

**Geometri Bilgisi Zayıf Olanlar
Sorularda Görme Problemi Yaşayanlar
Geometri Öğrenmeye Yeni Karar Verenler İçin...**

**ANTRENMANLARLA
GEOMETRİ**

Birinci Kitap

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Matematik Bire Bir Öğretim Uzmanı

Ahmet KARAKOÇ

Aziz YILDIRIM

DAYAMIŞLAR MATEMATİĞÜ... AYIPTUR YAW!:) ☺☺☺

Trabzonlu Temel'in sevgili torunu Eda'ya verilen ödev ile başı derttedir...

İstanbul'a göç eden arkadaşı Niyazi'ye başına gelenleri yazar.

"Niyazıcığum. Hanı benim küçük torun var ya. Geçen akşam, getirdi ödevini önüme koydu. Bi yandan da ağlay. Zaten dertlerini hep başa açar.

Dedi ki;

- "Habunları anlamadım. Yarın öğretmen beni dövecek."

Dedim ki; "Ağlama uşajım. Bunun için öğretmen uşak dövmez. Şimdi onu çözerük." Ama ne mümkün Niyazi kardışum.: Bi trenlan bi otobus aynı

istasyondan kalkmışlar. Tren otobustan üçte bir daha hızlı gidiy. Otobus iki yerde onbeşer dakika istirahat vermiş. Tiren da bi yerde durmuş, 20 dakika su almış. Otobus saatte 60 kilometre gidiymiş. Tiren 5 saat sonra gideceği yere

varmış. Otobus ise ne vakit sonra oriyeye varacakmış. Oğraştım yapamadım. Uşak da bi yandan ağlay. Derken bobası geldi. O da oğraştı çözemedi.

Dedim oğa ki; "damat senun tanıduğun tahsilli bi otobos şofori var ise oğa soralum. Belki o bilebilir. Yahutta sabah olsun da be uşajı şoforler cemiyetine götüreyum. Onlar arasında belki tirenlan yarış etmiş bi şofor vardur da bize nasihat verir."

Ha! Bu arada biz bi yandan da uşaja tirenleri tarif ediyruk. Tiren görmemiş ki... Ne anası görmüş, ne bobası. Ben da bi tek askerlukde Erzurum'dan Sivas'a gittiydum. Neysa kardışum, o gece çok kızdum. Dıyeceksun ki niye? La... Uşak daha incir ağacınlan dutı ayıramay; mezgiti gösteriyrum, hamsi diy, yumurtanın fabrikada yapılduğunu sanay. Biz geldük araba

yarıştıriyruk.

Ula, oriyeye otobos saatinde gitsa ne olur, geç gitsa ne olur? Gurbetten yolcu mi beklıysun? Eger varacağı saat önemliysa, edersun yazıhanıye bi telefon, derler sağa otobosun ineceği zamanı. Habu kadarlık mesele için sabıyü subyanı niye telef edersunuz?

La... Uşaklarda şarki yok, türki yok, oyun yok; DAYAMIŞLAR MATEMATİĞÜ. AYUPTUR YAW!..." ☺☺☺

Birinci Kitapta Neler Var?

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2. Üçgende Açılar	37
3. Dik Üçgen	83
4. İkizkenar Üçgen	120
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6. Üçgende Alan	155
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8. Üçgende Kenarortay	227
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1.
Bölüm

AÇI BİLGİSİ

Genel Kavramlar

Doğru Açılar

Matematikte zekâdan önce sabır gelir.

Cahit Arf

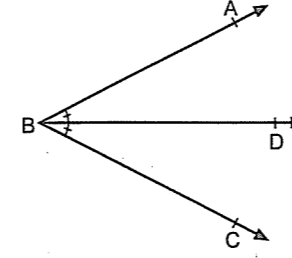
Başarının sırlarından biri, geçici başarısızlıkların bizi yenmesine izin vermemektir.

Mark Kay

Yapabildiğimiz her şeyi yapsaydık, buna kendimiz bile şaşardık.
Thomas Edison

— AÇI BİLGİSİ —

● Açortay Muhabbeti ☺



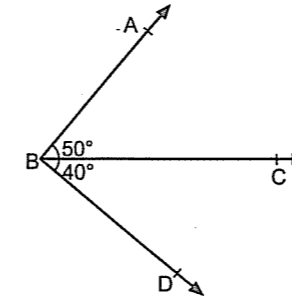
Adı üstünde. Açıyı ortالayan, yani açının ortasından çizilen şey. Mesela üstteki şekilde [BD, açortaydır. \widehat{ABC} açısını iki eşit parçaya bölüyor.

2'ye bölme probleminiz yoksa sıkıntı yaşamazsınız bunda ☺

Bir de açı ölçüleri aynı ise soruda bu açılar aynı şekilde gösteriliyor.

Mesela üstte  dir.

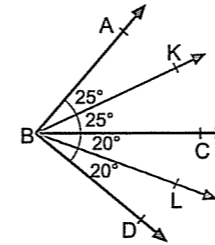
1.



\widehat{ABC} ile \widehat{CBD} açılarının açortayları arasındaki açı kaç derecedir?

- A) 25 B) 30 C) 45 D) 50 E) 60

Bunu ben çözeyim. 40° lik ve 50° lik açıları ikiye bölecek şekilde ortalarından bir çizgi (yani açortaylarını) çizin. Gerisi kolay.

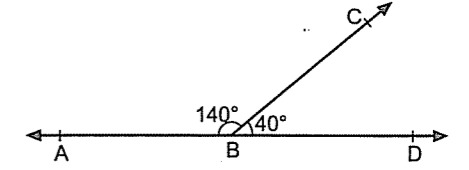


İstenen \widehat{KBL} dir.

O da $25^\circ + 20^\circ = 45^\circ$ dir.

1. Antrenman

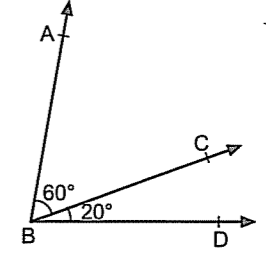
2.



\widehat{ABC} ile \widehat{CBD} açılarının açortayları arasındaki açı kaç derecedir?

- A) 60 B) 70 C) 80 D) 90 E) 100

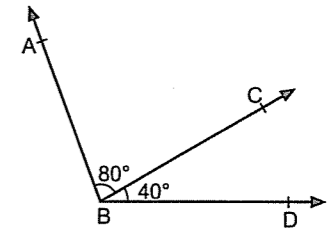
3.



\widehat{ABD} ile \widehat{DBC} açılarının açortayları arasındaki açı kaç derecedir?

- A) 15 B) 20 C) 25 D) 30 E) 35

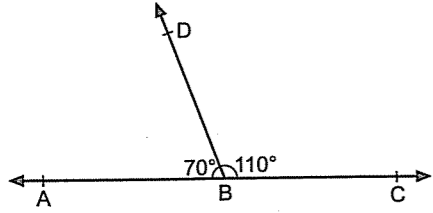
4.



\widehat{ABD} ile \widehat{CBD} açılarının açortayları arasındaki açı kaç derecedir?

- A) 40 B) 45 C) 50 D) 55 E) 60

5.



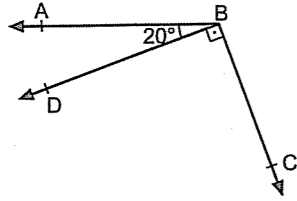
\widehat{ABD} ile \widehat{DBC} açılarının açıortayları arasındaki açı kaç derecedir?

- A) 70 B) 75 C) 80 D) 85 E) 90

Aklınızda olsun. yerine kullanılır.

Yani 90° yazılmaz. Şekli görünce anlamamız lazım ☺

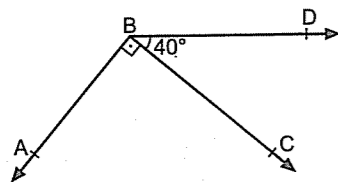
6.



\widehat{ABD} ile \widehat{DBC} açılarının açıortayları arasındaki açı kaç derecedir?

- A) 45 B) 80 C) 55 D) 60 E) 65

7.



\widehat{ABD} ile \widehat{ABC} açılarının açıortayları arasındaki açı kaç derecedir?

- A) 10 B) 20 C) 30 D) 40 E) 50

1-C

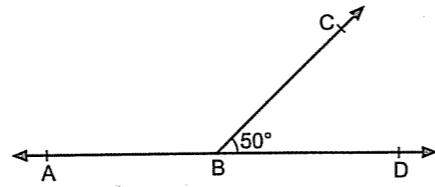
2-D

3-D

4-A

5-E

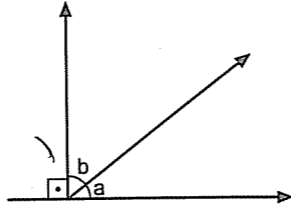
8.



\widehat{ABD} ile \widehat{ABC} açılarının açıortayları arasındaki açı kaç derecedir?

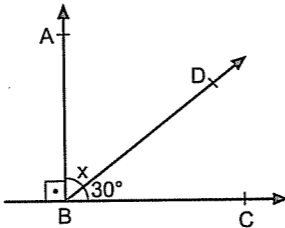
- A) 25 B) 30 C) 35 D) 40 E) 45

●



Yukarıdaki şekilde $a + b = 90^\circ$ dir. Ölçebilirsiniz hep 90° çıkar. ☺

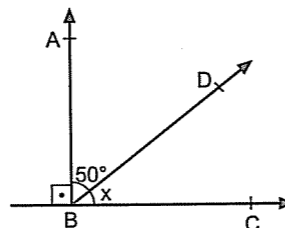
9.



$x = ?$

- A) 30 B) 40 C) 45 D) 50 E) 60

10.



$x = ?$

- A) 20 B) 30 C) 40 D) 50 E) 60

6-C

7-B

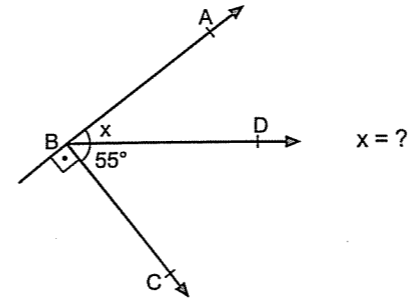
8-A

9-E

10-C

10

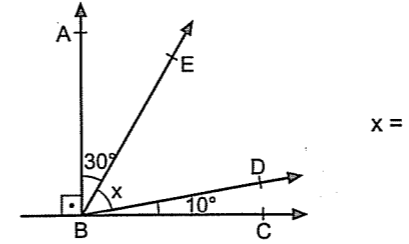
1.



$x = ?$

- A) 25 B) 30 C) 35 D) 40 E) 45

2.



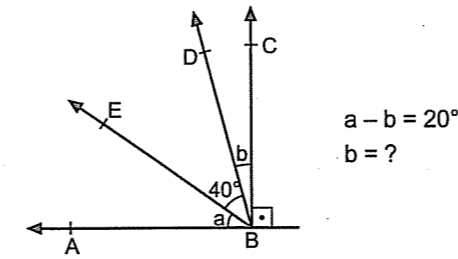
$x = ?$

- A) 50 B) 45 C) 40 D) 35 E) 30

İki bilinmeyenli denklem çözme bilmeyen var mı? Bu sorularda lazım olacak da ☺

Bilmeyen canlar, lütfen Antrenmanlarla Matematik 1'den iki bilinmeyenli denklem çözme olayını halledip öyle devam edin lütfen.

3.

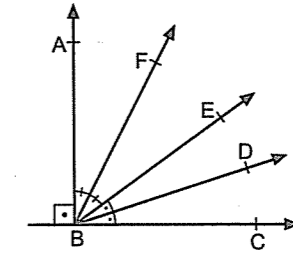


$a - b = 20^\circ$
 $b = ?$

- A) 15 B) 20 C) 25 D) 30 E) 40

Sorularda açı ölçüleri aynı olan açılara aynı harfleri yazın ve öyle çözün. Ama önce neyin istendiğini görün ve o açıyı netleştirin tabii ki.

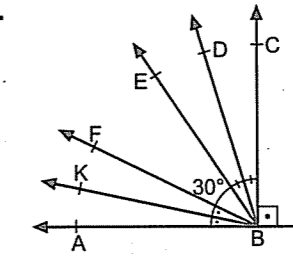
4.



$m(\widehat{FBD}) = ?$

- A) 20 B) 30 C) 45 D) 50 E) 55

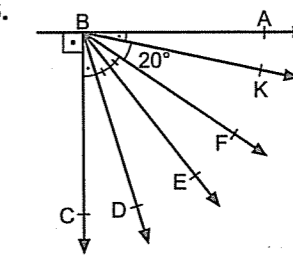
5.



$m(\widehat{KBD}) = ?$

- A) 30 B) 35 C) 40 D) 45 E) 60

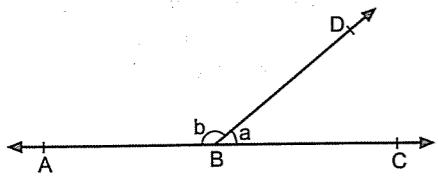
6.



$m(\widehat{ABE}) = ?$

- A) 35 B) 40 C) 45 D) 50 E) 55

11

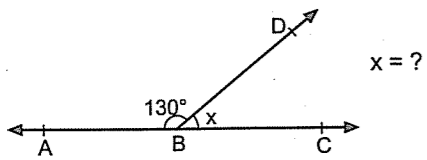


Yukarıdaki şekilde $a + b = 180^\circ$ dir.

Yani, düz çizgi 180° dir. İki, üç veya dört parçaya ayrılması bir şey değiştirmez. Parçaların toplamı 180° olur yine.

Varmı bi problem?

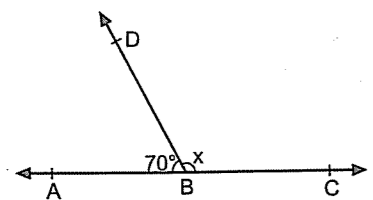
7.



$x = ?$

- A) 60 B) 50 C) 40 D) 30 E) 20

8.

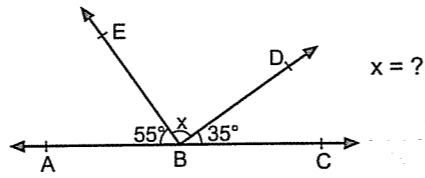


$x = ?$

- A) 130 B) 120 C) 110 D) 100 E) 90

1-C 2-A 3-A 4-C 5-E

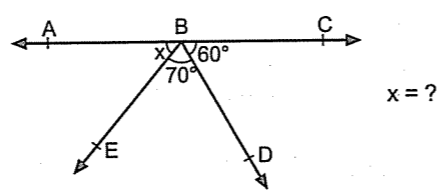
9.



$x = ?$

- A) 70 B) 80 C) 85 D) 90 E) 100

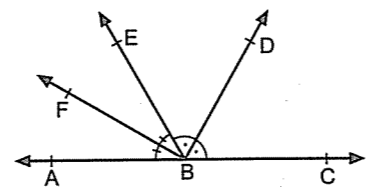
10.



$x = ?$

- A) 40 B) 50 C) 60 D) 70 E) 80

11.



$m(\widehat{DBF}) = ?$

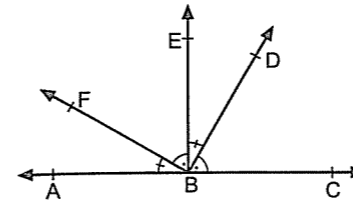
- A) 120 B) 110 C) 100 D) 90 E) 80

7-B 8-C 9-D 10-B 11-D

6-E

12

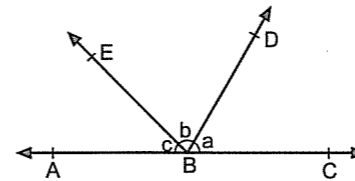
1.



$m(\widehat{FBD}) = ?$

- A) 90 B) 85 C) 80 D) 85 E) 70

2.



$3a = 2b = 6c$ ise $b = ?$

- A) 100 B) 95 C) 90 D) 80 E) 70

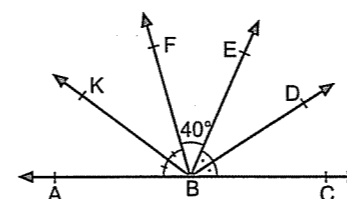
Bu soruda biraz orantı bilgisi var ve geometride çok lazım olacak bişey.

Şunu yapın. $3a = 2b = 6c$ demiş ya. 3, 2 ve 6'nın katı olan en küçük sayı kaç ise (burada 6'dır.) eşitliği o sayıya eşitleyin. x'li olarak.

Yani: $3a = 2b = 6c = 6x$ deyin.

$3a = 6x$ 'ten $a = 2x$, $2b = 6x$ 'ten $b = 3x$ ve $c = x$ 'i bulup öyle devam edin.

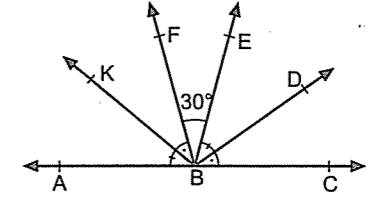
3.



$m(\widehat{KBD}) = ?$

- A) 70 B) 80 C) 90 D) 100 E) 110

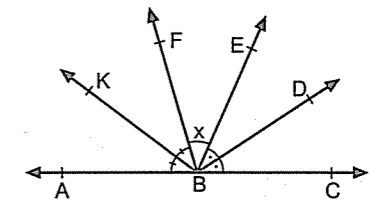
4.



$m(\widehat{KBD}) = ?$

- A) 90 B) 95 C) 100 D) 105 E) 110

5.

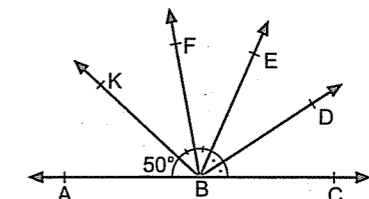


$m(\widehat{KBD}) = 115^\circ$

$x = ?$

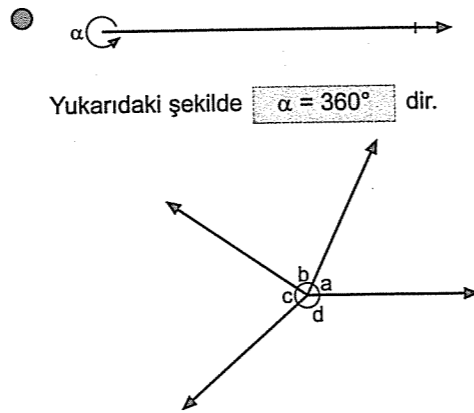
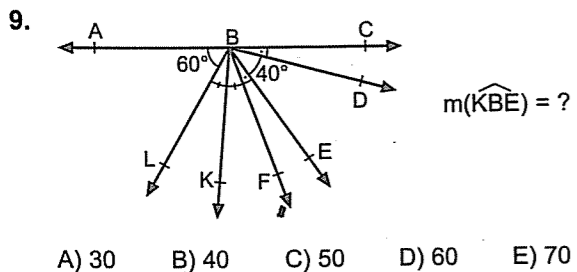
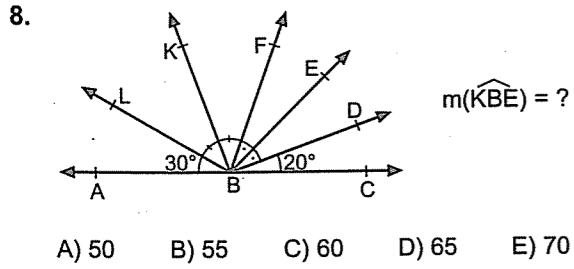
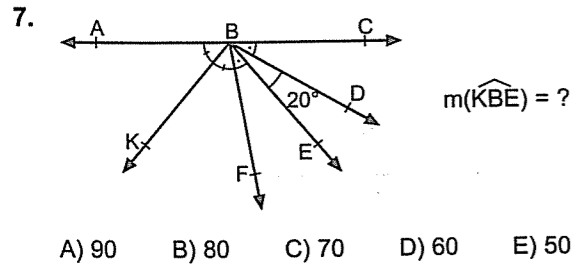
- A) 65 B) 60 C) 55 D) 50 E) 45

6.

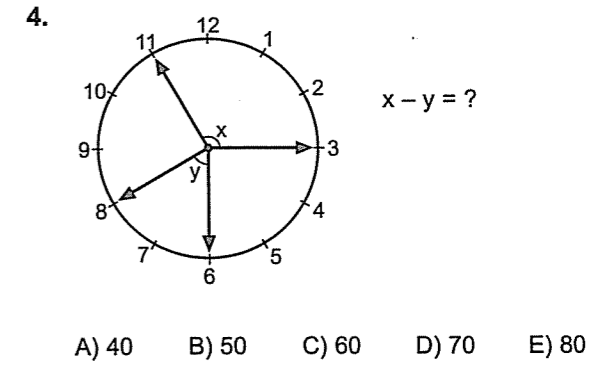
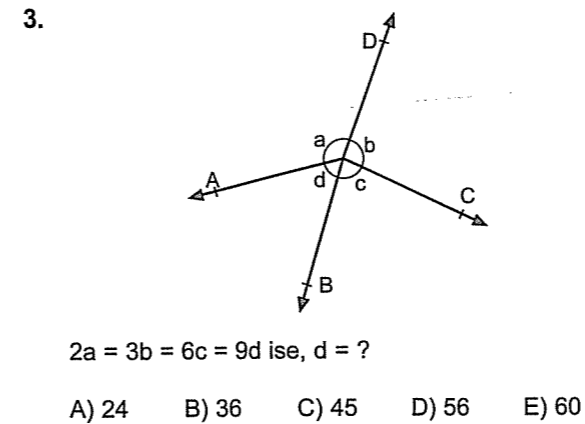
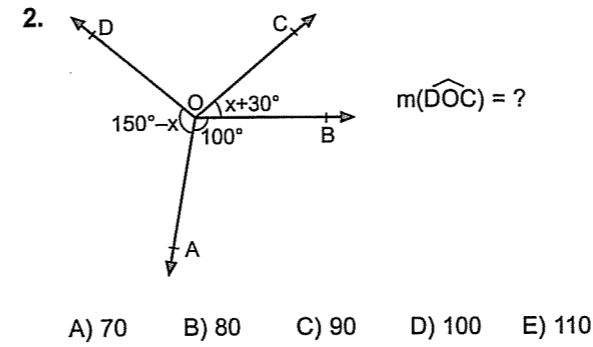
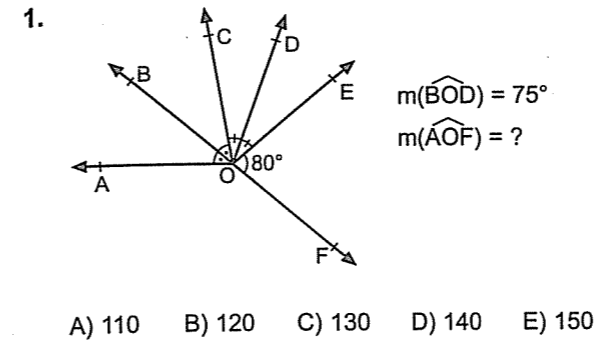
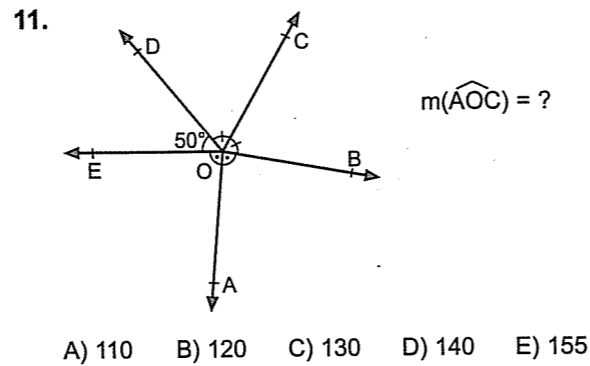
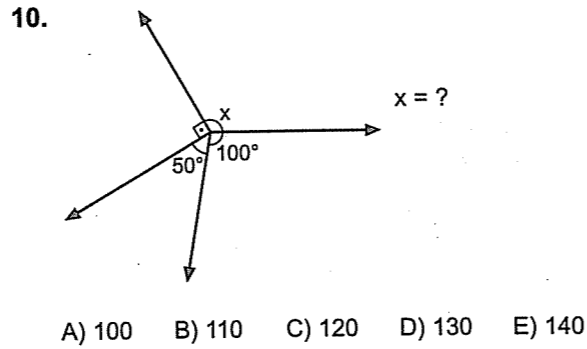



$m(\widehat{FBD}) = ?$

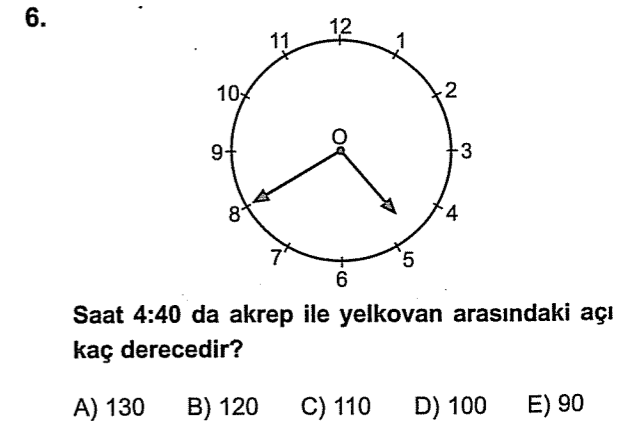
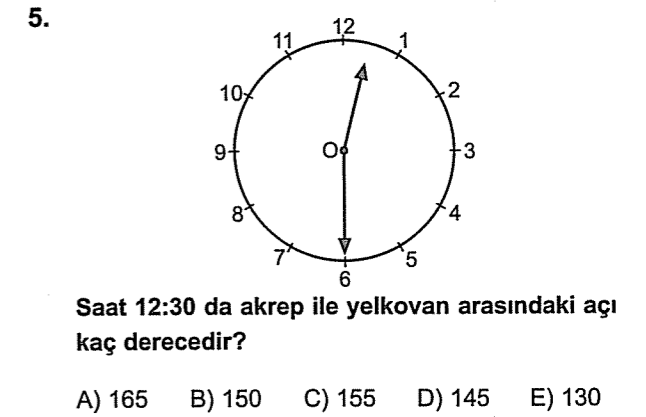
- A) 65 B) 60 C) 55 D) 50 E) 45



Yukarıdaki açılar toplamı 360° dir.
Yani $a + b + c + d = 360^\circ$ dir.



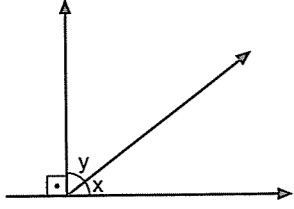
 Saatteki açı sorularında şunu bilin yeter. Yelkovan bir tam tur attığında 360° dönmüş olur. Akrep ise 1 saat ilerler. Yani 360° yi 12 ye bölersek 30° dönmüş olur. Sonuç olarak akrep her zaman yelkovanın döndüğü açının onikide biri kadar döner. Tabii hangisi akrep hangisi yelkovan bilmiyorsanız üzgünüm. ☹



● Tümler açısı, Bütünler açısı muhabbeti ☺

Bu muhabbet bayılacağınız türden değil. Ama çok da sıkıcı değil ☺ İçinde birazcık denklem kurma filan olabilir. O kadar.

Ölçüleri toplamı 90° olan açılara **tümler açısı** denir.



Yukarıdaki şekilde $x + y = 90^\circ$ dir. Bunu daha önce söyledim.

45° 'nin tümleyeni $90^\circ - 45^\circ = 45^\circ$ 'dir.

20° 'nin tümleyeni $90^\circ - 20^\circ = 70^\circ$ 'dir.

60° 'nin tümleyeni $90^\circ - 60^\circ = 30^\circ$ 'dir.

x 'in tümleyeni $90^\circ - x$ 'tir.

Genel olarak şunu bilin yeter. x 'in tümleri veya tümleyeni $90^\circ - x$ 'dir.

7. 15° 'nin tümleri kaç derecedir?

- A) 55 B) 65 C) 75 D) 85 E) 95

8. Tümleri 60° olan açı kaç derecedir?

- A) 30 B) 45 C) 60 D) 120 E) 150

9. Bir α açısının tümleri nedir?

- A) 90 B) $90 - \alpha$ C) $\alpha - 90$ D) 2α E) 3α

10. Ölçüleri farkı 40° olan tümler iki açının küçük olanı kaç derecedir?

- A) 45 B) 40 C) 35 D) 30 E) 25

11. Ölçüleri toplamı 50° olan iki açının tümleyenleri toplamı kaç derecedir?

- A) 90 B) 100 C) 110 D) 120 E) 130

12. Ölçüleri oranı $\frac{4}{5}$ olan tümler iki açıdan büyük olanı kaç derecedir?

- A) 50 B) 55 C) 60 D) 65 E) 70

13. Tümler iki açıdan biri diğerinin 3 katına eşit ise küçük açı kaç derecedir?

- A) 15 B) 22,5 C) 30 D) 45 E) 60

1. Biri diğerinin 2 katından 15° fazla olan tümler iki açıdan büyük olanı kaç derecedir?

- A) 65 B) 60 C) 55 D) 45 E) 40

2. Ölçüleri oranı $\frac{2}{7}$ olan tümler iki açının ölçüleri farkı kaç derecedir?

- A) 20 B) 30 C) 40 D) 50 E) 55

3. Toplamı 60° olan iki açının tümleyenleri oranı $\frac{1}{2}$ ise büyük olanı kaç derecedir?

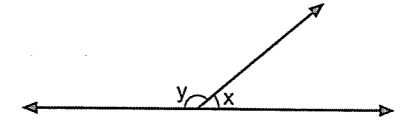
- A) 50 B) 45 C) 40 D) 35 E) 30

4. Ölçüleri oranı $\frac{5}{4}$ olan tümler iki açının tümleyenleri oranı kaçtır?

- A) $\frac{3}{5}$ B) $\frac{5}{3}$ C) $\frac{5}{4}$ D) $\frac{4}{5}$ E) $\frac{5}{9}$

● Bütünler açısı ne demektir?

Ölçüleri toplamı 180° dan açılara **bütünler açısı** denir.



Yukarıdaki şekilde $x + y = 180^\circ$ dir. Bunu daha önce söylemiştik zaten.

40° 'nin bütünleyeni $180^\circ - 40^\circ = 140^\circ$

70° 'nin bütünleyeni $180^\circ - 70^\circ = 110^\circ$

120° 'nin bütünleyeni $180^\circ - 120^\circ = 60^\circ$ 'dir.

x 'in bütünleyeni $180^\circ - x$ 'tir.

Genel olarak açı belli değilse açığı x olarak alın ve bütünleyenini de $180^\circ - x$ olarak yazın. Bütünler iki açı demişse ve açı maçı yoksa soruda birine x diğerine $180^\circ - x$ deyin öyle çözmeye başlayın. Gerisi gelir.

5. 60° 'nin bütünleri kaç derecedir?

- A) 60 B) 80 C) 90 D) 100 E) 120

6. Bütünleri 135° olan açı kaç derecedir?

- A) 45 B) 55 C) 105 D) 125 E) 135

7. Bir α açısının bütünleri nedir?

- A) $90 + \alpha$ B) $90 - \alpha$ C) $180 + \alpha$
D) $180 - \alpha$ E) $\alpha - 90$

8. Ölçüleri farkı 80° olan bütünler iki açıdan büyük olanı kaç derecedir?

- A) 110 B) 120 C) 130 D) 140 E) 150

9. Bütünler iki açının ölçüleri farkı 50° ise küçük olanı kaç derecedir?

- A) 70 B) 65 C) 60 D) 55 E) 45

10. Birinin ölçüsü diğerinin ölçüsünün 5 katına eşit olan bütünler iki açıdan büyük olanı kaç derecedir?

- A) 155 B) 150 C) 145 D) 135 E) 130

11. Bütünler iki açıdan birinin ölçüsü diğerinin ölçüsünün 2 katından 30° fazla ise bu açılardan küçük olanı kaç derecedir?

- A) 50 B) 70 C) 90 D) 100 E) 120

12. Ölçüleri toplamı 110° olan iki açının bütünleyenleri toplamı kaç derecedir?

- A) 170 B) 180 C) 200 D) 240 E) 250

13. Ölçüleri oranı $\frac{4}{5}$ olan bütünler iki açıdan küçük olanı kaç derecedir?

- A) 50 B) 60 C) 65 D) 70 E) 80

14. Ölçüleri oranı $\frac{5}{13}$ olan bütünler iki açının ölçüleri farkı kaç derecedir?

- A) 50 B) 70 C) 80 D) 90 E) 100

15. Ölçüleri oranı $\frac{7}{11}$ olan bütünler iki açının ölçüleri farkı kaç derecedir?

- A) 40 B) 50 C) 60 D) 70 E) 80

1. 30° nin tümüleri ile bütünleri toplamı kaç derecedir?

- A) 150 B) 180 C) 200 D) 210 E) 230

2. 45° nin bütünleri ile tümüleri arasındaki fark derecedir?

- A) 90 B) 75 C) 60 D) 45 E) 30

3. 40° nin tümüleri ile bütünleri oranı kaçtır?

- A) $\frac{4}{5}$ B) $\frac{2}{7}$ C) $\frac{5}{14}$ D) $\frac{14}{5}$ E) $\frac{9}{7}$

4. Bir açının tümüleri ile bütünleri toplamı 210° olduğuna göre, bu açı kaç derecedir?

- A) 10 B) 20 C) 30 D) 40 E) 50

5. Bir açının tümüleri ile bütünleri oranı $\frac{1}{3}$ ise bu açı kaç derecedir?

- A) 35 B) 45 C) 55 D) 65 E) 75

6. Ölçüleri toplamı 130° olan iki açıdan birinin tümüleri ile diğerinin bütünleri toplamı kaç derecedir?

- A) 100 B) 110 C) 120 D) 130 E) 140

7. Ölçüleri oranı $\frac{2}{7}$ olan tümüleri ile bütünleyenleri oranı kaçtır?

- A) $\frac{11}{16}$ B) $\frac{16}{11}$ C) $\frac{4}{11}$ D) $\frac{11}{4}$ E) $\frac{11}{18}$

8. Bir açının bütünleyeninin ölçüsü tümleyeninin ölçüsünün 4 katına eşit ise bu açı kaç derecedir?

- A) 45 B) 50 C) 55 D) 60 E) 70

9. 40° 'nin tümüleri y , y açısının bütünleri z 'dir.
Buna göre, z açısı kaç derecedir?
A) 140 B) 130 C) 120 D) 110 E) 100

Şu biraz zor gibi ☺

10. Bir x açısının tümüleri y , y açısının bütünleri z ise x 'in z cinsinden değeri nedir?
A) $2z$ B) $z - 90^\circ$ C) $90^\circ + z$
D) $z + 180^\circ$ E) $z + 80^\circ$

11. Bir açının bütünleri, tümülerinin ölçüsünün 2 katından 50° fazla ise bu açı kaç derecedir?
A) 50 B) 55 C) 60 D) 65 E) 70

12. Bir açının bütünleri ile tümüleri arasındaki fark kaç derecedir?
A) 60 B) 70 C) 80 D) 85 E) 90

Aslında şunu bilseydiniz daha kolay çözerdiniz.

Bir açının tümüleri ile bütünleri arasındaki fark 90° dir.

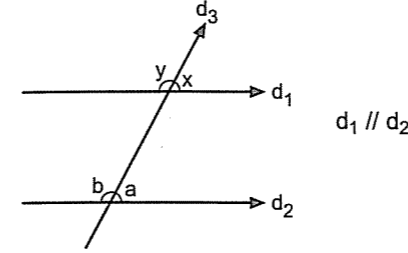
Bu her daim 90° 'dir ve siz yanlış çözerseniz de değişmez. ☺

13. Bir açının tümülerinin bütünlerine oranı $\frac{4}{13}$ ise bu açının ölçüsü kaç derecedir?
A) 30 B) 40 C) 50 D) 60 E) 70

14. Bir açının bütünlerinin tümülerine oranı $\frac{17}{8}$ ise bu açının ölçüsü kaç derecedir?
A) 10 B) 15 C) 20 D) 25 E) 30

15. Tümülerinin bütünlerine oranı $\frac{1}{2}$ olan açı kaç derecedir?
A) 22 B) 24 C) 26 D) 28 E) 30

- Paralel iki doğruyu kesen doğrunun oluşturduğu açılar.
Çok basit. Ama önemli. Onun için bu konuda pratikleşerseniz fena olmaz.



Aynı yöne bakan açılar **yöndeş** açılardır. Bu açılar birbirine eşittir. Yani, $x = a$ ve $y = b$ dir.

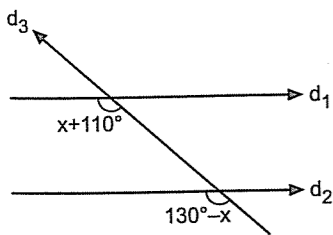
1. A) 30 B) 40 C) 80 D) 140 E) 150

2. A) 30 B) 60 C) 90 D) 120 E) 150

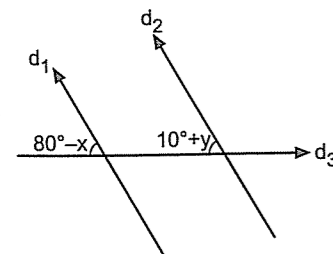
3. A) 20 B) 30 C) 40 D) 50 E) 60

4. A) 40 B) 50 C) 60 D) 70 E) 80

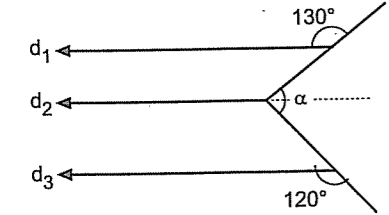
5. A) 45 B) 55 C) 65 D) 75 E) 85

6.  $d_1 \parallel d_2$
 $x = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

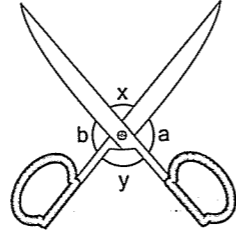
7.  $d_1 \parallel d_2$
 $x + y = ?$

A) 35 B) 40 C) 45 D) 60 E) 70

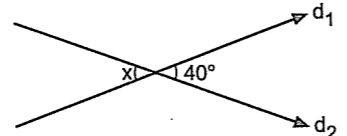
8.  $d_1 \parallel d_2 \parallel d_3$
 $\alpha = ?$

A) 110 B) 105 C) 100 D) 95 E) 90

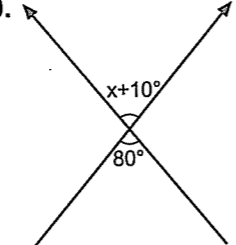
● Birbirini kesen iki doğrunun oluşturduğu açılar. Şunu bilin yeter ☺
Makasın kolları arasındaki açılar karşılıklı olarak birbirine eşittir.



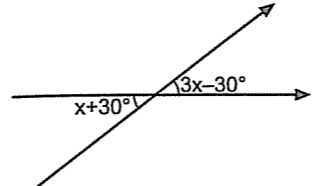
Yukarıdaki makasta $x = y$ ve $a = b$ dir.

9.  $x = ?$

A) 20 B) 25 C) 40 D) 45 E) 60

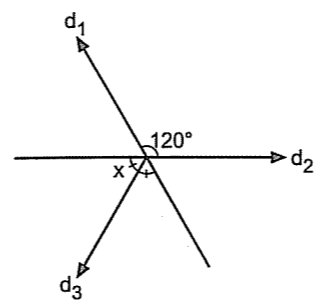
10.  $x = ?$

A) 40 B) 50 C) 60 D) 70 E) 80

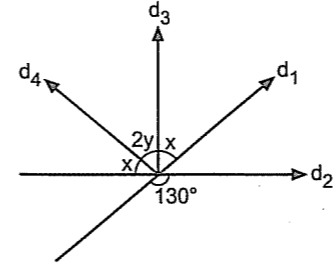
1.  $x = ?$

A) 20 B) 30 C) 35 D) 40 E) 48

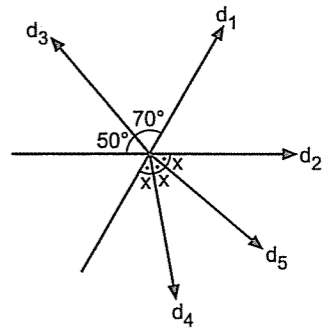
Eş açılar aynı harfle adlandırıyoruz. ☺

2.  $x = ?$

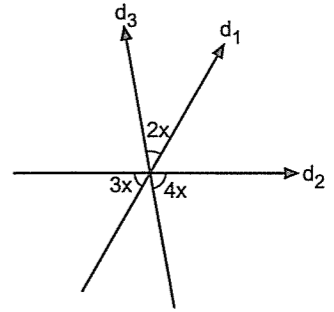
A) 30 B) 50 C) 60 D) 65 E) 75

3.  $x + y = ?$

A) 45 B) 55 C) 65 D) 75 E) 90

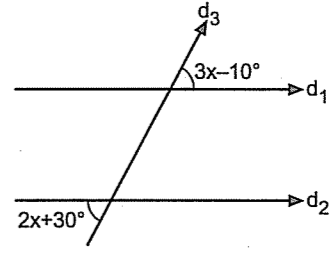
4.  $x = ?$

A) 30 B) 40 C) 45 D) 50 E) 55

5.  $x = ?$

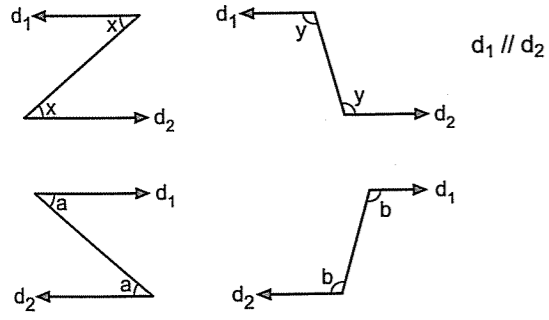
A) 20 B) 30 C) 35 D) 40 E) 45

Şu soruda ölçüsü x'e bağlı verilen iki açının ölçüleri eşittir. Niye ki?

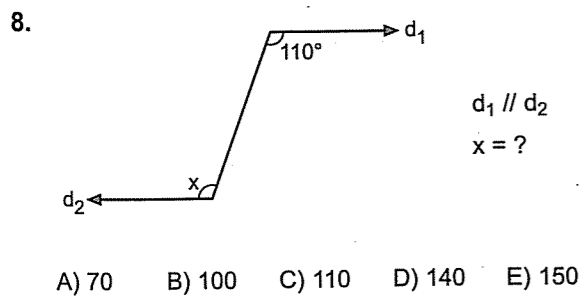
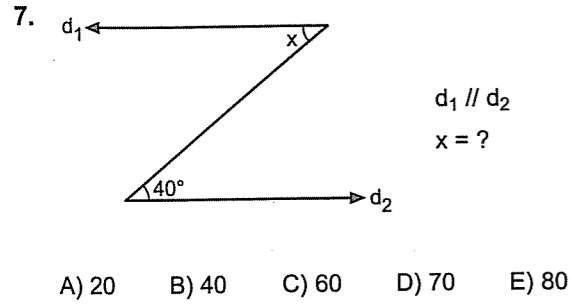
6.  $d_1 \parallel d_2$
 $x = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

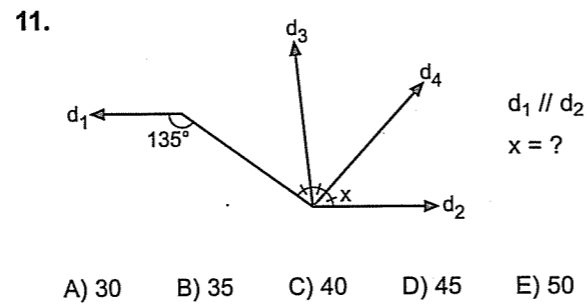
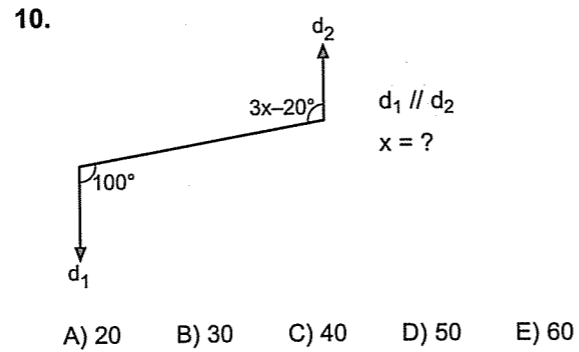
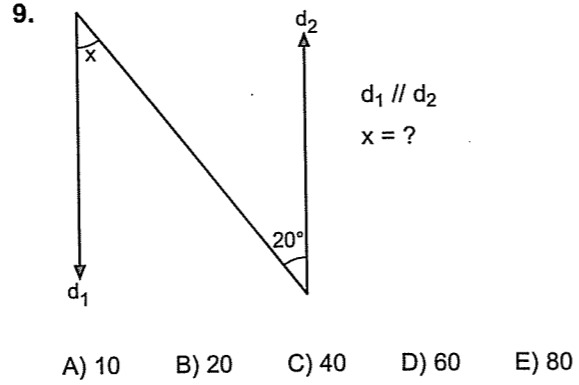
● Bildiğiniz bir şey. Ama birer kez daha görün. ☺



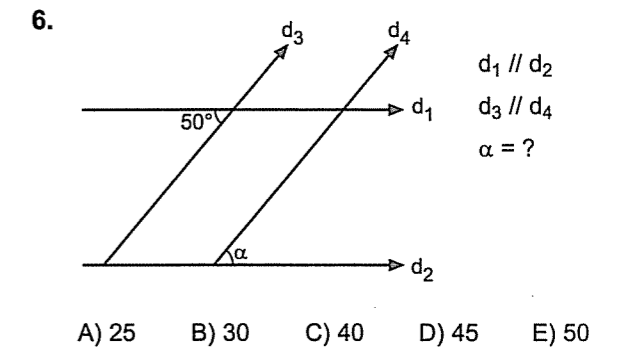
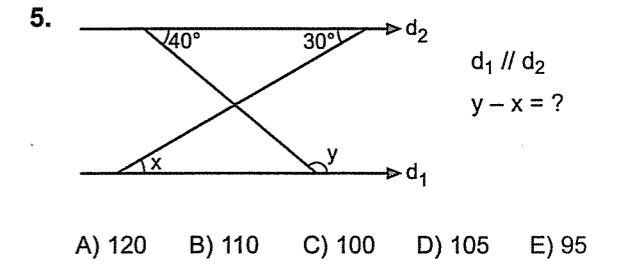
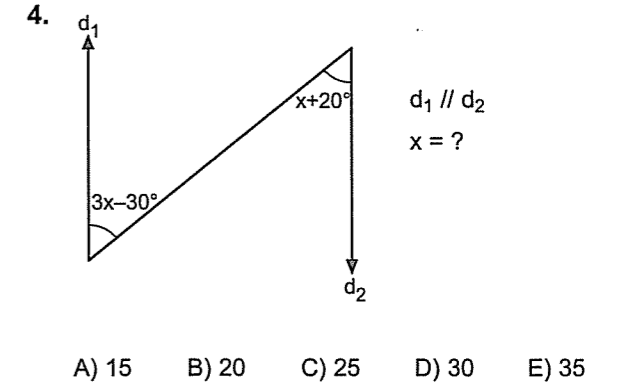
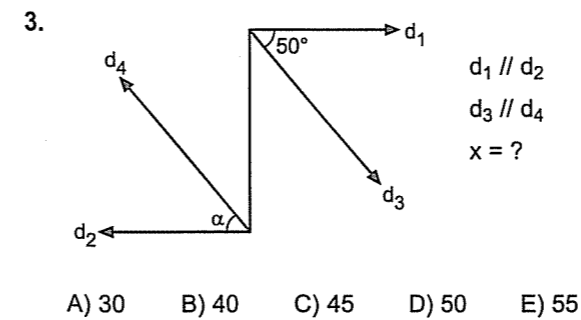
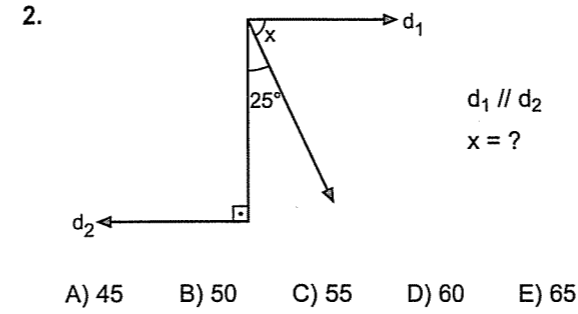
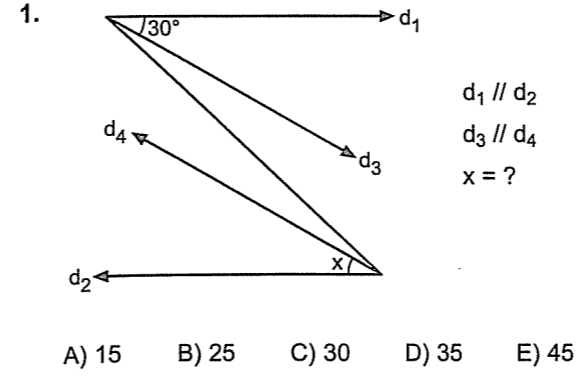
Yukarıdaki farklı "Z" şekillerinin kolları arasındaki açılar birbirine eşittir.

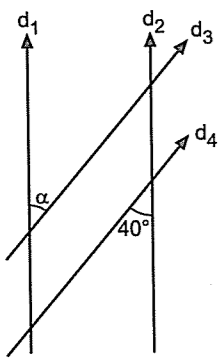


1-B 2-C 3-C 4-B 5-A

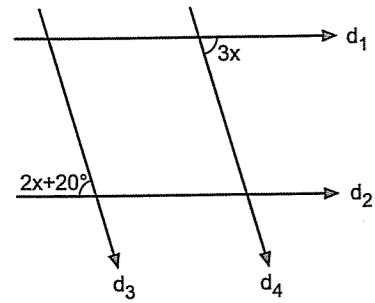


6-D 7-B 8-C 9-B 10-C 11-D

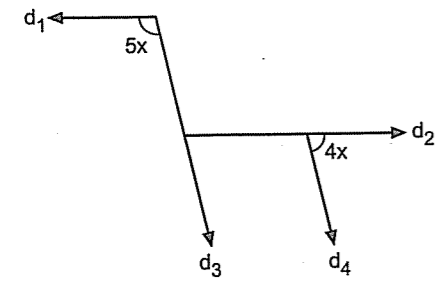


7.  $d_1 \parallel d_2$
 $d_3 \parallel d_4$
 $\alpha = ?$

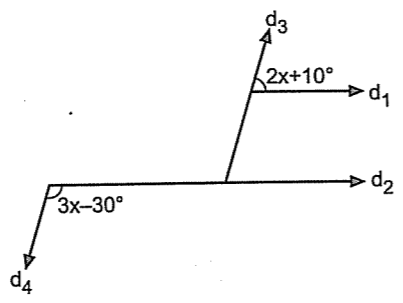
A) 20 B) 25 C) 30 D) 40 E) 50

8.  $d_1 \parallel d_2$
 $d_3 \parallel d_4$
 $x = ?$

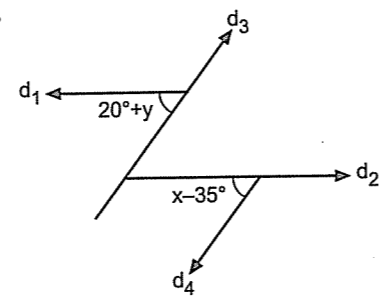
A) 20 B) 25 C) 30 D) 35 E) 40

9.  $d_1 \parallel d_2$
 $d_3 \parallel d_4$
 $x = ?$

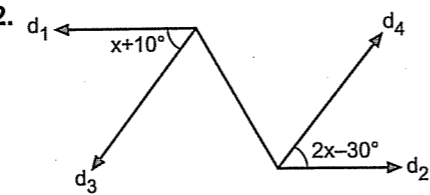
A) 5 B) 10 C) 15 D) 20 E) 25

10.  $d_1 \parallel d_2$
 $d_3 \parallel d_4$
 $x = ?$

A) 20 B) 30 C) 40 D) 45 E) 50

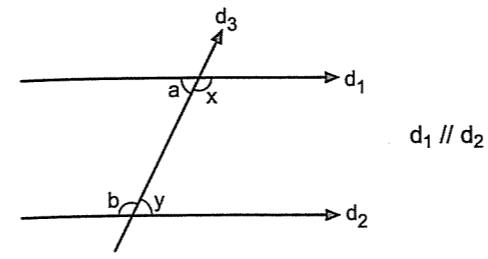
11.  $d_1 \parallel d_2$
 $d_3 \parallel d_4$
 $x - y = ?$

A) 55 B) 50 C) 45 D) 40 E) 35

12.  $d_1 \parallel d_2$
 $d_3 \parallel d_4$
 $x = ?$

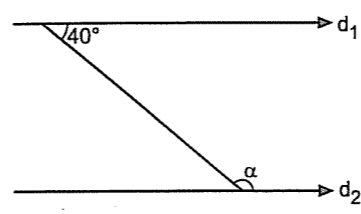
A) 50 B) 40 C) 30 D) 20 E) 10

● Paralel iki doğru arasında kalan ve birbirine bakan açılarının toplamı 180° dir.

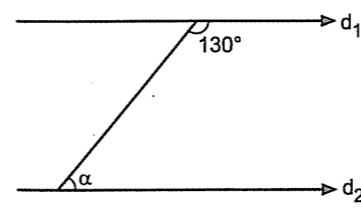


Yukarıdaki şekilde $x + y = 180^\circ$ ve $a + b = 180^\circ$ dir.

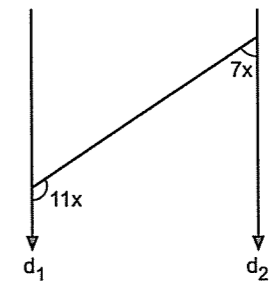
Açı sorularında paralel iki doğruyu kesen başka bir doğru varsa büyük bir olasılıkla buna ihtiyacınız olabilir.

1.  $d_1 \parallel d_2$
 $\alpha = ?$

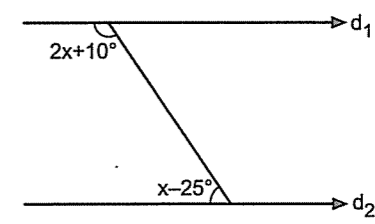
A) 100 B) 120 C) 140 D) 150 E) 160

2.  $d_1 \parallel d_2$
 $x = ?$

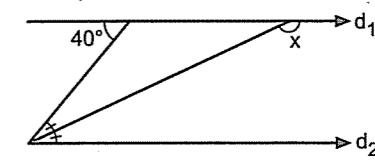
A) 60 B) 50 C) 40 D) 30 E) 20

3.  $d_1 \parallel d_2$
 $x = ?$

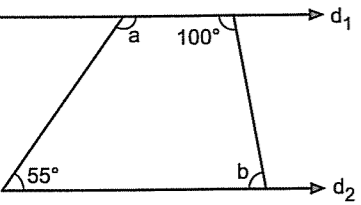
A) 10 B) 20 C) 30 D) 40 E) 50

4.  $d_1 \parallel d_2$
 $x = ?$

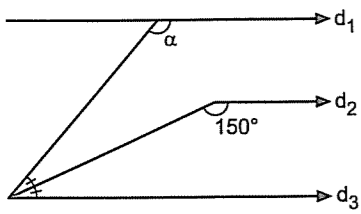
A) 45 B) 50 C) 55 D) 60 E) 65

5.  $d_1 \parallel d_2$
 $x = ?$

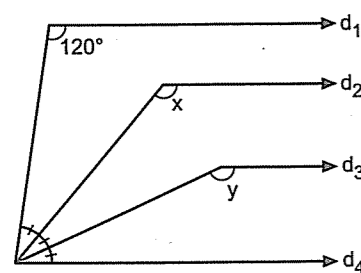
A) 120 B) 140 C) 150 D) 160 E) 170

6.  $d_1 \parallel d_2$
 $a + b = ?$

A) 165 B) 180 C) 195 D) 205 E) 210

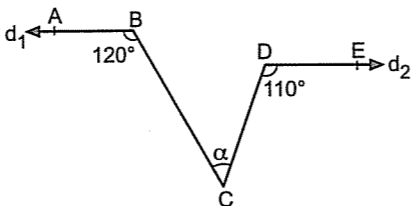
7.  $d_1 \parallel d_2 \parallel d_3$
 $\alpha = ?$

A) 130 B) 120 C) 110 D) 105 E) 100

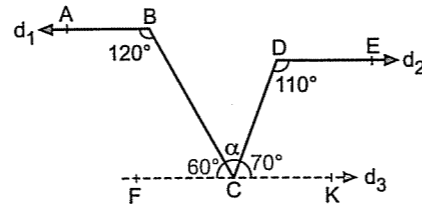
8.  $d_1 \parallel d_2 \parallel d_3 \parallel d_4$
 $y - x = ?$

A) 20 B) 25 C) 30 D) 35 E) 40

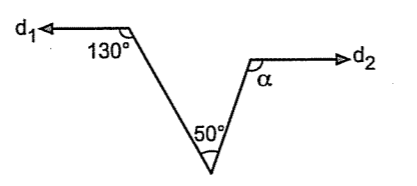
● Sivri Uç Muhabbeti ☺
 Sivri uç görünce paralel çizmek lazım.

Örnek Soru:  $d_1 \parallel d_2$
 $\alpha = ?$

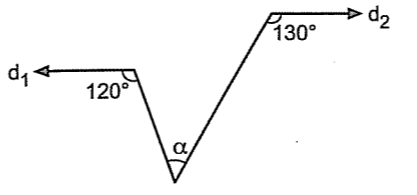
Çözüm: Bu tip sorular uç noktalardan paralel çizilerek çözülür.
 Soruda C noktası bizim uç noktamız. Buradan d_1 ve d_2 'ye paralel olacak şekilde d_3 doğrusu çizelim.



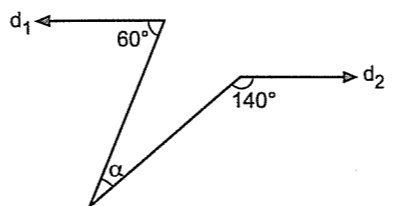
Paralel doğrular arasında kalan açılar toplamı 180° olduğundan, $m(\widehat{BCF}) = 60^\circ$ ve $m(\widehat{DCK}) = 70^\circ$ olur.
 Artık $60^\circ + \alpha + 70^\circ = 180^\circ$ 'den
 $\alpha = 50^\circ$ bulursunuz.

9.  $d_1 \parallel d_2$
 $\alpha = ?$

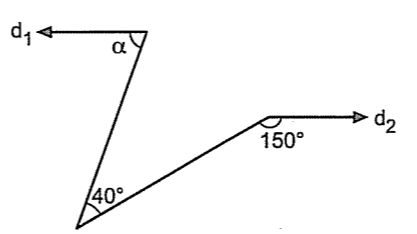
A) 90 B) 95 C) 100 D) 110 E) 120

1.  $d_1 \parallel d_2$
 $\alpha = ?$

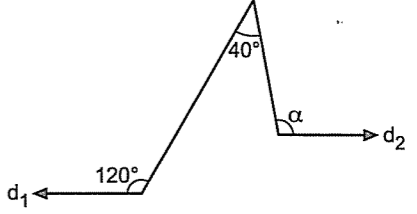
A) 40 B) 50 C) 60 D) 70 E) 80

2.  $d_1 \parallel d_2$
 $\alpha = ?$

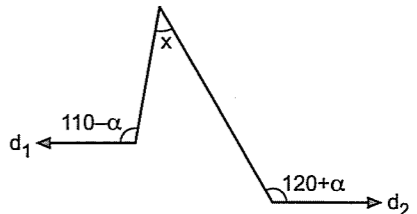
A) 10 B) 20 C) 25 D) 30 E) 35

3.  $d_1 \parallel d_2$
 $\alpha = ?$

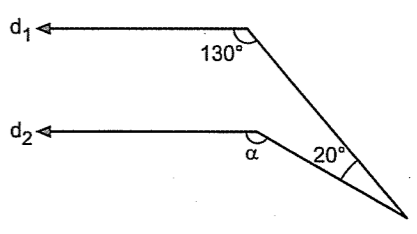
A) 45 B) 55 C) 70 D) 80 E) 85

4.  $d_1 \parallel d_2$
 $\alpha = ?$

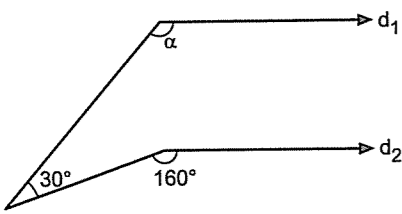
A) 100 B) 105 C) 110 D) 115 E) 120

5.  $d_1 \parallel d_2$
 $x = ?$

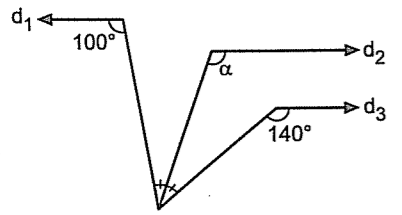
A) 20 B) 30 C) 40 D) 50 E) 60

6.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 110 B) 120 C) 130 D) 140 E) 150

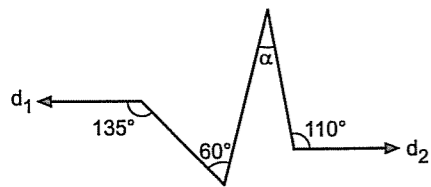
7.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 100 B) 110 C) 120 D) 130 E) 140

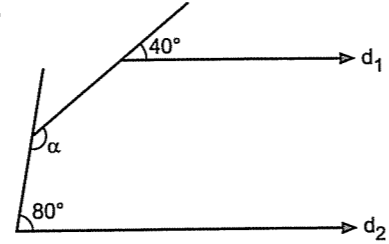
8.  $d_1 \parallel d_2 \parallel d_3$
 $\alpha = ?$

A) 100 B) 110 C) 120 D) 130 E) 140

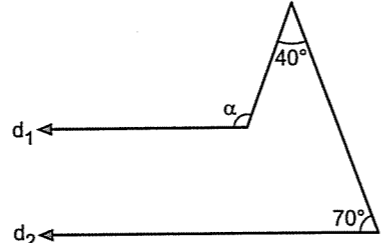
Sivri uçlar iki tane de olsa değişen bişey olmaz. Siz de ikisinden paralel çizersiniz olur biter.

9.  $d_1 \parallel d_2$
 $\alpha = ?$

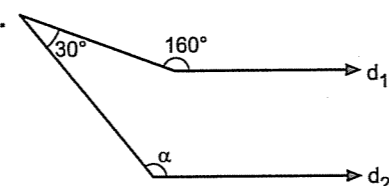
A) 15 B) 25 C) 30 D) 35 E) 45

10.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 110 B) 120 C) 130 D) 140 E) 150

11.  $d_1 \parallel d_2$
 $\alpha = ?$

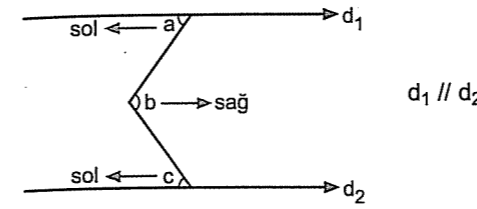
A) 100 B) 105 C) 110 D) 120 E) 130

12.  $d_1 \parallel d_2$
 $\alpha = ?$

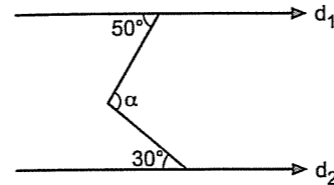
A) 110 B) 115 C) 125 D) 130 E) 140

● Ve M muhabbeti ☺
M W Σ Σ

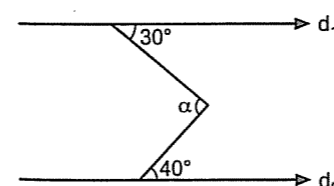
Her türlü "M" harfi için:



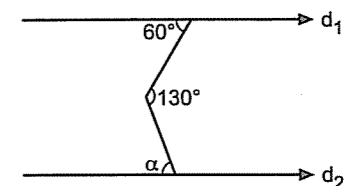
Sağa bakan açılar toplamı sola bakan açılar toplamına eşittir. Yani, $b = a + c$ dir. (Tabi sağınızı solunuzu karıştırırsanız bu bile sıkıntı olabilir. ☺)

1.  $d_1 \parallel d_2$
 $\alpha = ?$

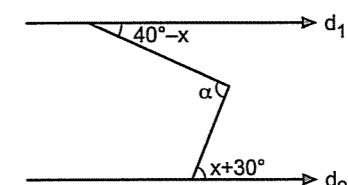
A) 65 B) 70 C) 75 D) 80 E) 90

2.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 50 B) 60 C) 70 D) 80 E) 90

3.  $d_1 \parallel d_2$
 $\alpha = ?$

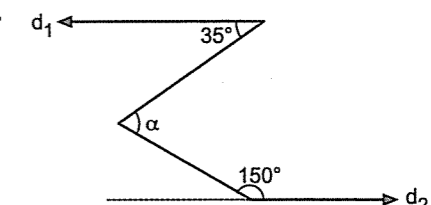
A) 55 B) 60 C) 65 D) 70 E) 80

4.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 60 B) 65 C) 70 D) 80 E) 90

Tabii M her zaman hazır verilmeyecek. Bazen M'yi sizin oluşturmanız lazım.

Meselâ; alttaki soruda kesikli çizdiğim çizgi normalde olmaz. Sizin çizmeniz lazım ki M oluşsun.

5.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 55 B) 65 C) 70 D) 75 E) 85

6. $d_1 \parallel d_2$
 $\alpha = ?$

A) 70 B) 60 C) 55 D) 50 E) 45

Hatırlayın.
Eş açılara aynı harfi yazıp soruyu öyle çözüyorduk.

7. $d_1 \parallel d_2$
 $\alpha = ?$

A) 80 B) 75 C) 70 D) 60 E) 50

8. $d_1 \parallel d_2$
 $\alpha = ?$

A) 25 B) 35 C) 45 D) 55 E) 60

9. $d_1 \parallel d_2$
 $\alpha = ?$

A) 40 B) 45 C) 50 D) 55 E) 60

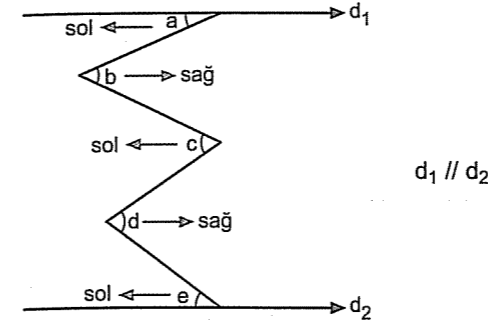
10. $d_1 \parallel d_2$
 $y - x = ?$

A) 15 B) 20 C) 25 D) 35 E) 45

11. $d_1 \parallel d_2$
 $\frac{y}{x+z} = ?$

A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{2}{5}$ E) $\frac{3}{7}$

● Abartılı M veya sağ-sol muhabbeti ☺



Bu tip sorularda yukarıdan başlayarak açılar bir sağa, bir sola bakarak inmişse, sağa bakanların toplamı sola bakanların toplamına eşittir.

Yani, $a + c + e = b + d$ dir.

1. $d_1 \parallel d_2$
 $\alpha = ?$

A) 50 B) 45 C) 40 D) 35 E) 30

2. $d_1 \parallel d_2$
 $\alpha = ?$

A) 50 B) 55 C) 60 D) 65 E) 70

3. $d_1 \parallel d_2$
 $\alpha = ?$

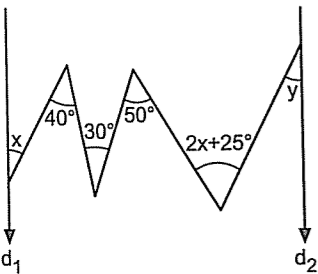
A) 10 B) 15 C) 20 D) 25 E) 30

4. $d_1 \parallel d_2$
 $\alpha = ?$

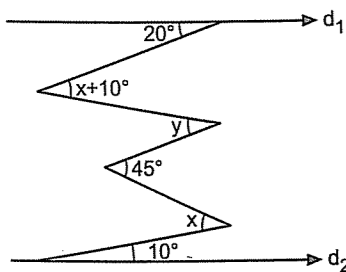
A) 10 B) 15 C) 20 D) 25 E) 30

5. $d_1 \parallel d_2$
 $a - b = 25^\circ$
 $a = ?$

A) 50 B) 55 C) 60 D) 65 E) 70

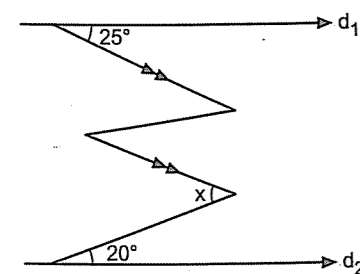
6.  $d_1 \parallel d_2$
 $x + y = 25^\circ$
 $x = ?$

A) 10 B) 15 C) 20 D) 25 E) 30

7.  $d_1 \parallel d_2$
 $y = ?$

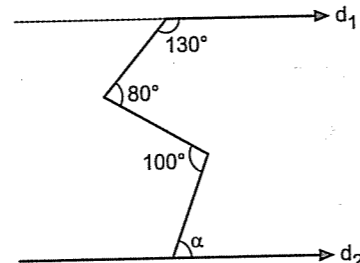
A) 30 B) 35 C) 40 D) 45 E) 50


Aklınızda olsun. Bu kitaptaki sorularda doğru üstündeki oklar bu doğruların paralel olduğu anlamına geliyor.

8.  $d_1 \parallel d_2$
 $x = ?$

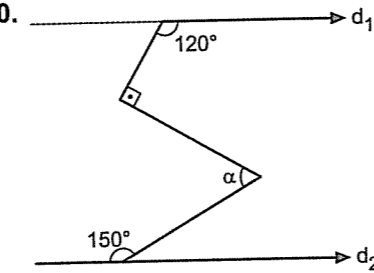
A) 55 B) 50 C) 45 D) 40 E) 35

Bu soruda da kesik çizginiz benden. ☺

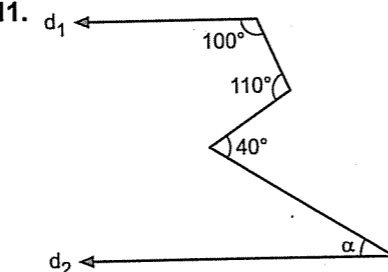
9.  $d_1 \parallel d_2$
 $\alpha = ?$

 Yalnız bu tip sorularda peşpeşe olan açılar iki sağa ya da iki sola bakmaması lazım. Eğer ikisi sağa bakıyorsa sıralamayı bozmayacak şekilde birinin sol tarafını almanız lazım.

- A) 50 B) 55 C) 60 D) 70 E) 80

10.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 40 B) 45 C) 50 D) 55 E) 60

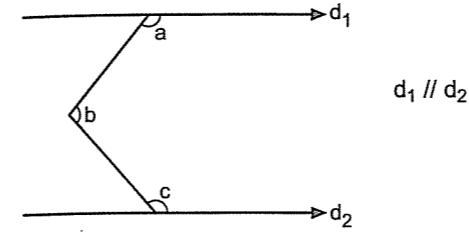
11.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 5 B) 10 C) 15 D) 20 E) 25

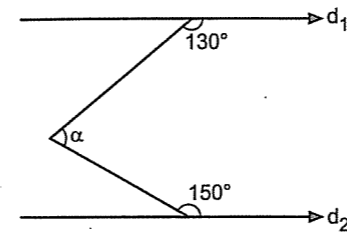
● Kalem ucu muhabbeti ☺



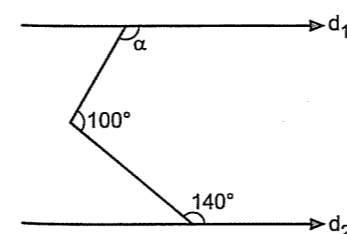
harfinin her türlü şekli için, içeride kalan açılarının toplamı 360° dir.



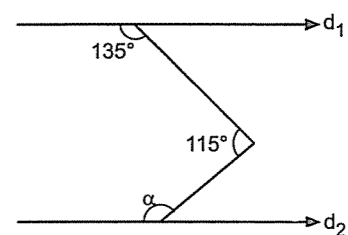
Yukarıdaki şekilde $a + b + c = 360^\circ$ dir.

1.  $d_1 \parallel d_2$
 $\alpha = ?$

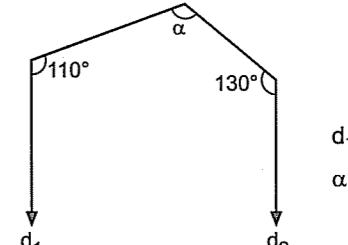
A) 55 B) 60 C) 75 D) 80 E) 85

2.  $d_1 \parallel d_2$
 $\alpha = ?$

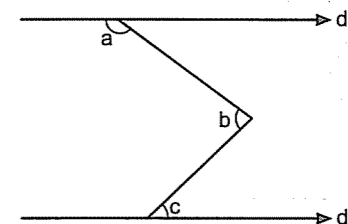
A) 100 B) 110 C) 120 D) 130 E) 140

3.  $d_1 \parallel d_2$
 $\alpha = ?$

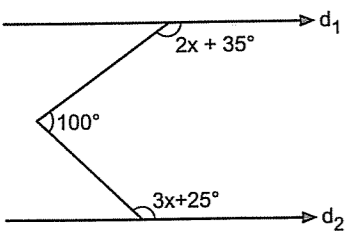
- A) 110 B) 120 C) 130 D) 140 E) 150

4.  $d_1 \parallel d_2$
 $\alpha = ?$

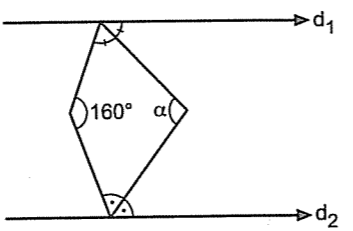
- A) 110 B) 120 C) 130 D) 140 E) 150

5.  $d_1 \parallel d_2$
 $a + b = 220^\circ$
 $c = ?$

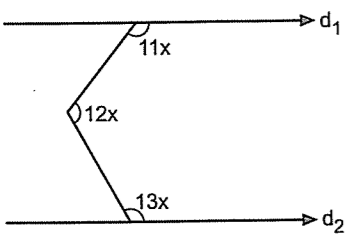
- A) 10 B) 15 C) 20 D) 30 E) 40

6.  $d_1 \parallel d_2$
 $x = ?$

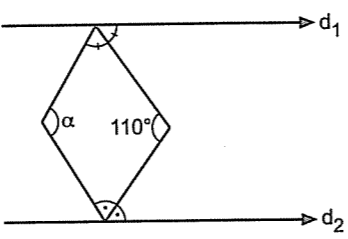
A) 20 B) 25 C) 30 D) 35 E) 40

9.  $d_1 \parallel d_2$
 $\alpha = ?$

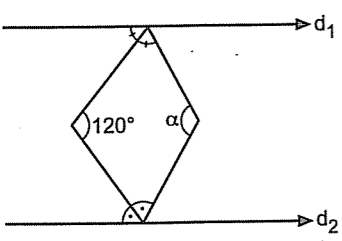
A) 70 B) 80 C) 85 D) 90 E) 100

7.  $d_1 \parallel d_2$
 $x = ?$

A) 10 B) 15 C) 20 D) 25 E) 30

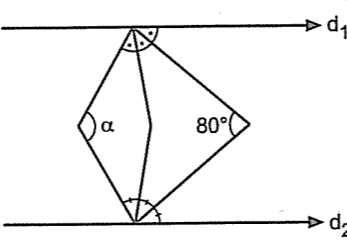
10.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 110 B) 115 C) 120 D) 130 E) 140

8.  $d_1 \parallel d_2$
 $x = ?$

Eşit açılar aynı harfle harflendiriyorduk.

A) 110 B) 120 C) 130 D) 140 E) 150

11.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 100 B) 110 C) 120 D) 130 E) 140

2. Bölüm

ÜÇGENDE AÇI

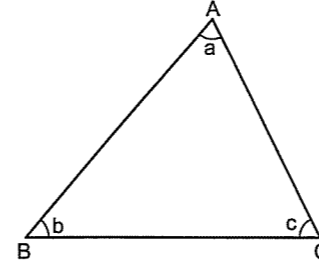
Üstelemek başarının temel unsurudur. Kapıyı yeterince uzun süre ve yüksek sesle çalarsanız, birilerini uyandıracacağınızdan emin olabilirsiniz.

Henry Wadsworth Longfellow

Bir şeyi gerçekten istiyorsan, bütün engelleri yenip ona ulaşabilirsin.
Shelton Skelton

ÜÇGENDE AÇI

● ÜÇGENDE AÇI olayı ☺

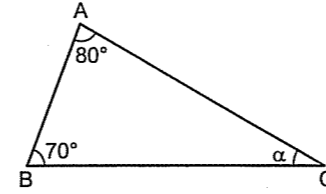


Üçgende açılarla ilgili bilmeniz gereken en önemli şey, iç açılar toplamının 180° olduğudur.

Bu değişmez. ☺ Üçgeni nasıl çizerseniz çizin. ☺

Bir üçgenin iç açıları toplamı $a + b + c = 180^\circ$ dir.

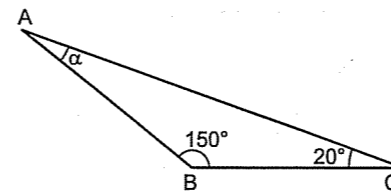
1.



$\alpha = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

2.

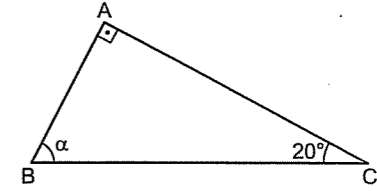


$\alpha = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

1. Antrenman

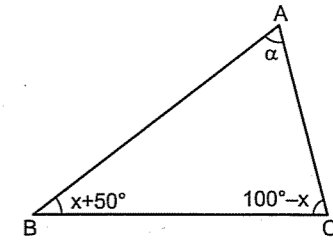
3.



$\alpha = ?$

A) 40 B) 50 C) 60 D) 70 E) 80

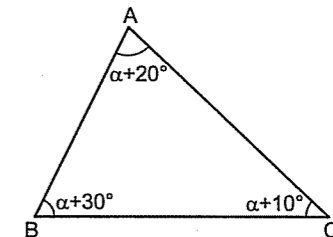
4.



$\alpha = ?$

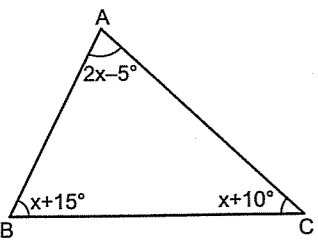
A) 10 B) 20 C) 30 D) 40 E) 50

5.



$\alpha = ?$

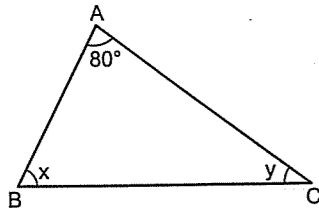
A) 50 B) 40 C) 30 D) 20 E) 10

6.  $x = ?$

A) 40 B) 55 C) 60 D) 65 E) 70

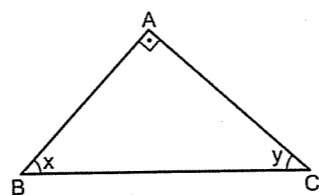
7. Bir üçgenin iç açıları 2, 3, 4 sayılarıyla doğru orantılı ise (Yani, 2k, 3k, 4k) bu üçgenin en büyük iç açısı kaç derecedir?

A) 60 B) 70 C) 80 D) 90 E) 100

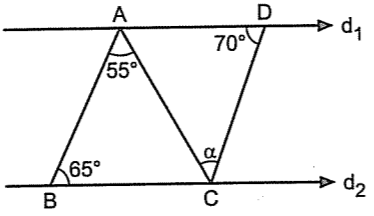
8.  $x - y = 20^\circ$
 $x = ?$

A) 40 B) 45 C) 50 D) 55 E) 60

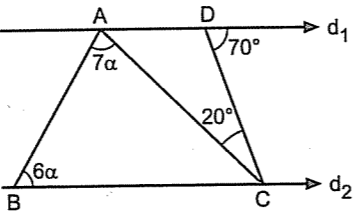
1-C 2-A 3-D 4-C 5-B

9.  $x - y = 60^\circ$
 $x = ?$

A) 75 B) 60 C) 55 D) 40 E) 45

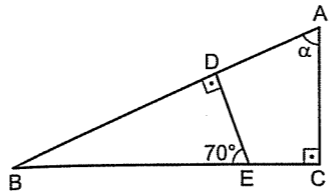
10.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 40 B) 50 C) 60 D) 70 E) 80

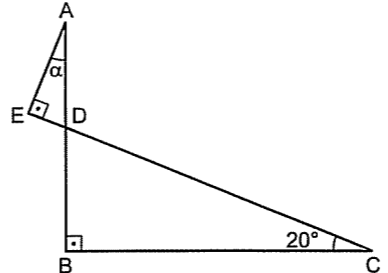
11.  $d_1 \parallel d_2$
 $\alpha = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

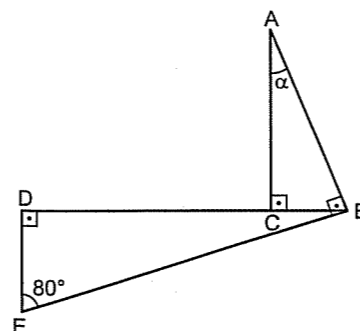
7-C 8-E 9-A 10-B 11-A

1.  $\alpha = ?$

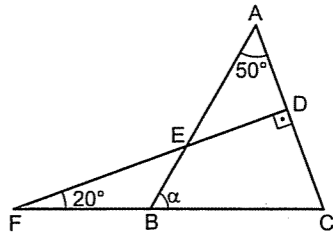
A) 30 B) 40 C) 50 D) 60 E) 70

2.  $\alpha = ?$

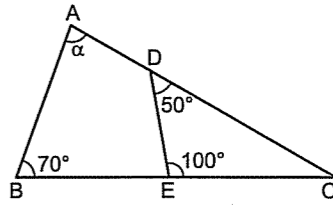
A) 10 B) 20 C) 30 D) 40 E) 50

3.  $\alpha = ?$

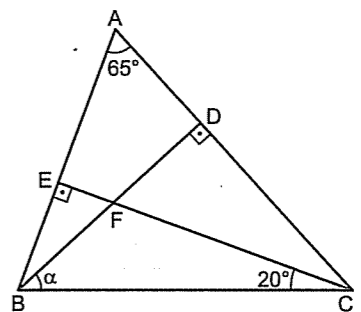
A) 10 B) 20 C) 30 D) 40 E) 50

4.  $\alpha = ?$

A) 50 B) 55 C) 60 D) 65 E) 70

5.  $\alpha = ?$

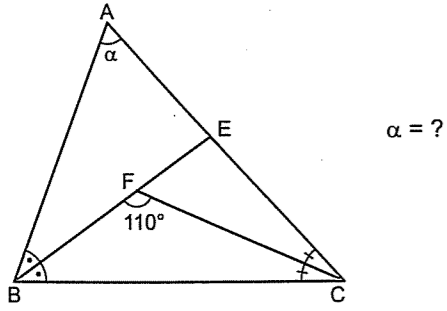
A) 80 B) 70 C) 60 D) 50 E) 40

6.  $\alpha = ?$

A) 25 B) 30 C) 35 D) 40 E) 45

Bi daha söyleyicem bakın. Eşit açıları aynı harfle harflendiriyorduk. ☺

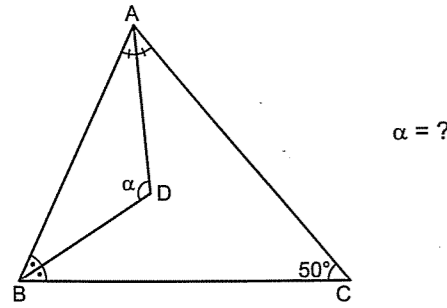
7.



$\alpha = ?$

- A) 30 B) 40 C) 50 D) 60 E) 70

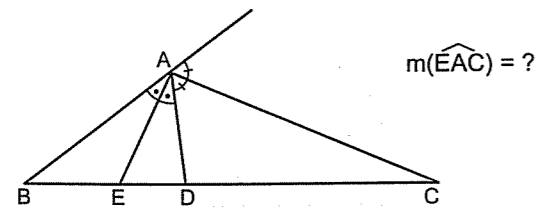
8.



$\alpha = ?$

- A) 100 B) 105 C) 110 D) 115 E) 120

9.

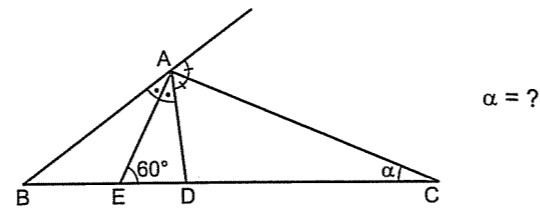


$m(\widehat{EAC}) = ?$

- A) 110 B) 100 C) 90 D) 80 E) 70

1-E 2-B 3-A 4-C 5-A 6-E

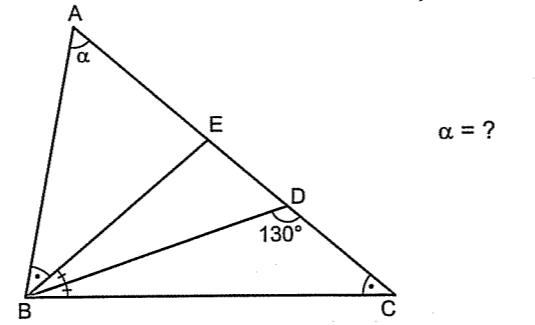
10.



$\alpha = ?$

- A) 10 B) 20 C) 30 D) 40 E) 50

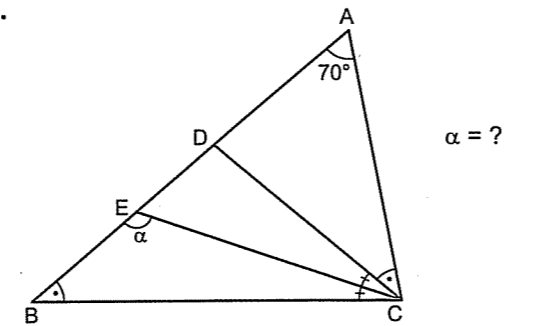
11.



$\alpha = ?$

- A) 60 B) 70 C) 75 D) 80 E) 85

12.

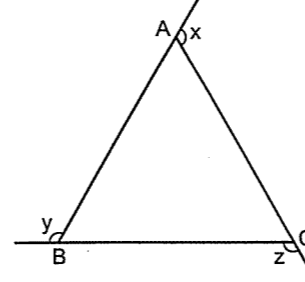


$\alpha = ?$

- A) 130 B) 125 C) 120 D) 115 E) 110

7-B 8-D 9-C 10-C 11-D 12-B

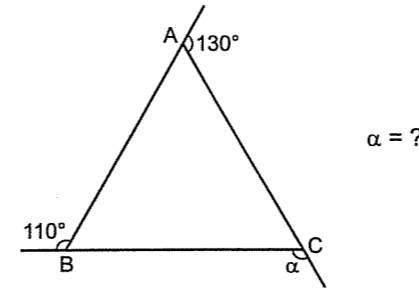
● Üçgende açılarla ilgili bilmeniz gereken ikinci şey şu:



Dış açılar toplamı her zaman 360° dir. Gerçi biliyorum ki ben ne kadar anlatsam da her soruda ameliği çok bile olsa iç açıları yazıp çözen tipler hep çıkacak.

Neyse işte... Üçgenin dış açıları toplamı $x + y + z = 360^\circ$ dir.

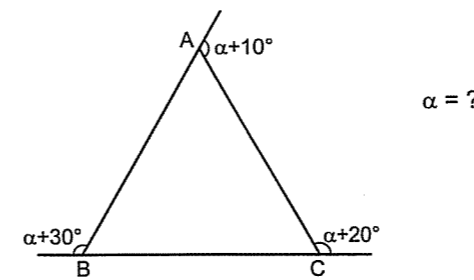
1.



$\alpha = ?$

- A) 160 B) 150 C) 140 D) 130 E) 120

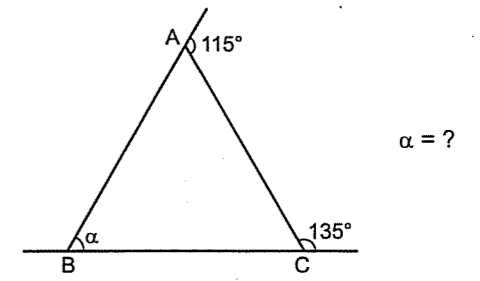
2.



$\alpha = ?$

- A) 80 B) 85 C) 90 D) 95 E) 100

3.



$\alpha = ?$

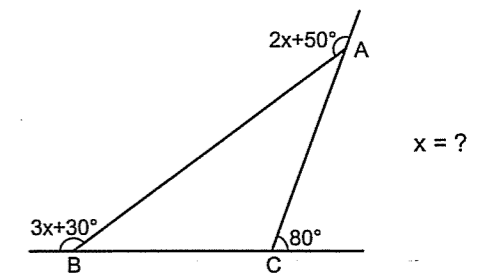
- A) 70 B) 65 C) 60 D) 55 E) 50

Bu soruda biraz orantı bilgisi var. Ama olsun çözersiniz. ☺

4. Bir üçgenin dış açıları 5, 6, 7 sayıları ile doğru orantılı ise bu üçgenin en küçük iç açısı kaç derecedir?

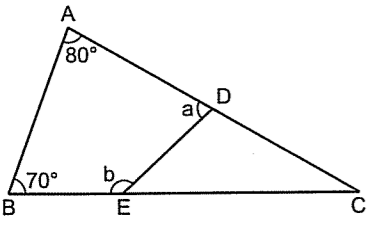
- A) 50 B) 40 C) 30 D) 20 E) 10

5.

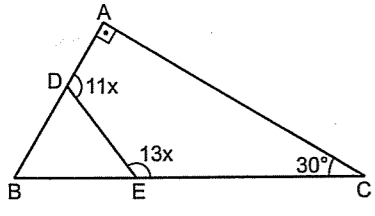


$x = ?$

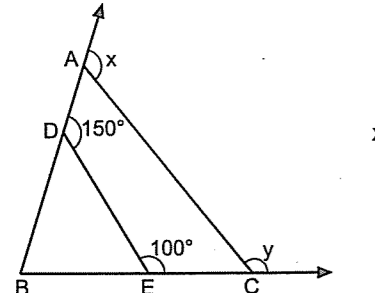
- A) 40 B) 35 C) 30 D) 25 E) 20

6.  $a + b = ?$

A) 180 B) 190 C) 200 D) 210 E) 220

7.  $x = ?$

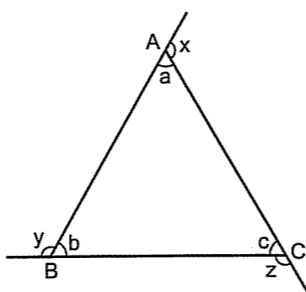
A) 5 B) 10 C) 15 D) 20 E) 25

8.  $x + y = ?$

A) 270 B) 260 C) 250 D) 240 E) 230

1-E 2-E 3-A 4-B 5-A

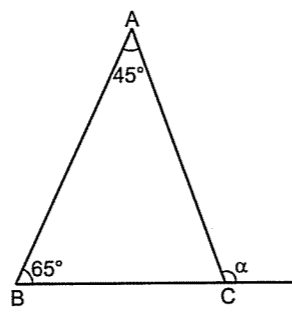
● Üçgende açılarla ilgili bilmezsin gereken üçüncü şey şu:



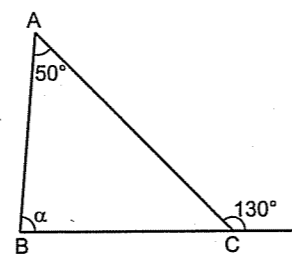
Gerçi ispatı çok kolay. Ama yinede böyle bilin siz. Daha faydalı ☺

Bir üçgende iki iç açının toplamı diğer açının dış açısına eşittir.

Meselâ, yukarıdaki üçgende $x = b + c$, $y = a + c$, $z = a + b$ dir.

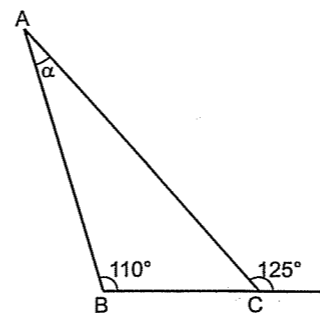
9.  $\alpha = ?$

A) 100 B) 105 C) 110 D) 115 E) 120

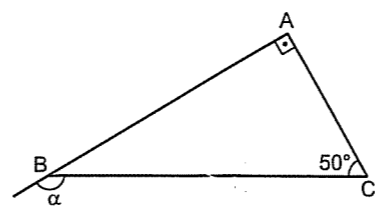
10.  $\alpha = ?$

A) 90 B) 80 C) 70 D) 60 E) 50

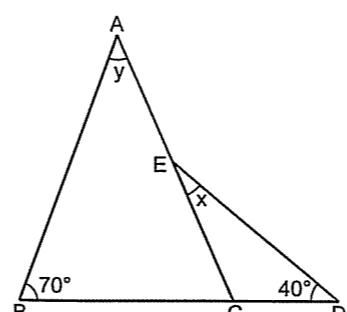
6-D 7-B 8-C 9-C 10-B

1.  $\alpha = ?$

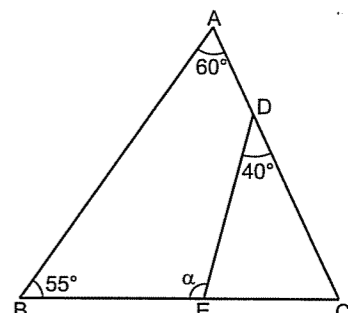
A) 5 B) 10 C) 15 D) 20 E) 25

2.  $\alpha = ?$

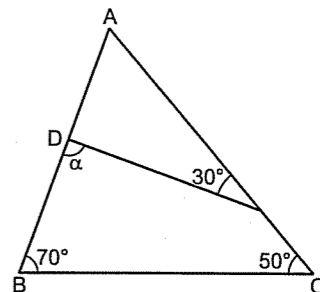
A) 125 B) 130 C) 135 D) 140 E) 150

3.  $x + y = ?$

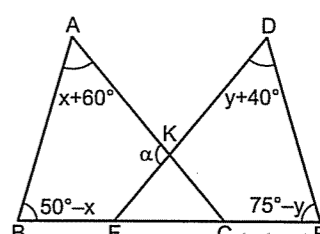
A) 60 B) 70 C) 80 D) 90 E) 100

4.  $\alpha = ?$

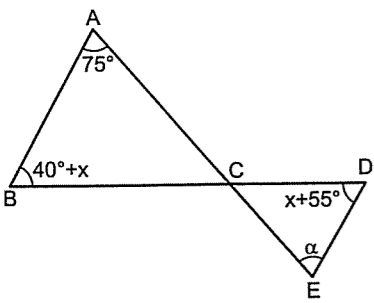
A) 125 B) 120 C) 115 D) 110 E) 105

5.  $\alpha = ?$

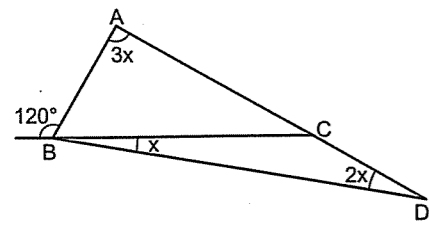
A) 75 B) 80 C) 85 D) 90 E) 95

6.  $\alpha = ?$

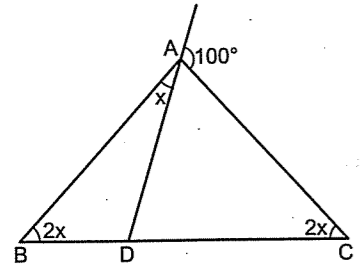
A) 125 B) 130 C) 135 D) 140 E) 145

7.  $\alpha = ?$

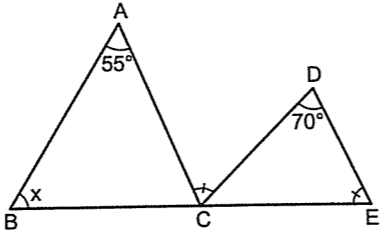
A) 60 B) 65 C) 70 D) 75 E) 80

8.  $x = ?$

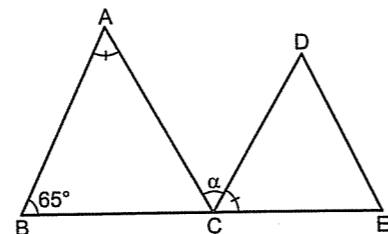
A) 5 B) 10 C) 15 D) 20 E) 25

9.  $x = ?$

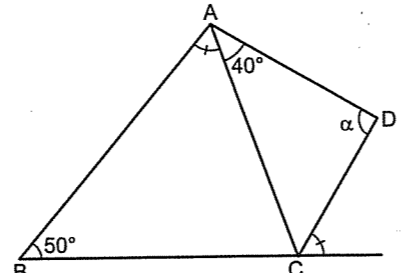
A) 50 B) 40 C) 30 D) 20 E) 10

10.  $x = ?$

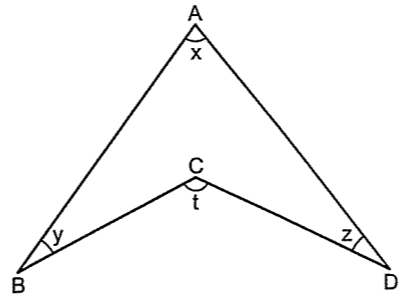
A) 55 B) 50 C) 45 D) 40 E) 35

11.  $\alpha = ?$

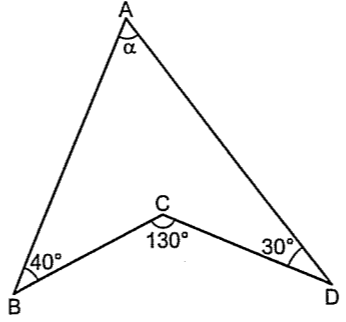
A) 70 B) 65 C) 60 D) 55 E) 50

12.  $\alpha = ?$

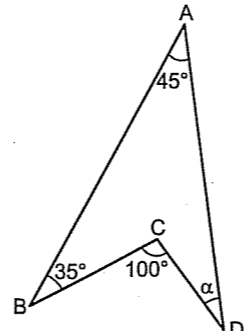
A) 80 B) 90 C) 95 D) 100 E) 105

● 

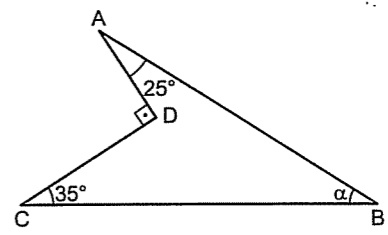
Bu dörtgen roket ya da bumerank olarak aklınızda kalsın. İçerideki açılarn toplamı dıştaki açıyı verir. Yani $t = x + y + z$ dir.

1.  $\alpha = ?$

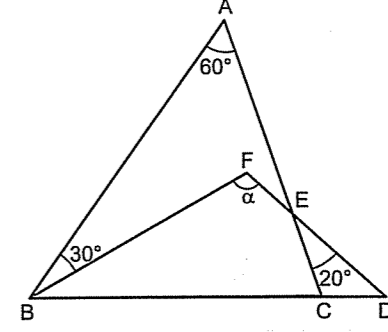
A) 40 B) 50 C) 60 D) 70 E) 80

2.  $\alpha = ?$

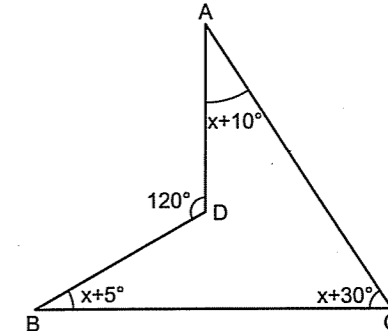
A) 5 B) 10 C) 15 D) 20 E) 25

3.  $\alpha = ?$

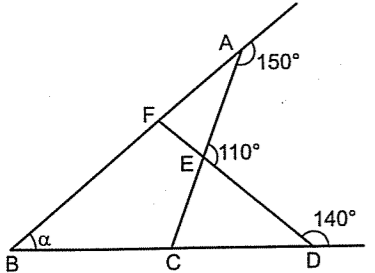
A) 10 B) 15 C) 20 D) 25 E) 30

4.  $\alpha = ?$

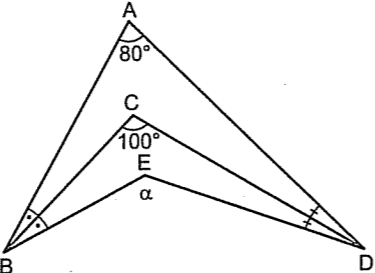
A) 100 B) 110 C) 120 D) 130 E) 140

5.  $x = ?$

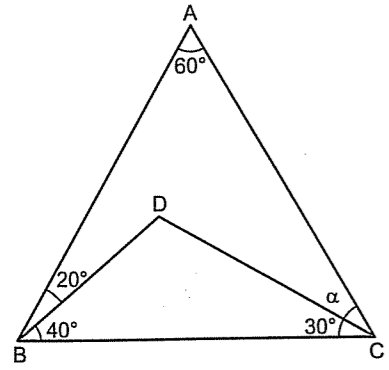
A) 10 B) 15 C) 20 D) 25 E) 30

6.  $\alpha = ?$

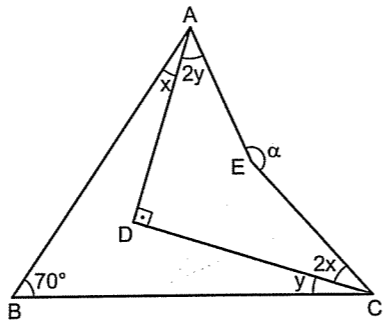
A) 40 B) 35 C) 30 D) 25 E) 20

9.  $\alpha = ?$

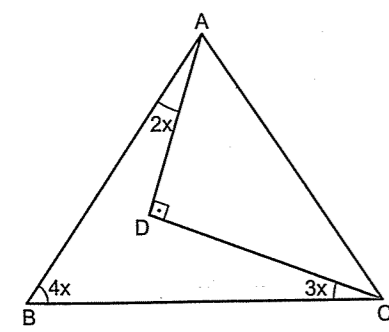
A) 105 B) 110 C) 115 D) 120 E) 125

7.  $\alpha = ?$

A) 5 B) 10 C) 15 D) 20 E) 30

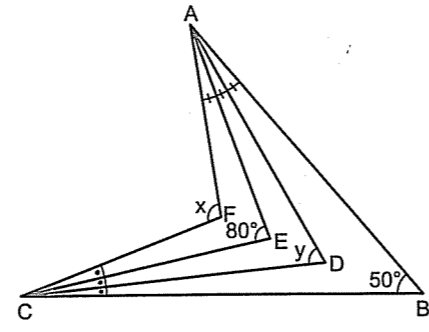
10.  $\alpha = ?$

A) 110 B) 120 C) 130 D) 140 E) 150

8.  $x = ?$

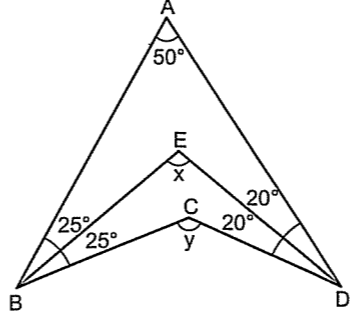
A) 5 B) 10 C) 15 D) 20 E) 25

1-C 2-D 3-E 4-B 5-D 6-A

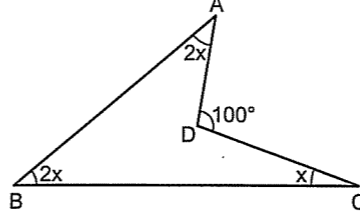
11.  $x - y = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

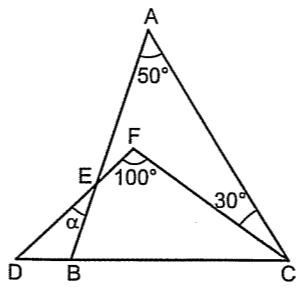
7-E 8-B 9-D 10-C 11-C

1.  $x + y = ?$

A) 200 B) 220 C) 230 D) 235 E) 240

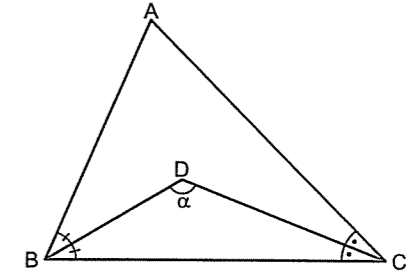
2.  $x = ?$

A) 5 B) 10 C) 15 D) 20 E) 25

3.  $\alpha = ?$

A) 5 B) 10 C) 15 D) 20 E) 25

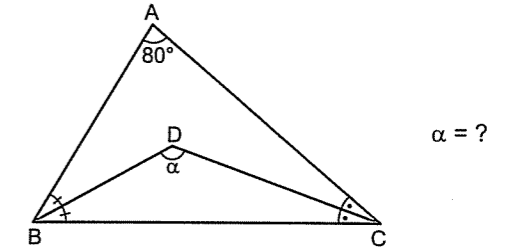
● İki iç açıortay arasındaki açı
Sizin de çıkarabileceğiniz bir sonuç. Ama hazırcılar için ben hazır vereyim. 😊



Üçgende iki iç açıortay arasında kalan açı

$$\alpha = 90^\circ + \frac{\hat{A}}{2} \text{ dir.}$$

Örnek Soru:



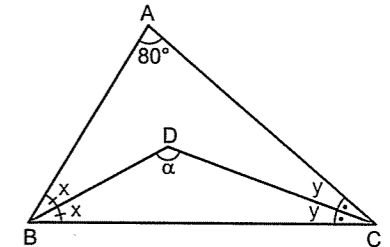
Çözüm:

1. yol: Eğer formül kullanıyorsanız hemen

$$\alpha = 90^\circ + \frac{\hat{A}}{2} \text{ den}$$

$$\alpha = 90^\circ + \frac{80^\circ}{2} = 130^\circ \text{ yi bulabilirsiniz.}$$

2. yol: Ama bence şu daha güzel. 😊 Açılı harflendirin. Ama eşit açılara aynı harfleri verin tabii ki 😊



ABC üçgeninin iç açılarını toplayın.

$$2x + 2y + 80^\circ = 180^\circ \text{ den}$$

$$x + y = 50^\circ \text{ yi bulun.}$$

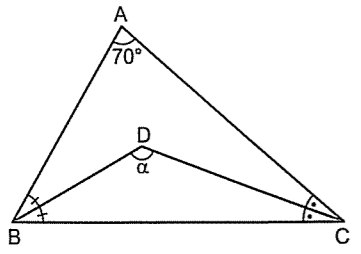
Sonra da BDC üçgeninin iç açılarını toplayın.

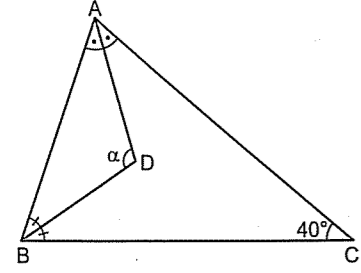
$$x + y + \alpha = 180^\circ$$

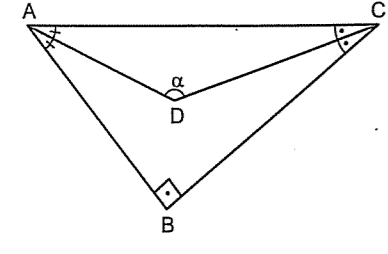
$x + y = 50^\circ$ yi zaten biliyorsunuz.

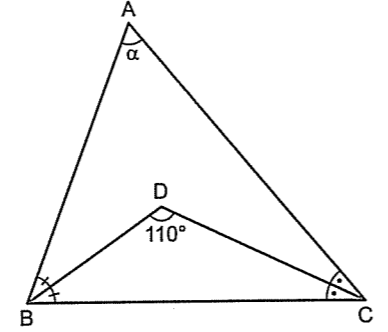
$$50^\circ + \alpha = 180^\circ \text{ den}$$

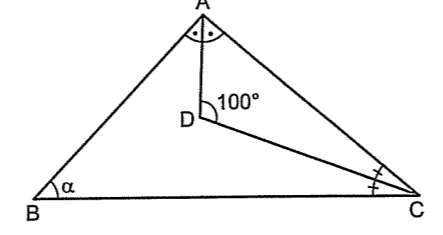
$$\alpha = 130^\circ \text{ yi bulursunuz artık.}$$

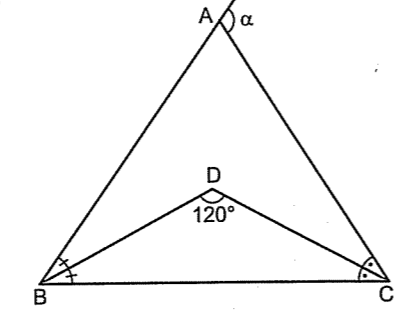
4.  $\alpha = ?$
 A) 115 B) 125 C) 130 D) 135 E) 140

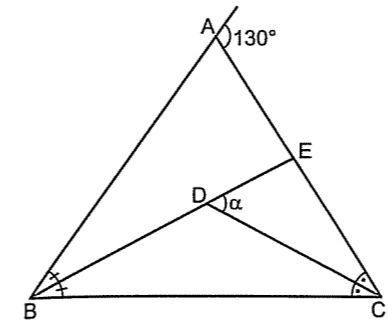
5.  $\alpha = ?$
 A) 100 B) 105 C) 110 D) 115 E) 120

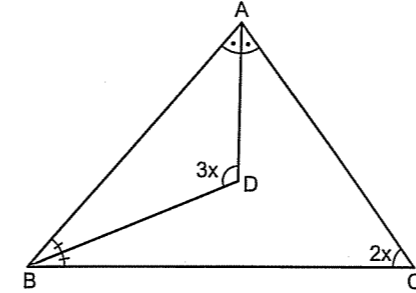
6.  $\alpha = ?$
 A) 120 B) 152 C) 130 D) 135 E) 140
 1-D 2-D 3-D 4-B

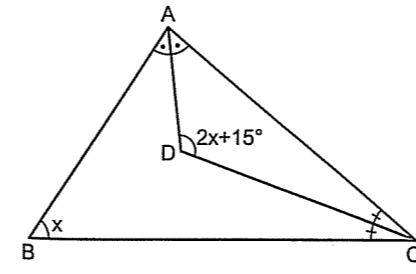
7.  $\alpha = ?$
 A) 30 B) 40 C) 50 D) 60 E) 70

8.  $\alpha = ?$
 A) 20 B) 30 C) 40 D) 50 E) 60

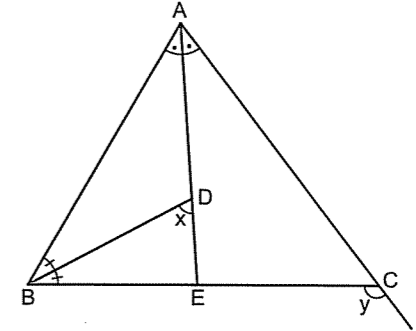
9.  $\alpha = ?$
 A) 100 B) 110 C) 120 D) 130 E) 140
 5-C 6-D 7-B 8-A 9-C

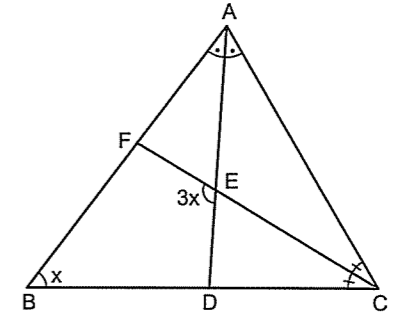
1.  $\alpha = ?$
 A) 130 B) 115 C) 85 D) 65 E) 55

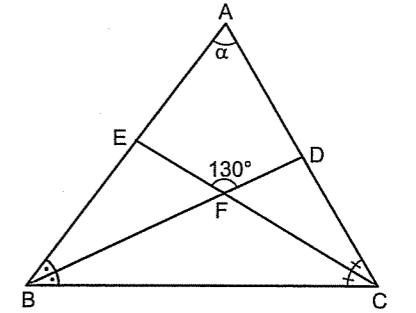
2.  $x = ?$
 A) 10 B) 18 C) 20 D) 30 E) 45

3.  $x = ?$
 A) 50 B) 45 C) 40 D) 36 E) 30

Üçgende iki iç açının toplamı neye eşitti? ☺
 Bu soru onunla ilgili de. ☺

4.  $\frac{x}{y} = ?$
 A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) 1 D) 2 E) 3

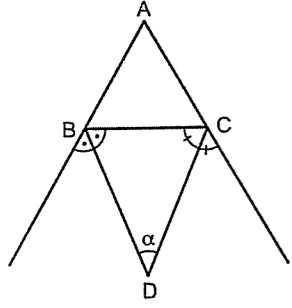
5.  $x = ?$
 A) 20 B) 24 C) 28 D) 36 E) 42

6.  $\alpha = ?$
 A) 60 B) 70 C) 75 D) 80 E) 90

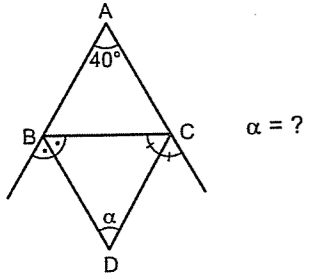
● Bu da iki dış açortay arasındaki açı,

Sevmediğinizi bildiğimden yine ispata girmiyorum.

İki dış açortay arasında kalan açı $\alpha = 90^\circ - \frac{\hat{A}}{2}$ dir.



Örnek Soru:



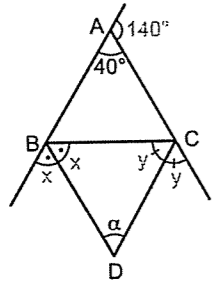
Çözüm:

1. yol: Direkt formülden giderseniz.

$$\alpha = 90^\circ - \frac{\hat{A}}{2}$$

$$\alpha = 90^\circ - \frac{40^\circ}{2} = 70^\circ \text{ bulunur.}$$

2. yol: Eşit açları aynı harfle harflendirip çözün.



Aklınızda olsun. Dış açortaylar arasındaki açıda önce dış açılar toplamından gidilir.

ABC üçgeninin dış açılarının toplamı 360° idi.

$$\text{Yani, } 140^\circ + 2x + 2y = 360^\circ$$

$$x + y = 110^\circ \text{ önce bunu bulun.}$$

Artık BCD üçgeninde de iç açılar toplamından

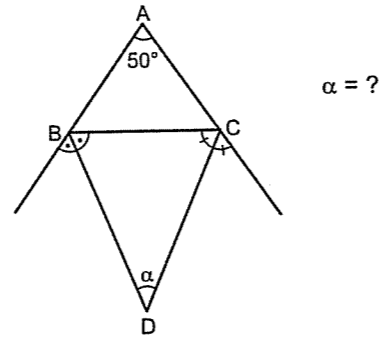
$$x + y + \alpha = 180^\circ$$

$$110^\circ + \alpha = 180^\circ$$

$$\alpha = 70^\circ \text{ yi bulursunuz.}$$

1-D 2-E 3-A 4-A

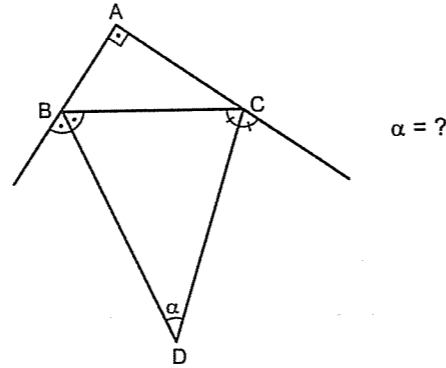
7.



$\alpha = ?$

- A) 55 B) 65 C) 70 D) 75 E) 80

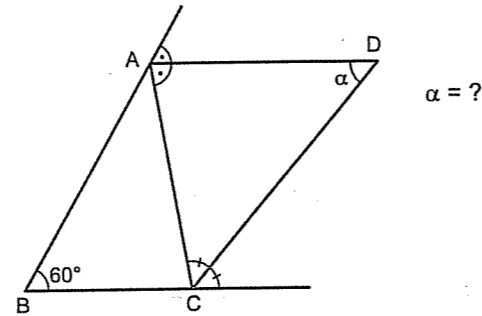
8.



$\alpha = ?$

- A) 35 B) 40 C) 45 D) 50 E) 55

9.



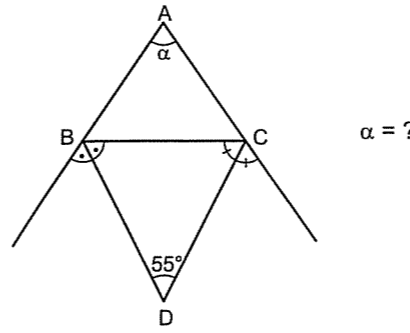
$\alpha = ?$

- A) 30 B) 40 C) 50 D) 60 E) 70

5-D

52

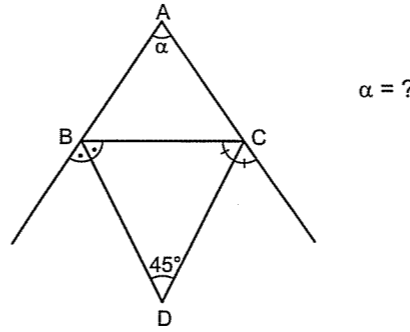
1.



$\alpha = ?$

- A) 40 B) 50 C) 60 D) 70 E) 80

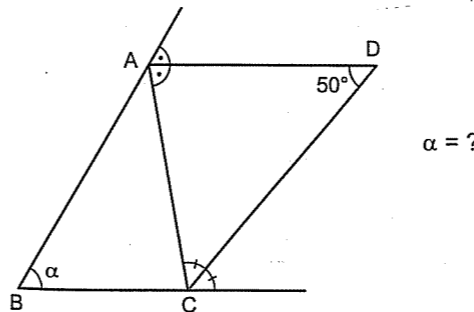
2.



$\alpha = ?$

- A) 50 B) 60 C) 70 D) 80 E) 90

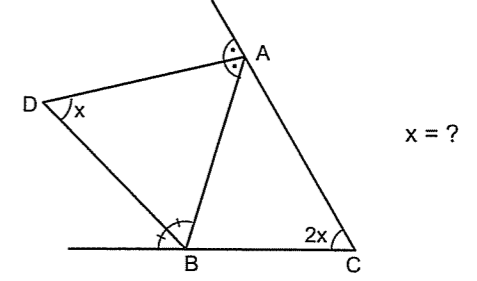
3.



$\alpha = ?$

- A) 80 B) 70 C) 60 D) 50 E) 40

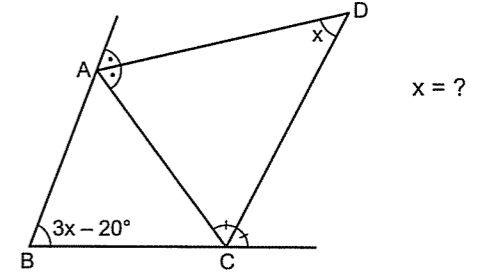
4.



$x = ?$

- A) 25 B) 30 C) 35 D) 45 E) 55

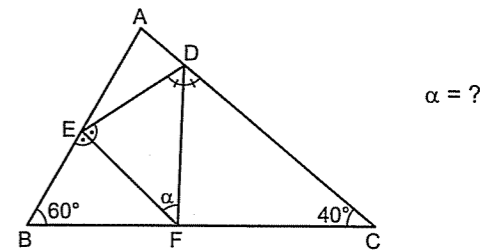
5.



$x = ?$

- A) 20 B) 30 C) 40 D) 50 E) 60

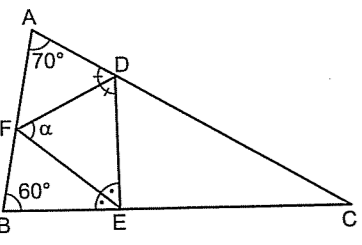
6.

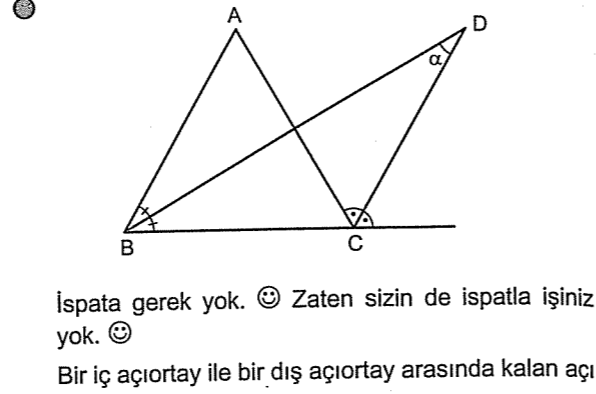


$\alpha = ?$

- A) 20 B) 30 C) 40 D) 50 E) 60

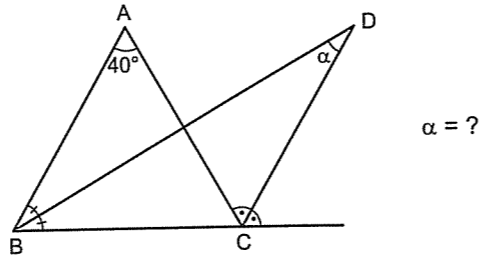
53

7.  $\alpha = ?$
- A) 75 B) 65 C) 60 D) 55 E) 45



$$\alpha = \frac{\hat{A}}{2} \text{ dir.}$$

Örnek Soru:



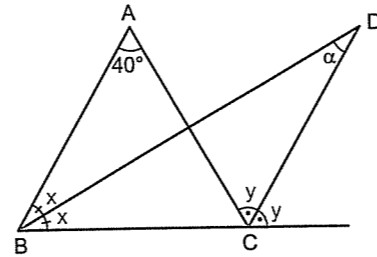
Çözüm:

1. yol: Eğer formül kullanırsanız çok kolay.

$$\alpha = \frac{\hat{A}}{2}$$

$$\alpha = \frac{40^\circ}{2} = 20^\circ \text{ bulunur.}$$

2. yol: Eşit açılara aynı harfi verip çözersiniz.



ABC üçgeninin iki iç açısının toplamı bir dış açıya eşit idi. İlk bunu kullanın.

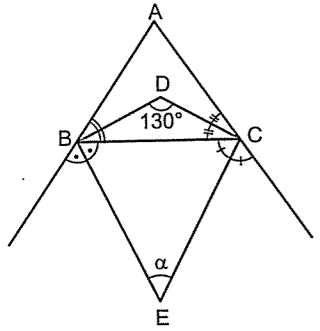
$$40^\circ + 2x = 2y \text{ den}$$

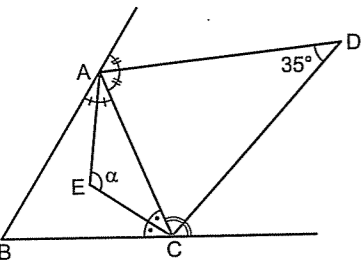
$$y - x = 20^\circ \text{ yi bulun.}$$

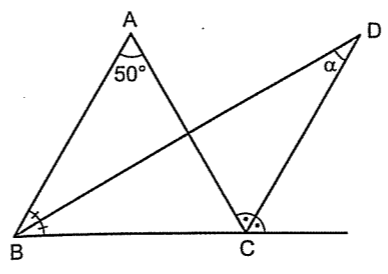
Sonra da BDC üçgeninde de iki iç açının toplamı bir dış açıya eşit olduğunu kullanın ve

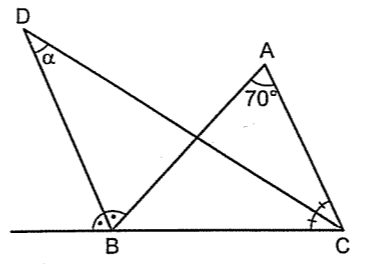
$$x + \alpha = y \text{ den}$$

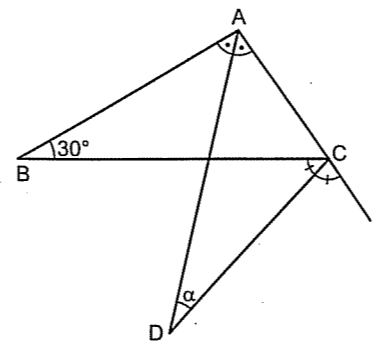
$$\alpha = y - x = 20^\circ \text{ bulun.}$$

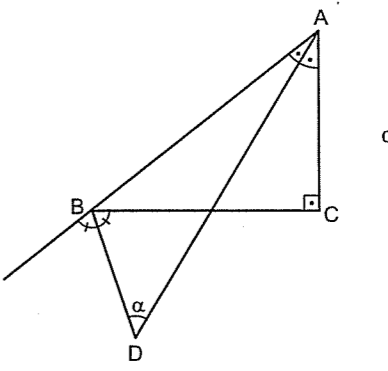
8.  $\alpha = ?$
- A) 60 B) 50 C) 40 D) 30 E) 20

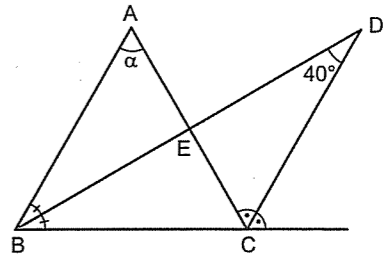
9.  $\alpha = ?$
- A) 125 B) 130 C) 135 D) 140 E) 145

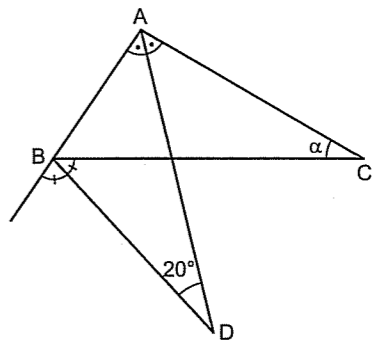
1.  $\alpha = ?$
- A) 50 B) 40 C) 35 D) 25 E) 15

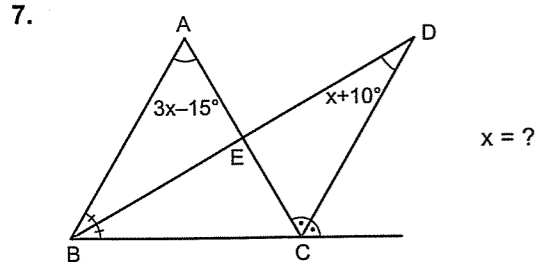
2.  $\alpha = ?$
- A) 20 B) 25 C) 30 D) 35 E) 40

3.  $\alpha = ?$
- A) 30 B) 25 C) 20 D) 15 E) 10

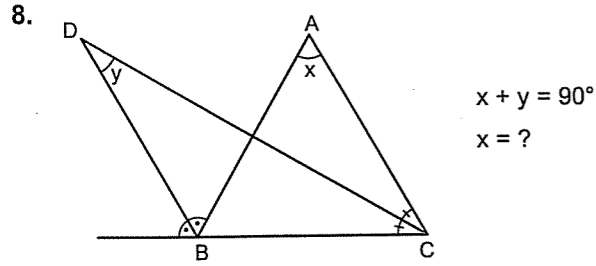
4.  $\alpha = ?$
- A) 45 B) 40 C) 35 D) 30 E) 25

5.  $\alpha = ?$
- A) 90 B) 80 C) 70 D) 60 E) 50

6.  $\alpha = ?$
- A) 30 B) 40 C) 50 D) 60 E) 70

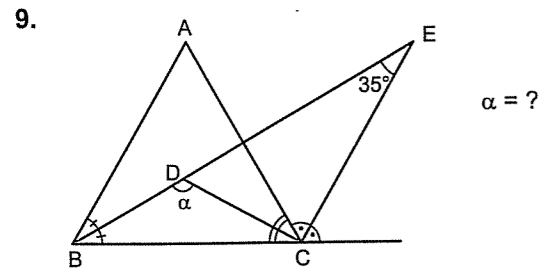


- A) 25 B) 30 C) 35 D) 40 E) 45

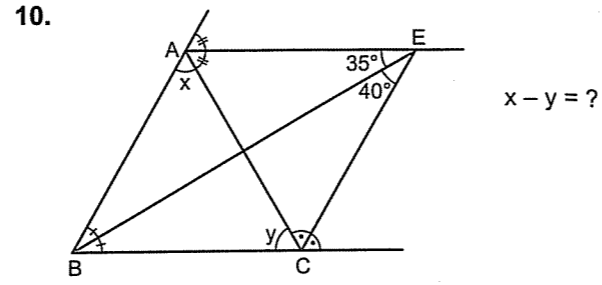


- A) 36 B) 40 C) 48 D) 50 E) 60

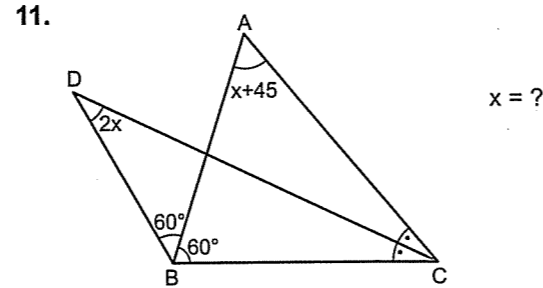
Bu soruda daha hoş bi çözüm de var. Ama görmek lazım. Zorlayın bakalım. ☺



- A) 115 B) 120 C) 125 D) 130 E) 135



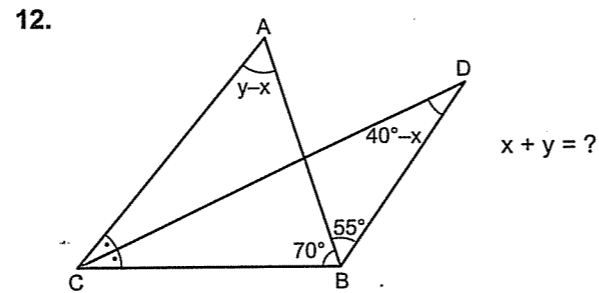
- A) 10 B) 20 C) 30 D) 40 E) 50



Aaa... Bu soruda iç açıortay var ama dış açıortay filan yok.

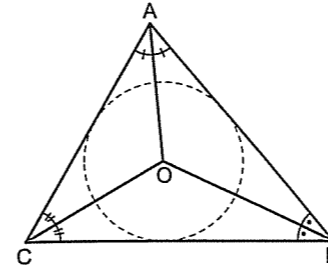
Sıkıntı değil. |BC|'yi uzatırsanız dış açıortay karşınıza gelecek.

- A) 10 B) 15 C) 20 D) 25 E) 30



- A) 50 B) 60 C) 70 D) 80 E) 90

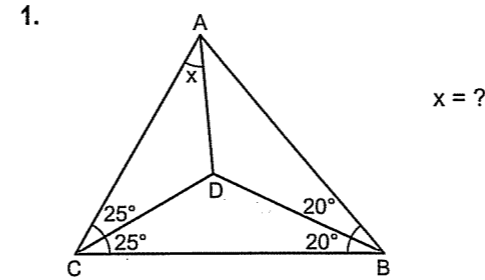
● Size üçgenin iç açıortaylarıyla ilgili önemli bi şey daha diyeyim.



Bir üçgende iç açıortaylar aynı noktada kesişir. Bunun için soruya baktığınızda ikisi açıortay verilmiş üçüncüsü yoksa hemen siz de üçüncü açıortayı çiziniz ve aynı noktada kesiştirin. Emin olun işinize yarar.

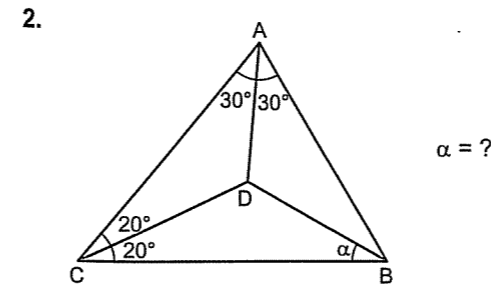
Bir de iç açıortayların kesim noktasına, yani üstteki şekilde O noktasına **iç teğet çemberin merkezi** denir.

Anlayacağınız üçgen içinde iç teğet çemberin merkezi diye verilen nokta iç açıortayların kesişme noktasıdır. Bunu bilmek lazım.

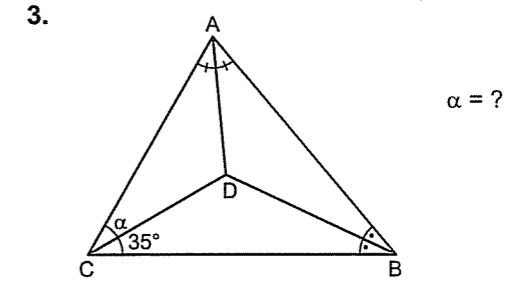


Soruya baktığınızda ikisi açıortay verilmiş üçüncü yok. Hemen sizde üçüncünün açıortay olduğunu şekilde gösterin.

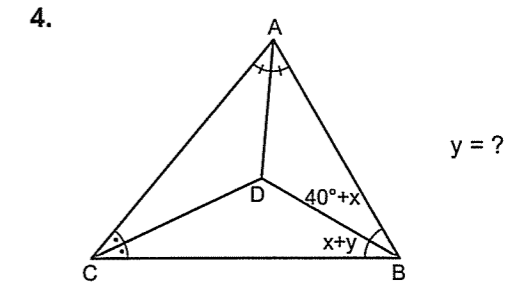
- A) 20 B) 25 C) 30 D) 35 E) 45



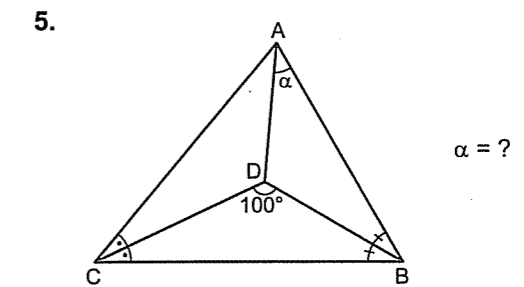
- A) 40 B) 35 C) 30 D) 25 E) 20



- A) 55 B) 50 C) 45 D) 40 E) 35

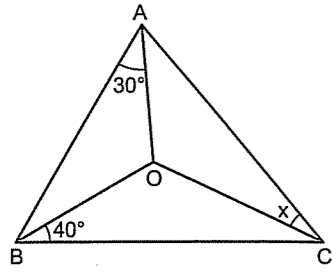


- A) 10 B) 20 C) 30 D) 40 E) 50



- A) 5 B) 10 C) 15 D) 20 E) 25

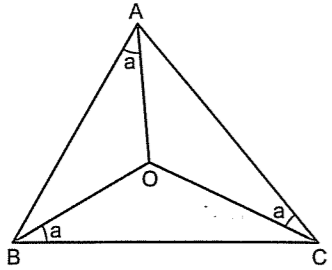
6.



O, iç teğet çemberin merkezi ise $x = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

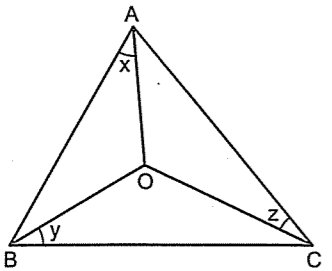
7.



O, iç teğet çemberin merkezi ise $a = ?$

- A) 25 B) 30 C) 35 D) 40 E) 45

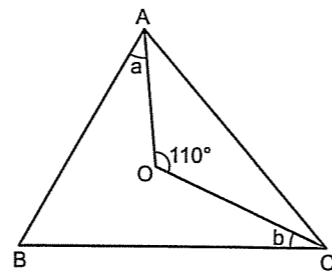
8.



O, iç teğet çemberin merkezi ise $x + y + z = ?$

- A) 50 B) 60 C) 70 D) 80 E) 90

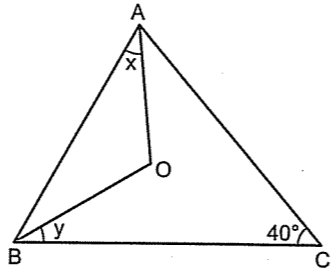
9.



O, iç teğet çemberin merkezi ise $a + b = ?$

- A) 55 B) 60 C) 65 D) 70 E) 75

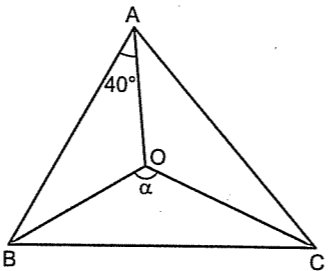
10.



O, iç teğet çemberin merkezi ise $x + y = ?$

- A) 70 B) 65 C) 60 D) 55 E) 50

11.

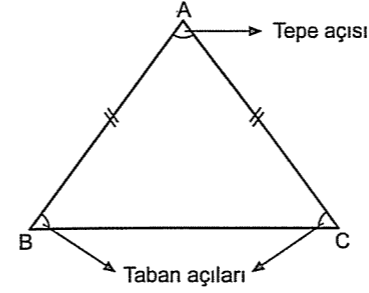


O, iç teğet çemberin merkezi ise $\alpha = ?$

- A) 130 B) 125 C) 120 D) 115 E) 110

● İKİZKENAR ÜÇGEN

İki kenarı eşit olan üçgene **ikizkenar üçgen** deniyor.



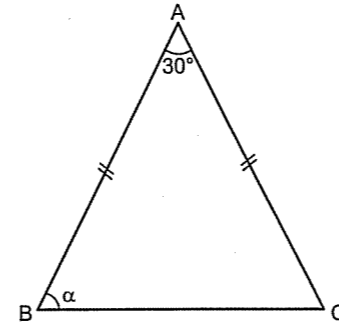
Eşit iki kenarın birleştiği yerde oluşan açığa **tepe açısı** denir.

Eşit kenarların diğer kenarla birleştiği yerde oluşan açılar **taban açılarıdır** ve bunlar birbirine eşittir.

Yani, $m(\hat{B}) = m(\hat{C})$ dir.

Dolayısıyla ikizkenar üçgende bilmeniz gereken ilk şey **taban açıları** ve **iki kenarın eşit** olduğudur. İlk sorular bunlarla ilgili ve basit dolayısıyla 😊

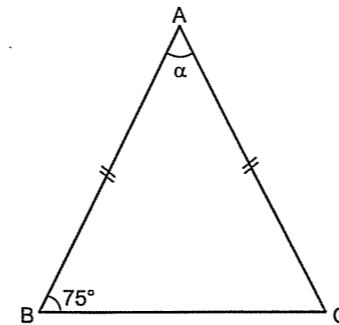
1.



$\alpha = ?$

- A) 80 B) 70 C) 75 D) 65 E) 60

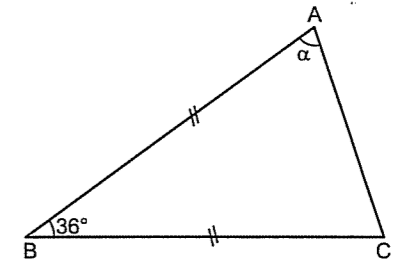
2.



$\alpha = ?$

- A) 10 B) 20 C) 30 D) 40 E) 50

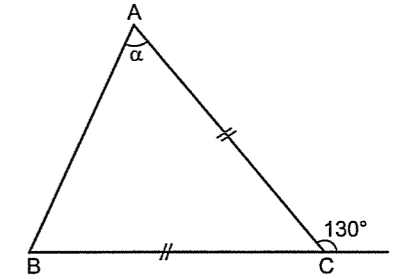
3.



$\alpha = ?$

- A) 48 B) 54 C) 68 D) 72 E) 84

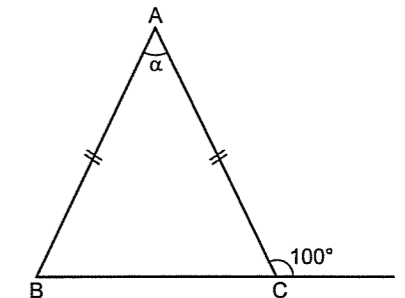
4.



$\alpha = ?$

- A) 75 B) 65 C) 60 D) 55 E) 50

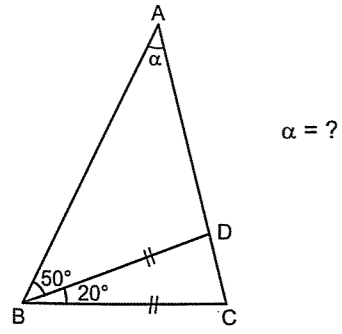
5.



$\alpha = ?$

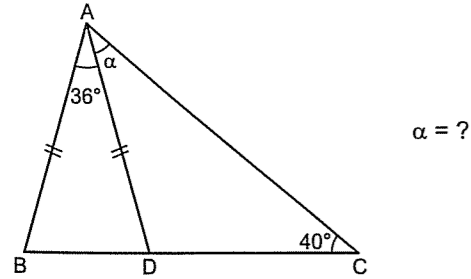
- A) 10 B) 20 C) 30 D) 40 E) 50

6.



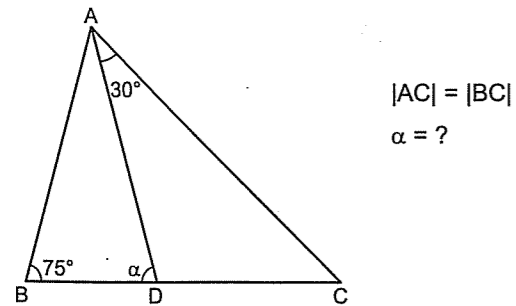
- A) 20 B) 30 C) 40 D) 50 E) 60

7.



- A) 32 B) 36 C) 48 D) 54 E) 62

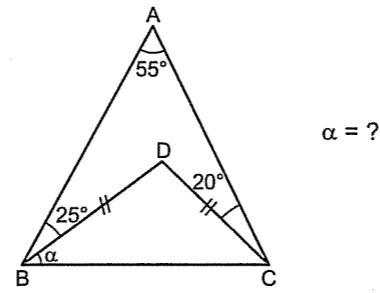
8.



- A) 45 B) 50 C) 55 D) 60 E) 75

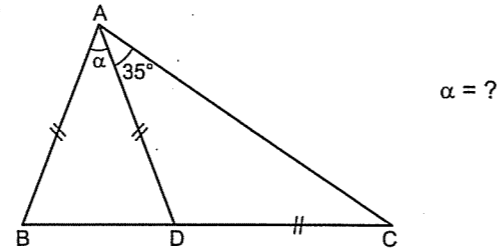
1-C 2-C 3-D 4-B 5-B

9.



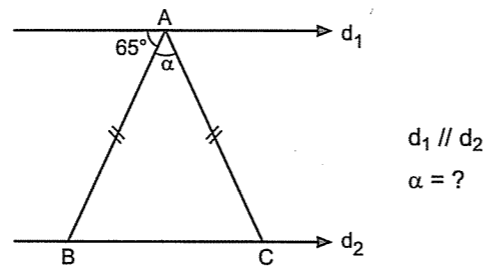
- A) 10 B) 15 C) 20 D) 30 E) 40

10.



- A) 60 B) 50 C) 40 D) 30 E) 20

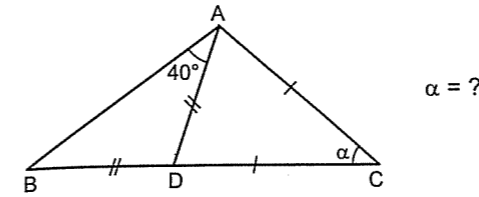
11.



- A) 50 B) 40 C) 30 D) 20 E) 10

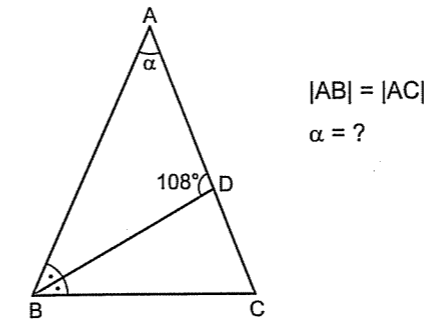
7-A 8-D 9-E 10-C 11-A

1.



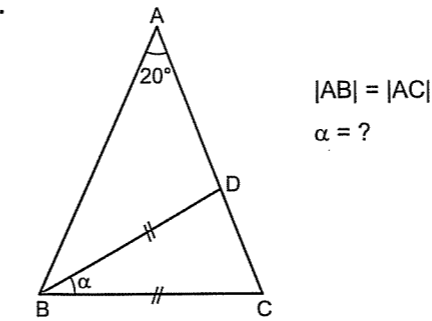
- A) 10 B) 20 C) 30 D) 40 E) 50

2.



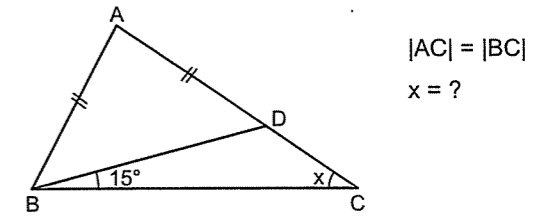
- A) 18 B) 36 C) 48 D) 54 E) 72

3.



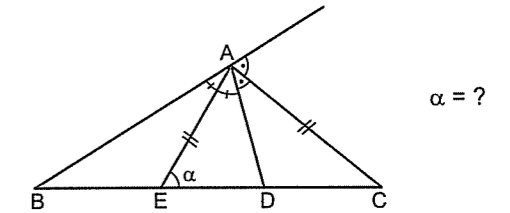
- A) 20 B) 25 C) 30 D) 36 E) 40

4.



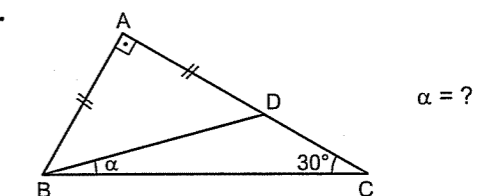
- A) 10 B) 20 C) 30 D) 40 E) 50

5.



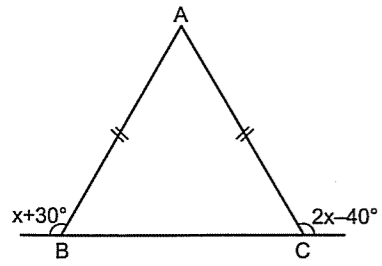
- A) 75 B) 60 C) 45 D) 22,5 E) 20

6.



- A) 5 B) 10 C) 15 D) 20 E) 30

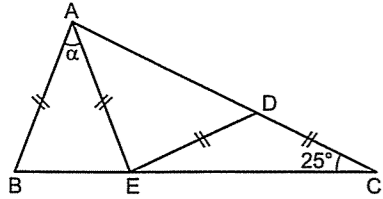
7.



$x = ?$

- A) 70 B) 65 C) 60 D) 55 E) 50

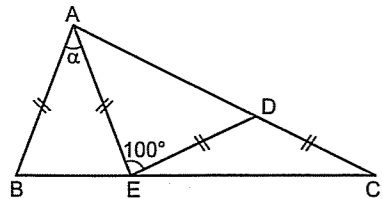
8.



$\alpha = ?$

- A) 10 B) 18 C) 20 D) 30 E) 36

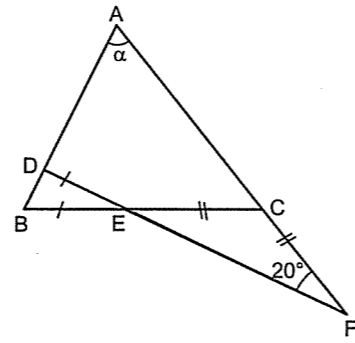
9.



$\alpha = ?$

- A) 20 B) 30 C) 40 D) 50 E) 60

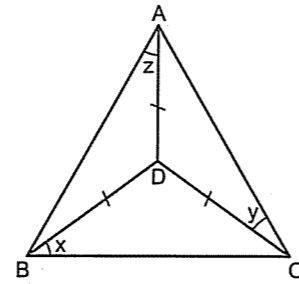
10.



$\alpha = ?$

- A) 20 B) 30 C) 40 D) 50 E) 60

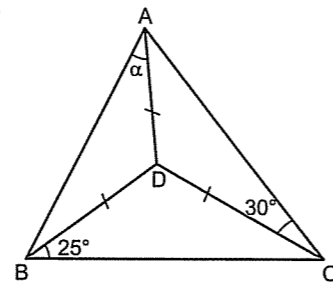
11.



$x + y + z = ?$

- A) 90 B) 80 C) 72 D) 70 E) 60

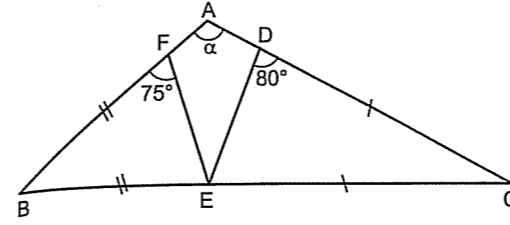
12.



$\alpha = ?$

- A) 15 B) 25 C) 35 D) 45 E) 55

Örnek Soru:



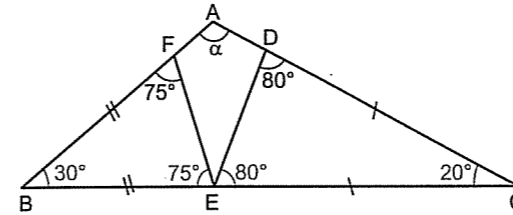
$\alpha = ?$

Çözüm:

Bu soru ikizkenar üçgende taban ve tepe açılarını bulup çözeceğiniz bi soru. Ve kolay. ☺

İlk önce BFE ikizkenar üçgen olduğundan $m(\widehat{BEF}) = 75^\circ$ ve $m(\widehat{B}) = 30^\circ$ 'yi bulun. Aynı şekilde DEC de ikizkenar üçgen olduğundan $m(\widehat{DEC}) = 80^\circ$ ve $m(\widehat{C}) = 20^\circ$ 'yi bulun. Gerisi daha kolay ☺

Bulduğunuz değerleri üçgende yazın ve şimdi de en büyük üçgeni düşünün.

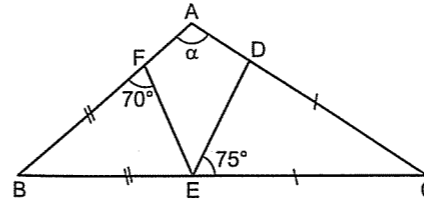


Yani, ABC üçgeninin iç açılarını toplayın.

Ve $30^\circ + 20^\circ + \alpha = 180^\circ$ 'den

$\alpha = 130^\circ$ 'yi bulun.

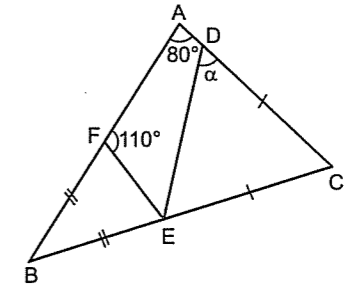
1.



$\alpha = ?$

- A) 100 B) 110 C) 120 D) 130 E) 140

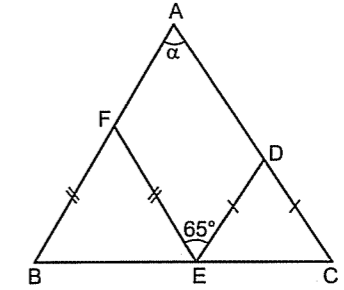
2.



$\alpha = ?$

- A) 60 B) 65 C) 70 D) 75 E) 80

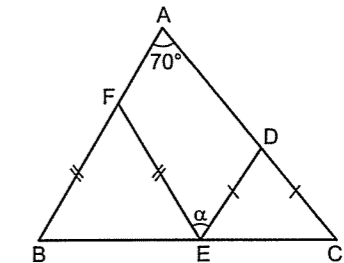
3.



$\alpha = ?$

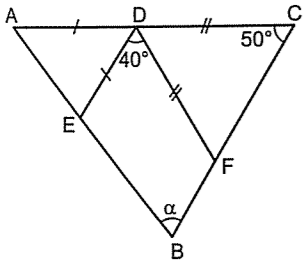
- A) 75 B) 70 C) 65 D) 60 E) 55

4.

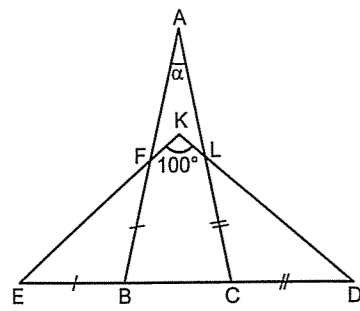


$\alpha = ?$

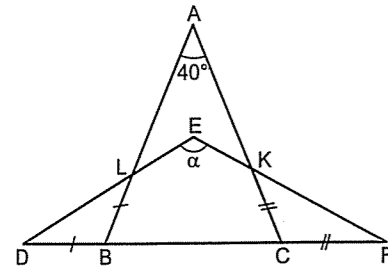
- A) 50 B) 60 C) 70 D) 80 E) 90

5.  $\alpha = ?$

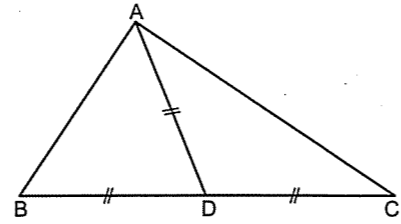
A) 55 B) 60 C) 65 D) 70 E) 80

6.  $\alpha = ?$

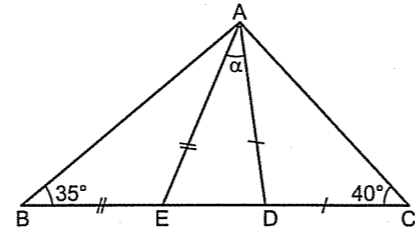
A) 10 B) 20 C) 30 D) 40 E) 50

7.  $\alpha = ?$

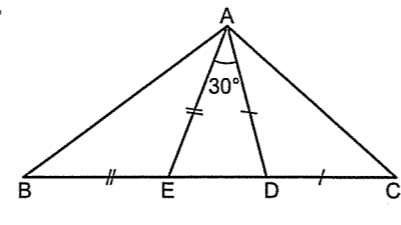
A) 110 B) 120 C) 130 D) 140 E) 150

8.  $m(\widehat{BAC}) = ?$

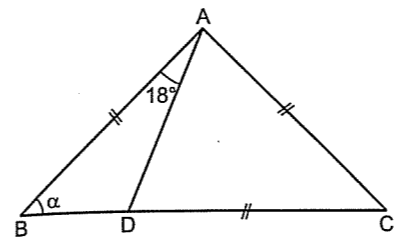
A) 90 B) 100 C) 110 D) 120 E) 130

9.  $\alpha = ?$

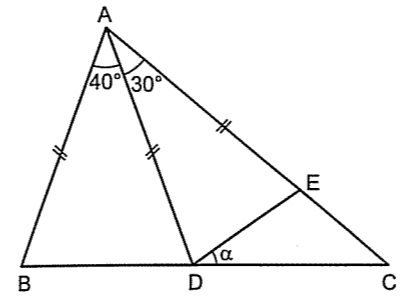
A) 20 B) 30 C) 40 D) 50 E) 60

10.  $m(\widehat{BAC}) = ?$

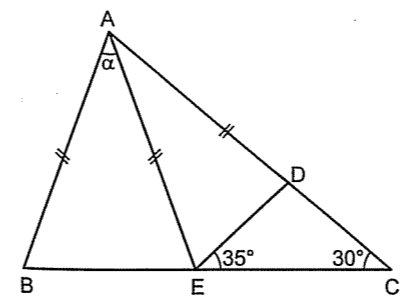
A) 100 B) 105 C) 110 D) 115 E) 120

1.  $\alpha = ?$

A) 24 B) 36 C) 48 D) 54 E) 60

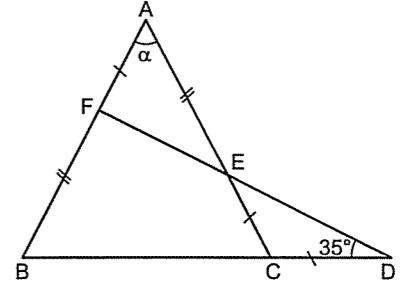
2.  $\alpha = ?$

A) 25 B) 35 C) 40 D) 45 E) 50

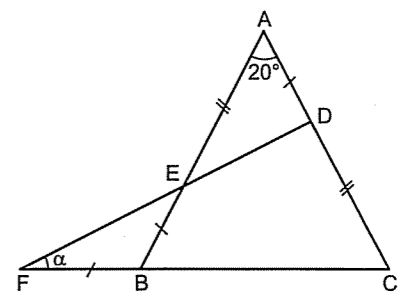
3.  $\alpha = ?$

A) 10 B) 20 C) 30 D) 40 E) 50

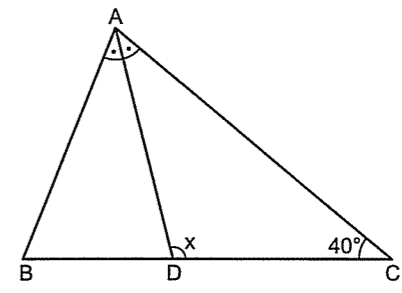
Şunda da iki tane ikizkenar üçgen var. Gördünüz mü?

4.  $\alpha = ?$

A) 80 B) 70 C) 60 D) 50 E) 40

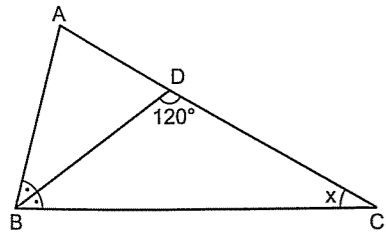
5.  $\alpha = ?$

A) 10 B) 20 C) 30 D) 40 E) 45

6.  $|AC| = |BC|$
 $x = ?$

A) 100 B) 105 C) 110 D) 115 E) 120

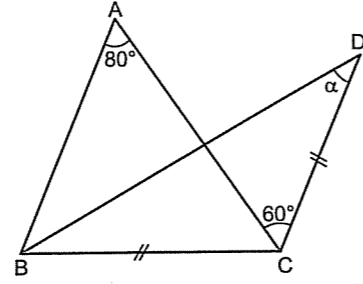
7.



$|AC| = |BC|$
 $x = ?$

- A) 10 B) 16 C) 20 D) 24 E) 36

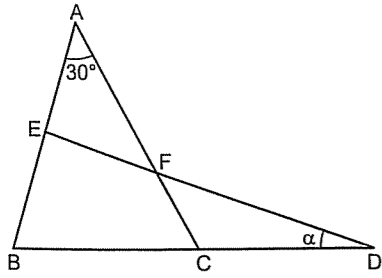
10.



$|AB| = |AC|$
 $\alpha = ?$

- A) 20 B) 25 C) 30 D) 35 E) 45

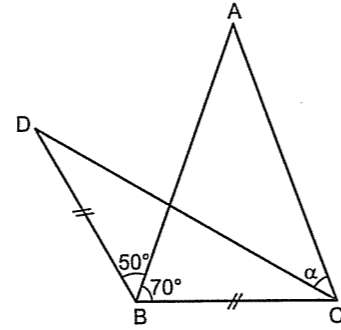
8.



$|AB| = |AC|$
 $|ED| = |BD|$
 $\alpha = ?$

- A) 10 B) 20 C) 30 D) 40 E) 50

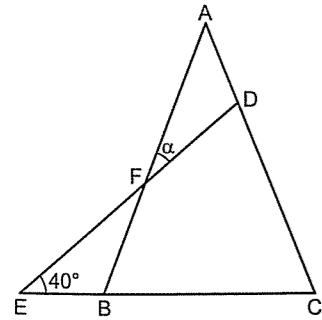
11.



$|AB| = |AC|$
 $\alpha = ?$

- A) 20 B) 25 C) 30 D) 35 E) 40

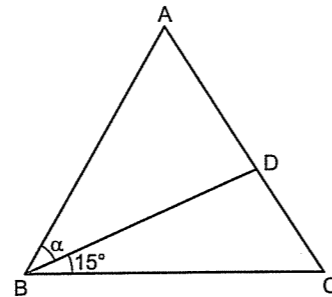
9.



$|AB| = |AC|$
 $|ED| = |EC|$
 $\alpha = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

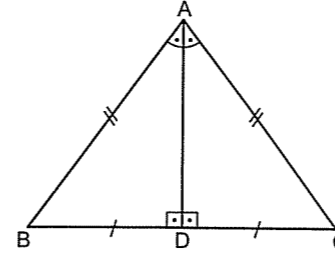
12.



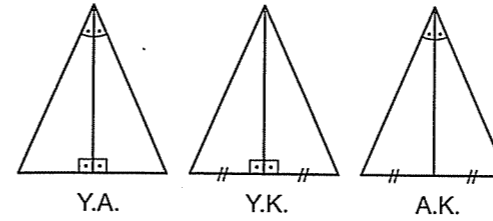
$|AB| = |AC| = |BD|$
 $\alpha = ?$

- A) 20 B) 30 C) 40 D) 44 E) 50

● İkizkenar üçgende tepe açısından karşısındaki kenara inilen yükseklik hem kenarortay hem de açıortaydır. Biz buna Y.A.K. diyoruz. (Yani, Yükseklik, Açıortay, Kenarortay'ın ilk harfleri.)

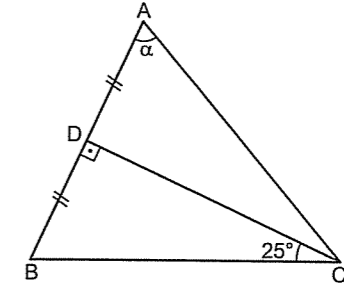


Y.A.K. karşımıza üç farklı şekilde çıkar. Y.A.K. dan ikisi var ise üçüncüsü de vardır ve üçgen ikizkenar üçgendir.



Bu YAK olayında amcalar ikisini verirler genelde. Böyle durumlarda üçgenin ikizkenar üçgen olduğunu anlayın ve YAK üçlüsünden verilmeyeni görün. ☺

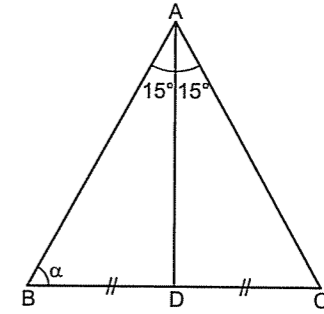
2.



$\alpha = ?$

- A) 75 B) 65 C) 60 D) 55 E) 45

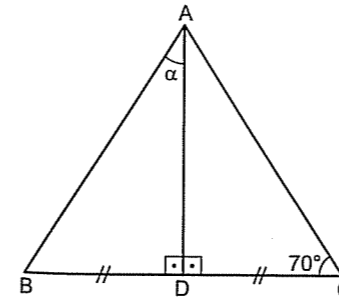
3.



$\alpha = ?$

- A) 75 B) 70 C) 65 D) 60 E) 55

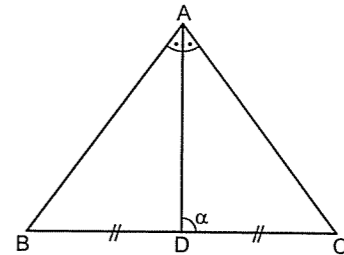
1.



$\alpha = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

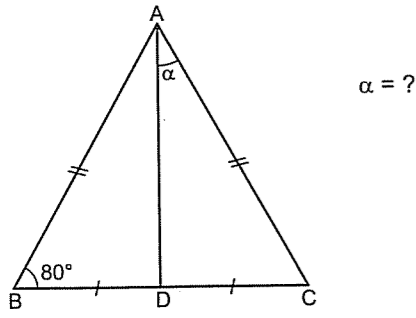
4.



$\alpha = ?$

- A) 90 B) 80 C) 70 D) 60 E) 50

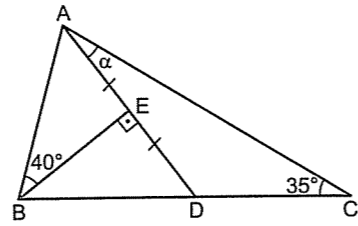
5.



$\alpha = ?$

- A) 5 B) 10 C) 15 D) 20 E) 25

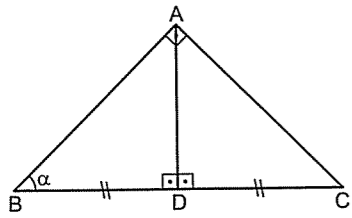
8.



$\alpha = ?$

- A) 5 B) 10 C) 15 D) 20 E) 25

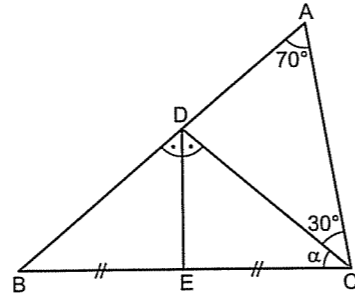
6.



$\alpha = ?$

- A) 22,5 B) 25 C) 30 D) 36 E) 45

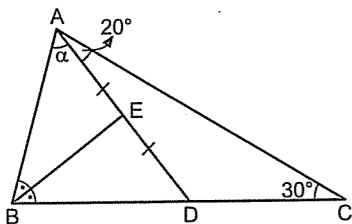
9.



$\alpha = ?$

- A) 40 B) 35 C) 30 D) 25 E) 15

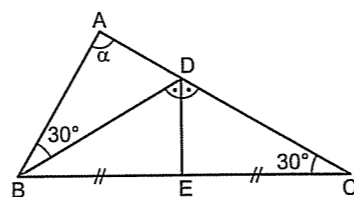
7.



$\alpha = ?$

- A) 60 B) 55 C) 50 D) 45 E) 40

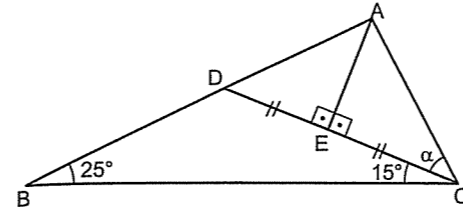
10.



$\alpha = ?$

- A) 60 B) 70 C) 80 D) 90 E) 100

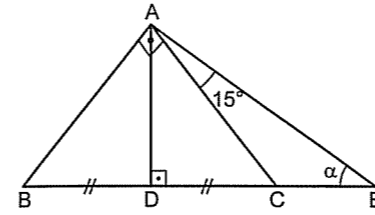
1.



$\alpha = ?$

- A) 20 B) 30 C) 40 D) 50 E) 60

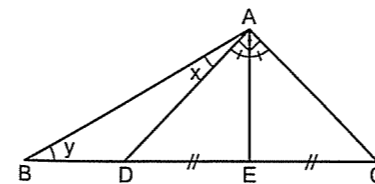
2.



$\alpha = ?$

- A) 15 B) 20 C) 25 D) 30 E) 35

3.



$y - x = 15^\circ$

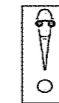
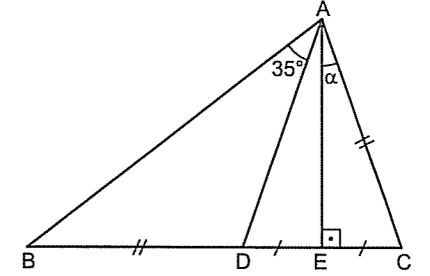
$x = ?$

- A) 10 B) 15 C) 18 D) 25 E) 30

Bakin size ne diyeceğim. Bazen soruda hiç alâkası olmayan iki eşitlik verirler. Bu tip sorularda bir yerlerde mutlaka ikizkenar üçgen vardır.

Ama arayıp bulmak lazım. Gerçi bu biraz tecrübe işi. Ama olsun. Sizde de yavaş yavaş oluyor zaten. 😊

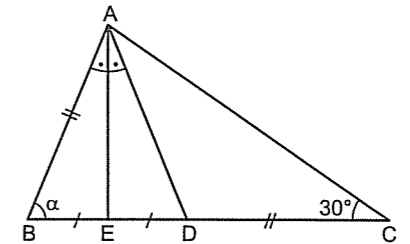
4.



Sorularda alakasız iki eşitlik verilmişse mutlaka bir yerlerde ikizkenar üçgen vardır. Arayın ve bulun.

- A) 10 B) 20 C) 30 D) 40 E) 50

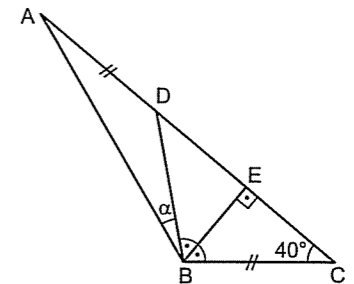
5.



$\alpha = ?$

- A) 70 B) 65 C) 60 D) 55 E) 50

6.



$\alpha = ?$

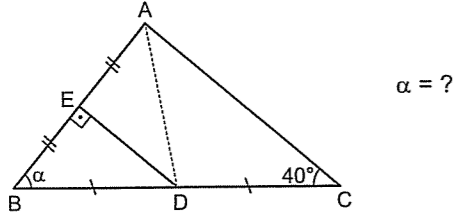
- A) 10 B) 15 C) 20 D) 25 E) 30

Aklınızda olsun.

Yükseklik bir doğru parçasını iki eşit parçaya bölmüşse orada bir ikizkenar üçgen vardır.

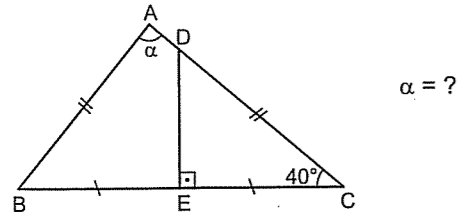
Ama çizip eksik üçgeni tamamlamanız lazım. Mesela alttaki soruda kesikli çizgi normalde verilmez. Sizin çizmeniz lazım. ☺ Ve çizdikten sonra eşitlikleri de bi zahmet gösterin. İşe yarayacak, göreceksiniz. ☺

7.



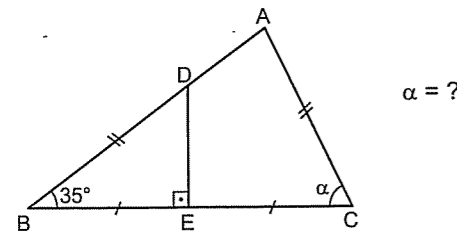
- A) 40 B) 50 C) 55 D) 60 E) 65

8.



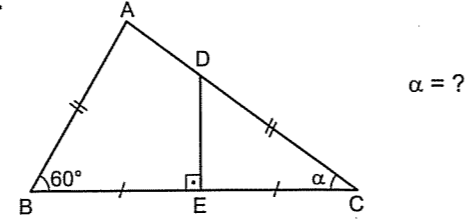
- A) 90 B) 80 C) 70 D) 60 E) 50

9.



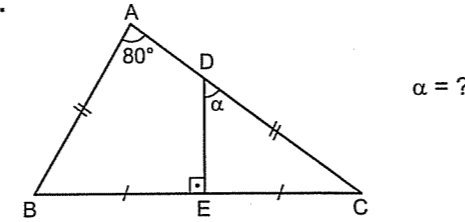
- A) 75 B) 70 C) 65 D) 60 E) 55

10.



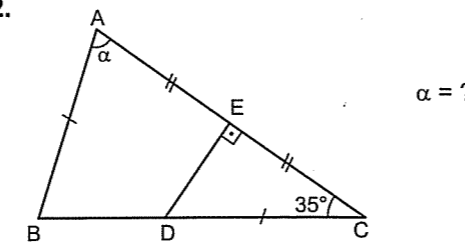
- A) 20 B) 25 C) 30 D) 35 E) 40

11.



- A) 30 B) 40 C) 45 D) 50 E) 55

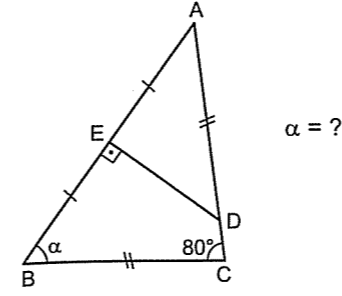
12.



- A) 35 B) 45 C) 55 D) 60 E) 75

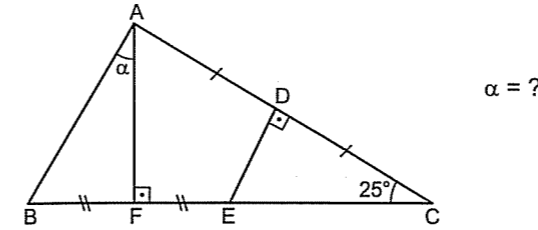
Bu tip sorularda üsteki ikizkenardan daha önemlisi alttaki ikizkenar üçgeni oluşturmaktır. |DF| yi çiziniz ikizkenar üçgeni oluşturun. Gerisi kolay. ☺

1.



- A) 20 B) 30 C) 40 D) 50 E) 60

2.

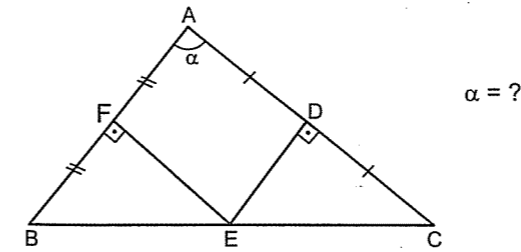


- A) 10 B) 15 C) 20 D) 30 E) 40



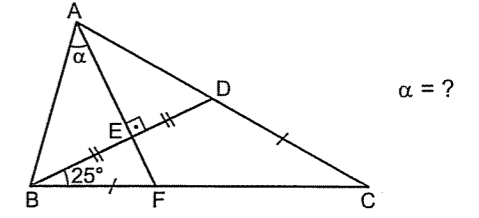
Eksik çizilen ikizkenar üçgenleri oluşturduktan sonra eşitlikleri şekilde gösterin bi zahmet.

3.



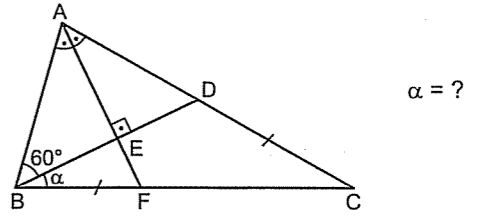
- A) 110 B) 100 C) 90 D) 80 E) 70

4.



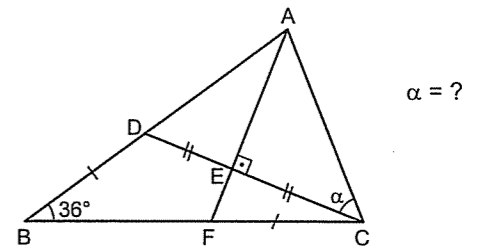
- A) 10 B) 15 C) 20 D) 25 E) 30

5.



- A) 10 B) 15 C) 20 D) 25 E) 30

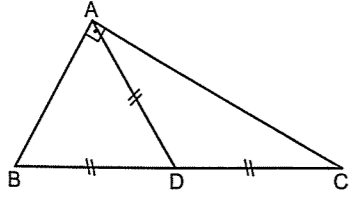
6.



- A) 18 B) 24 C) 36 D) 42 E) 54

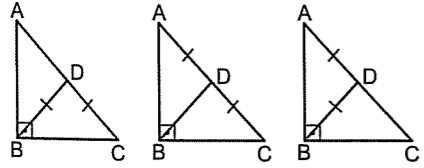
● MUHTEŞEM ÜÇLÜ

Bir dik üçgende hipotenüsü ikiye bölen kenarortay (kenarı ortadan ikiye ayıran doğru) ayırdığı parçalardan birine eşittir.

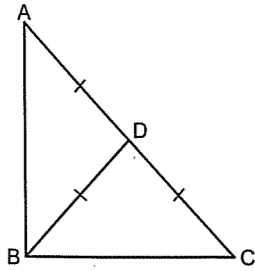


Muhteşem üçlü karşınıza dört farklı şekilde gelebilir.

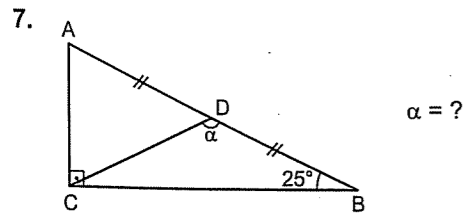
Genellikle üç eşitlikten ikisini soruda verir diğerini vermezler. O da size kalmıştır. Bu durumda bi zahmet üçüncü eşitliği de şekilde siz gösterin.



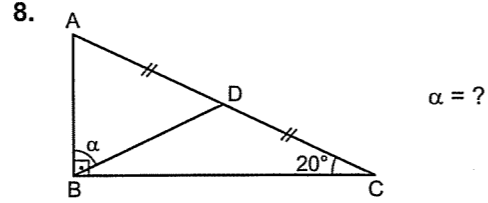
Ya da, Üç eşitlik verilir ama 90° verilmez. O zaman da 90° 'yi şekilde sizin göstermeniz gerekir.



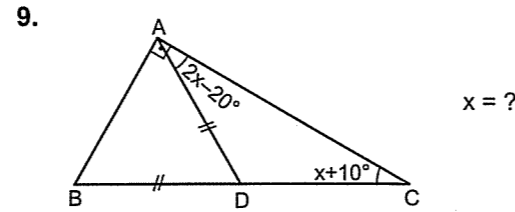
Meselâ şekilde $m(\widehat{ABC}) = 90^\circ$ 'dir. Görmek lâzım.



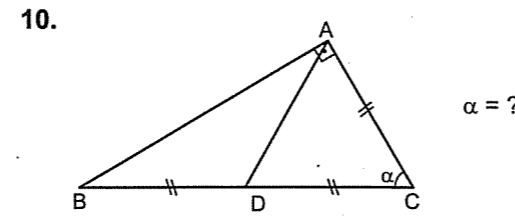
- A) 150 B) 140 C) 130 D) 120 E) 110



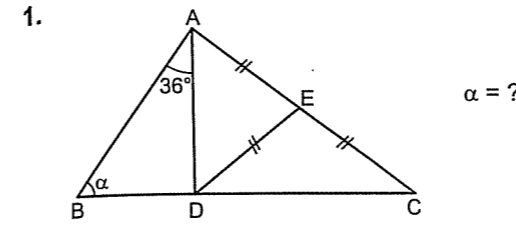
- A) 55 B) 60 C) 65 D) 70 E) 80



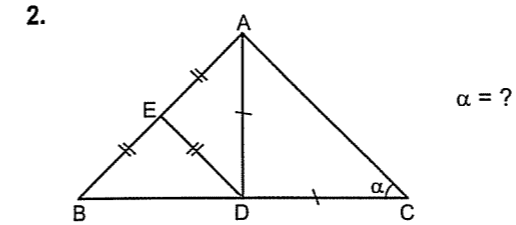
- A) 30 B) 25 C) 20 D) 15 E) 10



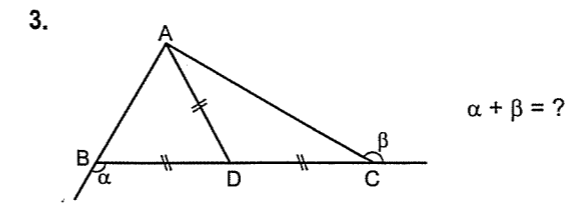
- A) 80 B) 70 C) 60 D) 50 E) 40



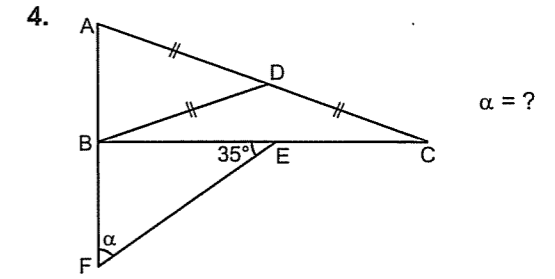
- A) 72 B) 62 C) 54 D) 48 E) 36



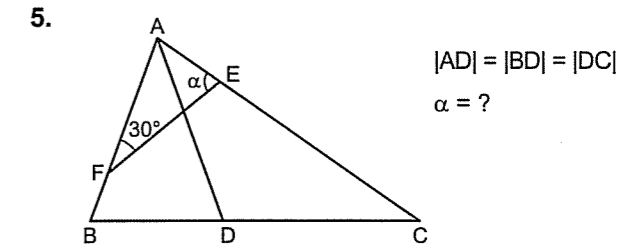
- A) 22,5 B) 25 C) 30 D) 36 E) 45



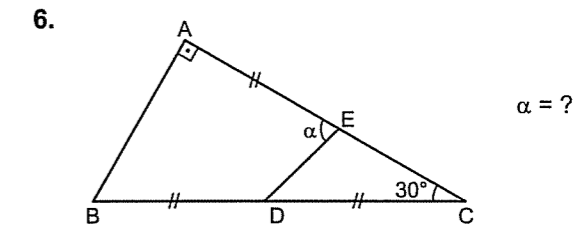
- A) 170 B) 180 C) 220 D) 235 E) 270



- A) 75 B) 65 C) 55 D) 75 E) 35

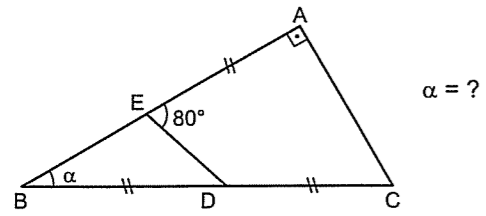


- A) 75 B) 60 C) 65 D) 55 E) 50



- A) 75 B) 70 C) 65 D) 60 E) 55

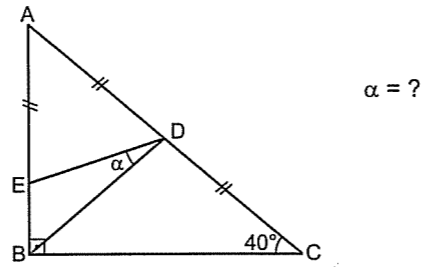
7.



$\alpha = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

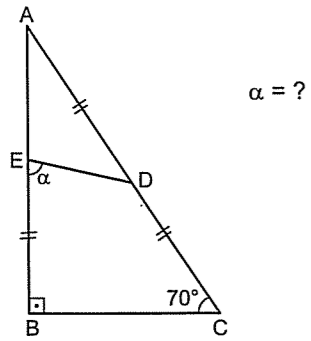
10.



$\alpha = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

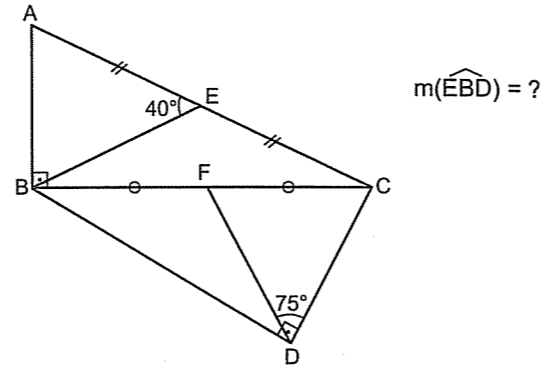
8.



$\alpha = ?$

- A) 90 B) 85 C) 80 D) 75 E) 70

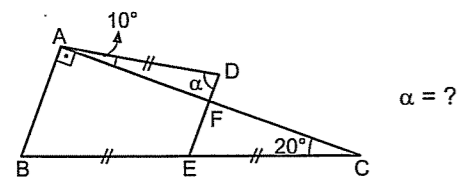
11.



$m(\widehat{EBD}) = ?$

- A) 15 B) 20 C) 25 D) 30 E) 35

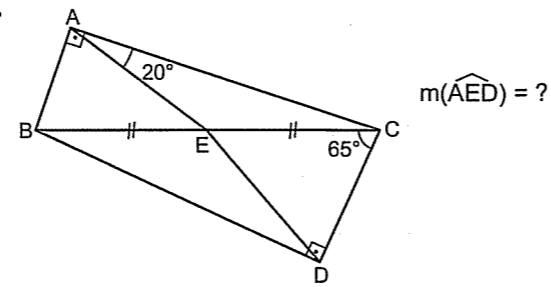
9.



$\alpha = ?$

- A) 90 B) 85 C) 80 D) 75 E) 70

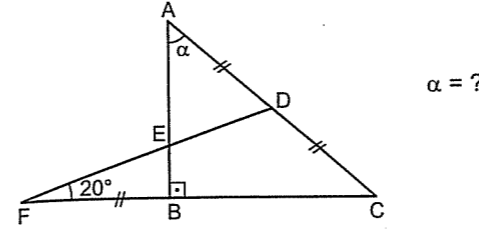
12.



$m(\widehat{AED}) = ?$

- A) 155 B) 160 C) 165 D) 170 E) 180

Örnek Soru:



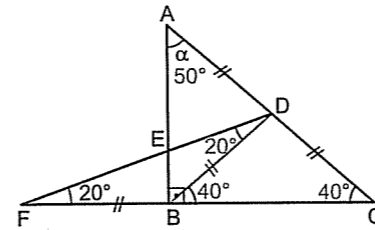
$\alpha = ?$

Çözüm:

Bu tip soruları gördüğümüzde büyük bir ihtimalle şöyle diyorsunuz. "İki eşitliği anladık da o üçüncüsü de ne alaka."

Aklınızda olsun. Böyle alakasız yani saçma sapan eşitlikler var ise biryerlerde ikizkenar üçgen vardır. Ya da ikizkenar üçgeni siz oluşturmanız lâzım. Bu ikizkenar üçgeni arayıp bulursunuz artık. ☺

Şimdi |BD|'yi çizin ve muhteşem üçlüyü oluşturup eşitlikleri gösterin.



FBD üçgeninden $m(\widehat{FDB}) = 20^\circ$ 'dir.

İki iç açının toplamı bir dış açıya eşit olduğundan $m(\widehat{DBC}) = 40^\circ$ 'yi bulun.

BDC üçgeninden de $m(\widehat{BCD}) = 40^\circ$ olur.

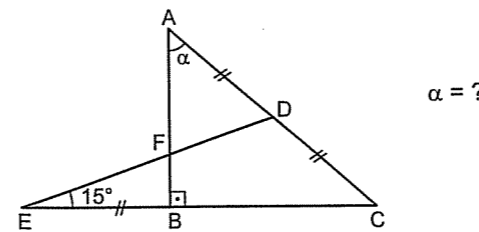
ABC üçgeninin iç açılarından yani,

$$\alpha + 40^\circ + 90^\circ = 180^\circ$$

$$\alpha = 50^\circ\text{'yi bulun.}$$

Zor mu ki? ☺

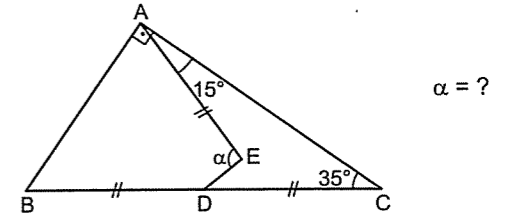
1.



$\alpha = ?$

- A) 75 B) 70 C) 60 D) 55 E) 50

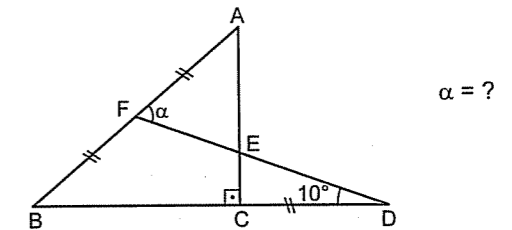
2.



$\alpha = ?$

- A) 90 B) 85 C) 80 D) 75 E) 70

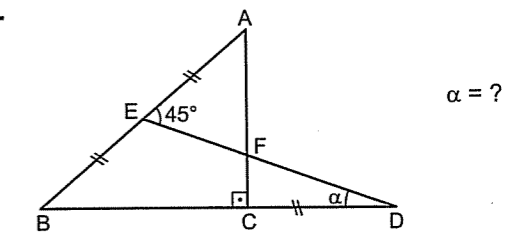
3.



$\alpha = ?$

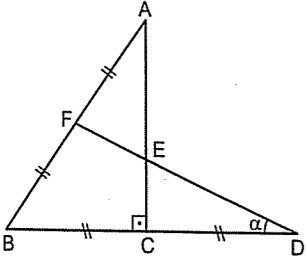
- A) 25 B) 30 C) 35 D) 40 E) 45

4.

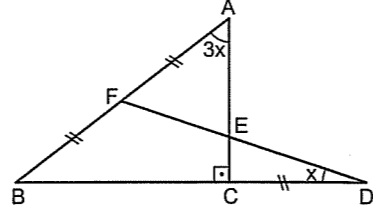


$\alpha = ?$

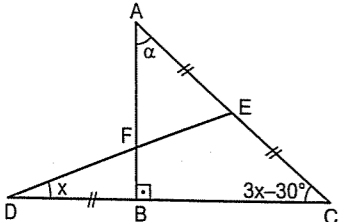
- A) 35 B) 30 C) 25 D) 20 E) 15

5.  $\alpha = ?$

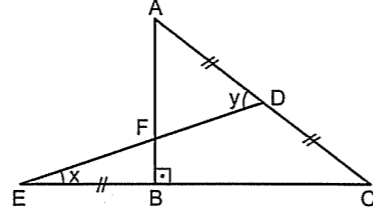
A) 10 B) 15 C) 20 D) 25 E) 30

8.  $x = ?$

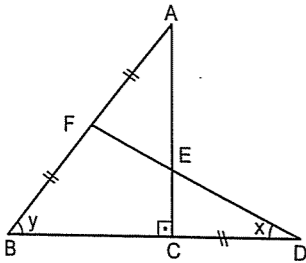
A) 12 B) 16 C) 18 D) 24 E) 27

6.  $\alpha = ?$

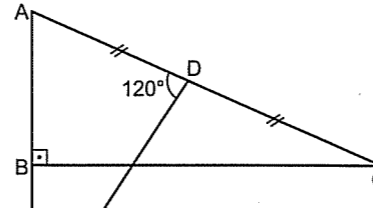
A) 10 B) 20 C) 30 D) 40 E) 50

9.  $\frac{x}{y} = ?$

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

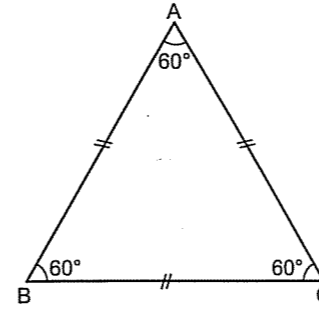
7.  $\frac{x}{y} = ?$


A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

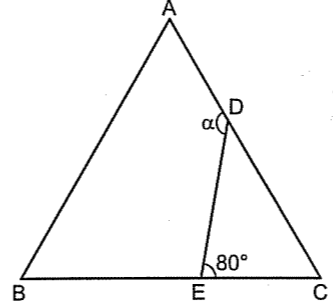
10.  $\alpha = ?$

A) 35 B) 30 C) 25 D) 20 E) 10

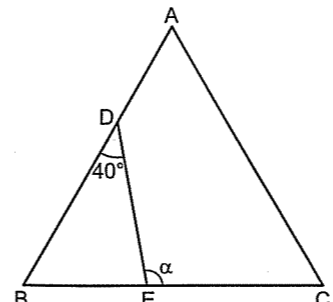
● **EŞKENAR ÜÇGEN**
Üç kenarı eşit olan üçgene **eşkenar üçgen** denir.
Eşkenar üçgenin iç açıları eşit ve herbiri 60° 'dir.



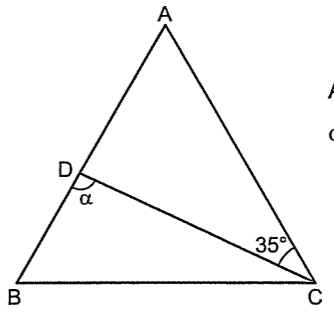
 Eşkenar üçgenle ilgili açı sorularında açıları yazıp eşitlikleri şeklin üzerinde gösterin.

1.  ABC eşkenar üçgen $\alpha = ?$

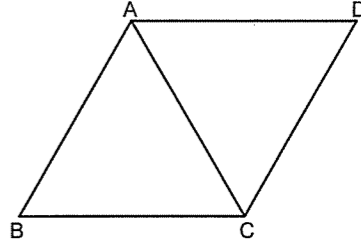
A) 100 B) 110 C) 120 D) 130 E) 140

2.  ABC eşkenar üçgen $\alpha = ?$

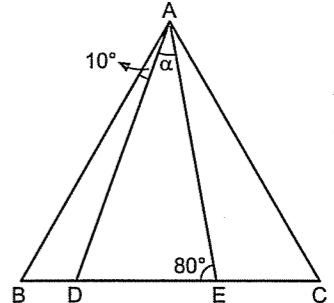
A) 100 B) 110 C) 120 D) 130 E) 140

3.  ABC eşkenar üçgen $\alpha = ?$

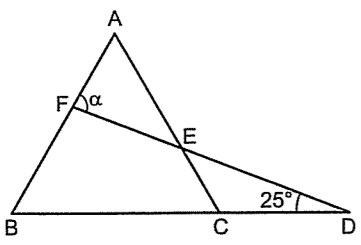
A) 85 B) 90 C) 95 D) 100 E) 105

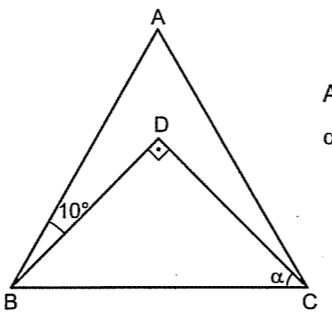
4.  ABC ve ACD eşkenar üçgen $m(\widehat{BAD}) = ?$

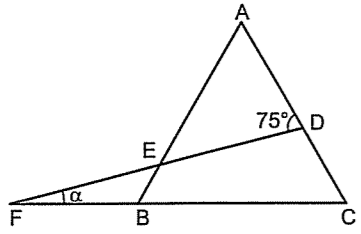
A) 100 B) 110 C) 120 D) 130 E) 150

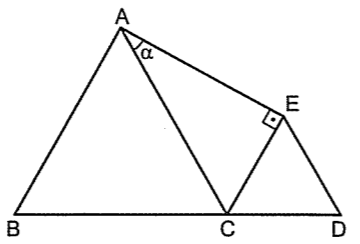
5.  ABC eşkenar üçgen $\alpha = ?$

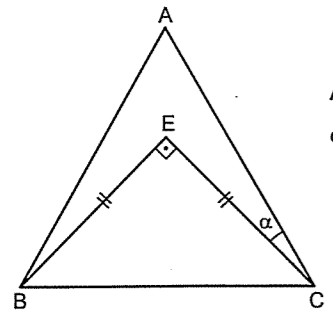
A) 15 B) 20 C) 25 D) 30 E) 40

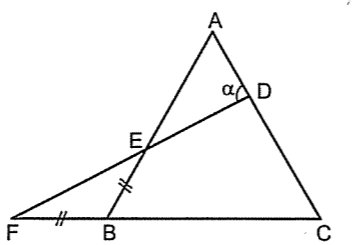
6.  ABC eşkenar üçgen
 $\alpha = ?$
A) 65 B) 70 C) 75 D) 80 E) 85

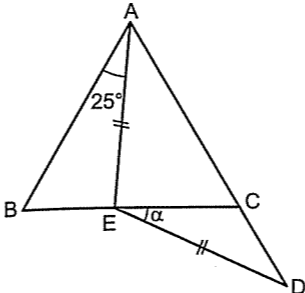
9.  ABC eşkenar üçgen
 $\alpha = ?$
A) 50 B) 45 C) 40 D) 35 E) 30

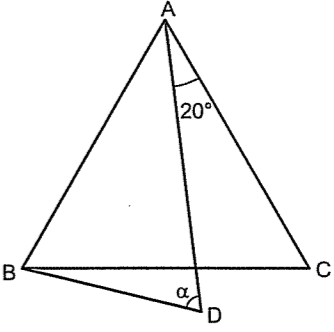
7.  ABC eşkenar üçgen
 $\alpha = ?$
A) 10 B) 15 C) 20 D) 25 E) 30

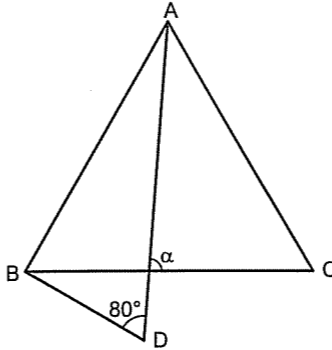
10.  ABC ve CED eşkenar üçgen
 $\alpha = ?$
A) 22,5 B) 30 C) 35 D) 40 E) 45

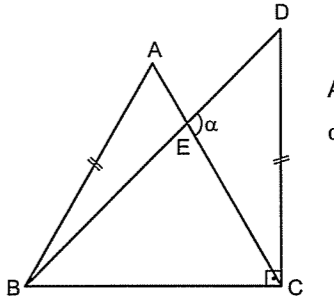
8.  ABC eşkenar üçgen
 $\alpha = ?$
A) 30 B) 25 C) 20 D) 15 E) 10

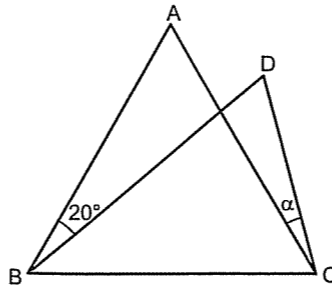
11.  ABC eşkenar üçgen
 $\alpha = ?$
A) 90 B) 85 C) 80 D) 70 E) 65

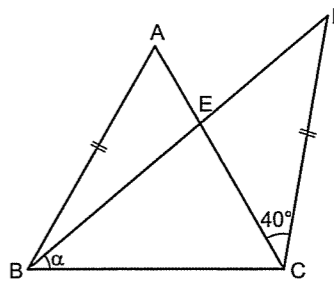
1.  ABC eşkenar üçgen
 $\alpha = ?$
A) 15 B) 20 C) 25 D) 30 E) 35

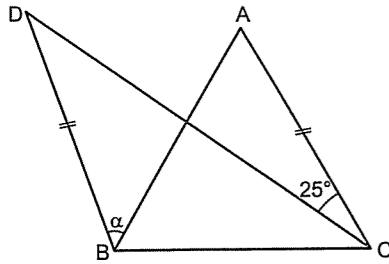
4.  ABC eşkenar üçgen
 $|AD| = |BC|$
 $\alpha = ?$
A) 90 B) 80 C) 70 D) 60 E) 50

2.  ABC eşkenar üçgen
 $|AD| = |AC|$
 $\alpha = ?$
A) 90 B) 80 C) 75 D) 70 E) 60

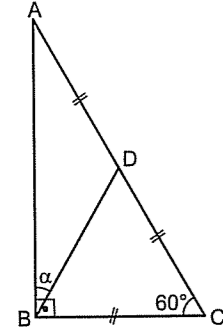
5.  ABC eşkenar üçgen
 $\alpha = ?$
A) 90 B) 95 C) 100 D) 105 E) 110

3.  ABC eşkenar üçgen
 $|AB| = |BD|$
 $\alpha = ?$
A) 10 B) 15 C) 20 D) 25 E) 30

6.  ABC eşkenar üçgen
 $\alpha = ?$
A) 10 B) 20 C) 30 D) 40 E) 50

7.  ABC eşkenar üçgen $\alpha = ?$

A) 40 B) 50 C) 55 D) 60 E) 65

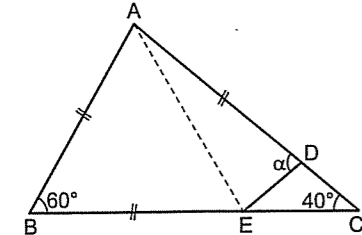
8.  $\alpha = ?$

A) 10 B) 15 C) 20 D) 25 E) 30

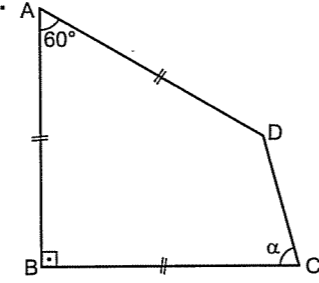
Aklınızda olsun. Eşit kenarlar arasında 60° açı varsa orada eşkenar üçgen oluşturun ve soruyu öyle çözün.

Şu soruda kesikli çizdiğim çizgi verilmez aslında. Çizmemiz lazım. ☺

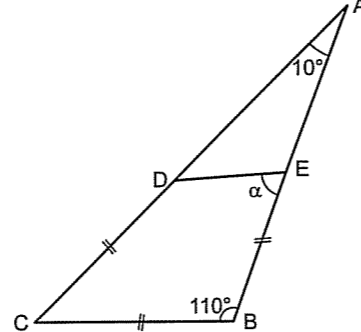
Anlayın artık. ☺

9.  $\alpha = ?$

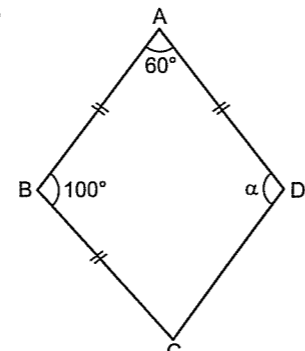
A) 50 B) 60 C) 70 D) 80 E) 90

10.  $\alpha = ?$

A) 60 B) 70 C) 75 D) 80 E) 85

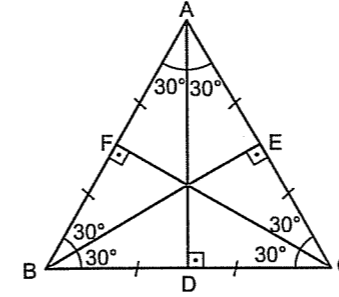
11.  $\alpha = ?$

A) 85 B) 80 C) 75 D) 70 E) 65

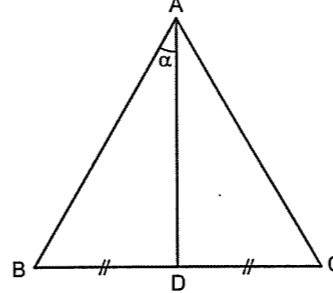
12.  $\alpha = ?$

A) 100 B) 105 C) 110 D) 120 E) 130

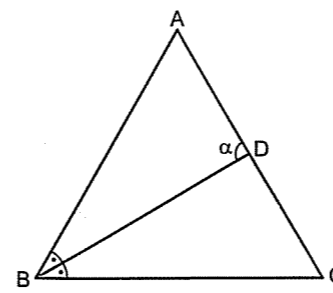
● Eşkenar üçgenle ilgili olarak şunu da unutmayın!



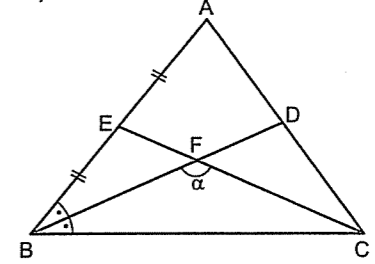
Eşkenar üçgende yükseklikler hem kenarortay hem de açıortaydır ve bunların hepsi birbirine eşittir. Yani, $|AD| = |BE| = |FC|$ dir.

1.  ABC eşkenar üçgen $\alpha = ?$

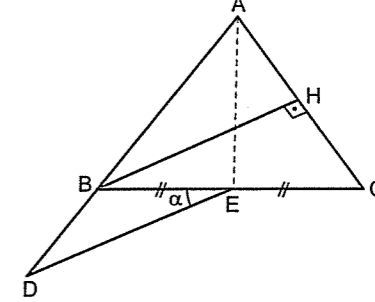
A) 15 B) 20 C) 25 D) 30 E) 40

2.  ABC eşkenar üçgen $\alpha = ?$

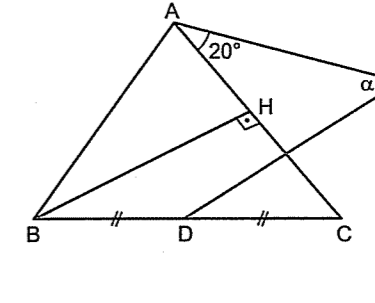
A) 90 B) 85 C) 80 D) 75 E) 70

3.  ABC eşkenar üçgen $\alpha = ?$

A) 100 B) 110 C) 120 D) 130 E) 140

4.  ABC eşkenar üçgen $|BH| = |DE|$ $\alpha = ?$

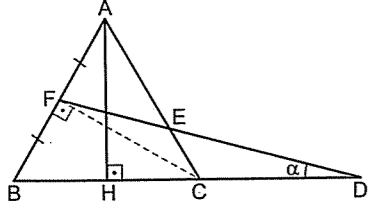
A) 15 B) 20 C) 25 D) 30 E) 35

5.  ABC eşkenar üçgen $|BH| = |AE|$ $\alpha = ?$

A) 75 B) 70 C) 65 D) 60 E) 50

Bir daha söylemicem bakın. Şu iki soruda da kesikli çizdiğim çizgiler aslında yok. Ben çizdim. Ama sizin çizmeniz lazım. ☺

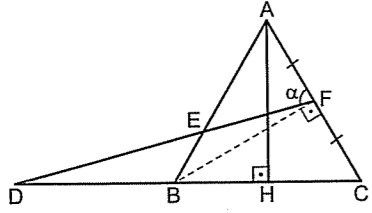
6.



ABC eşkenar üçgen
|AH| = |CD|
 $\alpha = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

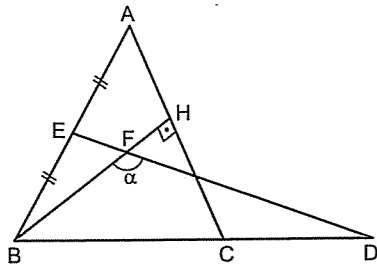
7.



ABC eşkenar üçgen
|AH| = |DB|
 $\alpha = ?$

- A) 65 B) 70 C) 75 D) 80 E) 85

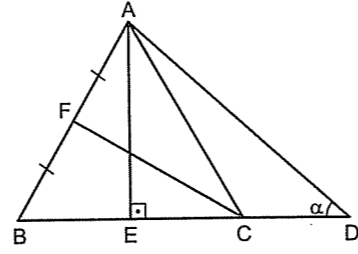
8.



ABC eşkenar üçgen
|BH| = |CD|
 $\alpha = ?$

- A) 115 B) 120 C) 125 D) 130 E) 135

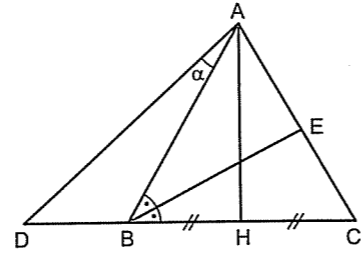
9.



ABC eşkenar üçgen
|FC| = |ED|
 $\alpha = ?$

- A) 30 B) 35 C) 40 D) 45 E) 50

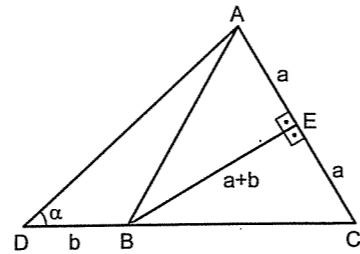
10.



ABC eşkenar üçgen
|BE| = |DH|
 $\alpha = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

11.



ABC eşkenar üçgen
 $\alpha = ?$

- A) 55 B) 50 C) 45 D) 40 E) 35

3. Bölüm

DİK ÜÇGEN

Pisagor Bağintısı

Öklit Bağintıları

Kenarlarına Göre Özel Dik Üçgenler

Açılarına Göre Özel Dik Üçgenler

Ders alınmış başarısızlık başarı demektir.

Malcom S. Forbes

*Birşeyden hoşlanmıyorsan, onu değiştir;
değiştiremiyorsan da, ona bakış açını değiştir...*

Mary Engelbreit

DİK ÜÇGEN

1. Antrenman

● Pisagor Bağintısı

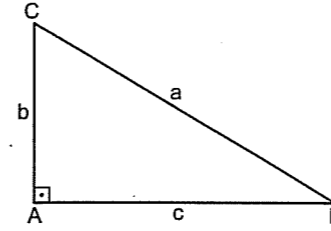
Bu bağıntı o kadar önemli ki. Önemli olduğunu anlatmak için ne demem lazım. Bilmiyorum. Ama gerçekten çok önemli. Ve bir o kadar da kolay. ☺

Pisagor amcanın bağıntısının Türkçesi şu;

Dik üçgende dik kenarların kareleri toplamı hipotenüsün karesine eşittir.

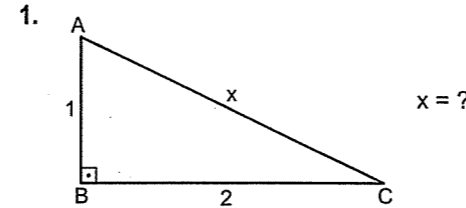
Bi daha okuyun bakim...

Bi daha...

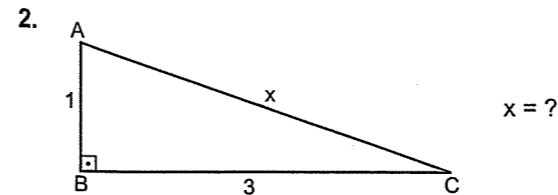


Matematikçesi de şu;

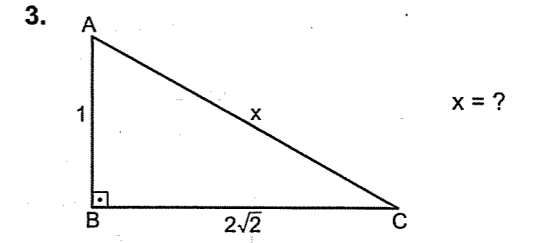
Yukarıdaki dik üçgende $a^2 = b^2 + c^2$ dir.



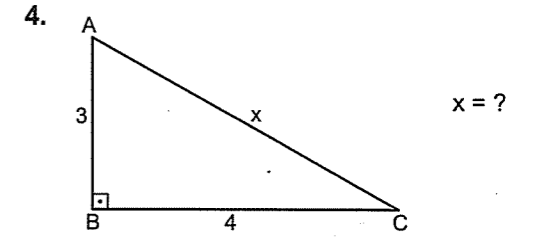
A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{5}$ D) 3 E) 4



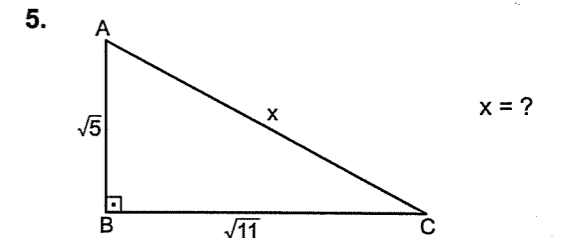
A) $2\sqrt{2}$ B) $\sqrt{10}$ C) $2\sqrt{3}$ D) 4 E) 5



A) 3 B) $\sqrt{10}$ C) $2\sqrt{3}$ D) $\sqrt{13}$ E) $3\sqrt{2}$

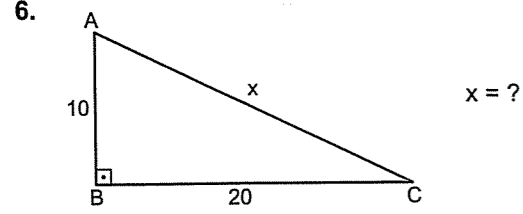


A) $3\sqrt{2}$ B) $2\sqrt{6}$ C) 5 D) 6 E) 8

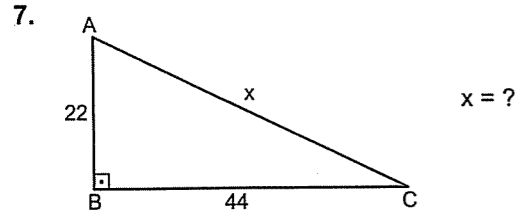


A) $2\sqrt{3}$ B) $\sqrt{13}$ C) $\sqrt{15}$ D) 4 E) 5

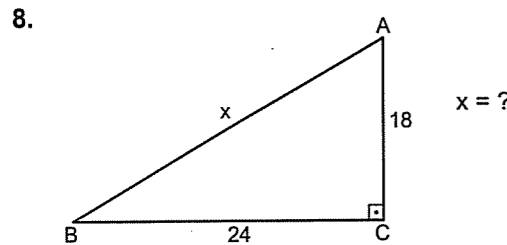
Bazı kenar uzunlukları kocaman verilir. Olsun. Problem değil. Şunu yapın. Bu durumda siz de kenarları sadeleştirip diğer kenarı bulun. Sonra da bulduğunuz kenarı sadeleştirdiğiniz sayıyla çarpın. Meselâ, şu soruda kenarlar 10'un katı. İkisini de 10'a bölüp kenarları 1 ve 2 gibi düşünün. Ve x 'i $\sqrt{5}$ bulun. Sonra da sadeleştirdiğinizi 10 ile çarpın.



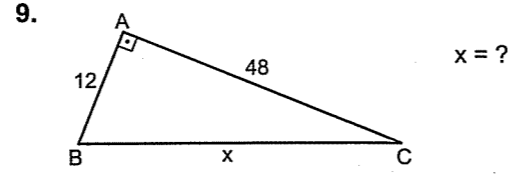
- A) 21 B) $10\sqrt{5}$ C) 22 D) $12\sqrt{5}$ E) 24



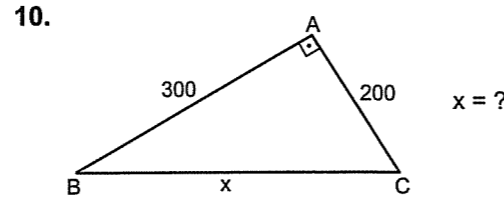
- A) 55 B) $22\sqrt{5}$ C) $22\sqrt{6}$ D) $44\sqrt{5}$ E) $44\sqrt{6}$



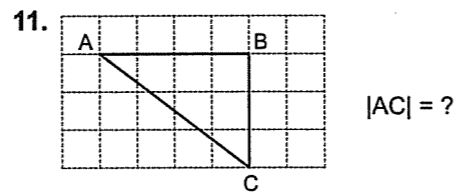
- A) 25 B) 27 C) 30 D) 32 E) 35



- A) 50 B) 52 C) $10\sqrt{17}$
D) $12\sqrt{17}$ E) $16\sqrt{17}$



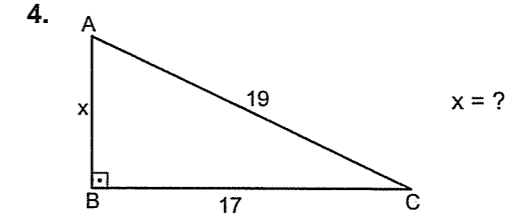
- A) $50\sqrt{3}$ B) $75\sqrt{3}$ C) $100\sqrt{13}$
D) $200\sqrt{13}$ E) 500



Şekildeki karelerin kenarları 1 birim.

- A) 3 B) 4 C) 5 D) 7 E) 10

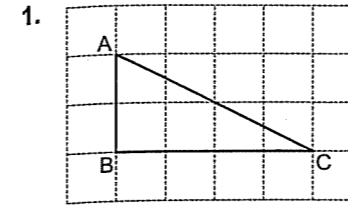
Bazen iki kare farkını bilip de kullanmak kolaylık sağlayabilir.



Bu soruda 19 ve 17'nin karelerini bularak gözlemek vaktinizi alır. Onun yerine iki kare farkından gidin.

$$a^2 - b^2 = (a - b) \cdot (a + b) \text{ idi.}$$

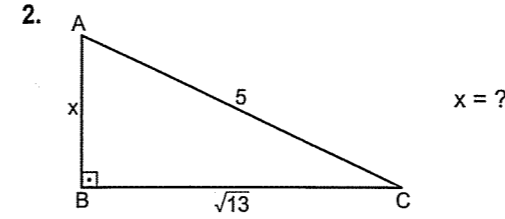
- A) $4\sqrt{3}$ B) $6\sqrt{2}$ C) $5\sqrt{3}$ D) $5\sqrt{2}$ E) $4\sqrt{2}$



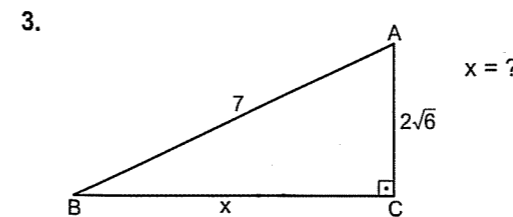
Şekildeki kareler birim kare ise |AC| = ?

Aklınızda olsun. Birim kare; kenar uzunluğu 1 birim olan kare demektir.

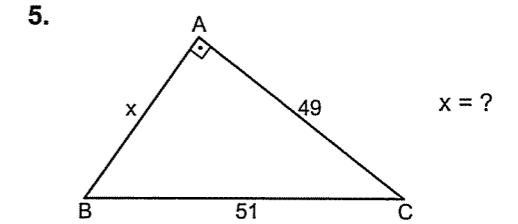
- A) 4 B) $3\sqrt{2}$ C) $2\sqrt{5}$ D) $2\sqrt{6}$ E) 5



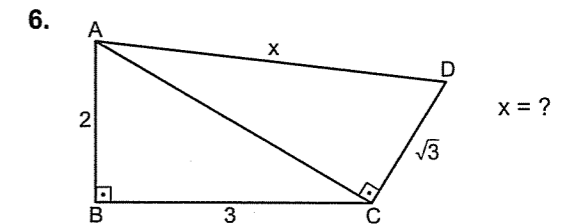
- A) $\sqrt{3}$ B) $2\sqrt{3}$ C) $\sqrt{15}$ D) $\sqrt{17}$ E) $\sqrt{19}$



- A) 5 B) $3\sqrt{3}$ C) $4\sqrt{2}$ D) 6 E) $4\sqrt{3}$

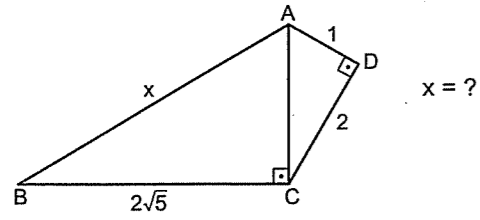


- A) $6\sqrt{2}$ B) $7\sqrt{2}$ C) $8\sqrt{3}$ D) $9\sqrt{2}$ E) $10\sqrt{2}$



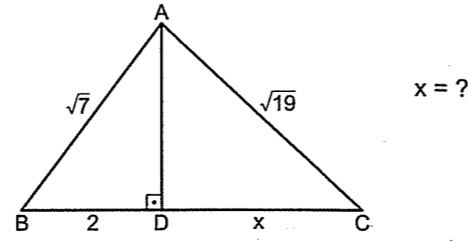
- A) 4 B) $3\sqrt{2}$ C) 5 D) $3\sqrt{3}$ E) 6

7.



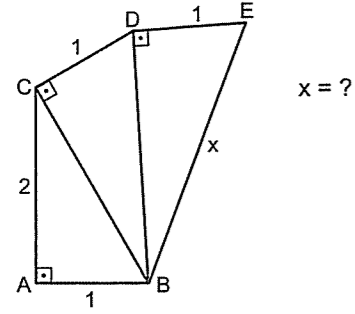
- A) $2\sqrt{6}$ B) 5 C) $3\sqrt{3}$ D) $4\sqrt{2}$ E) 6

10.



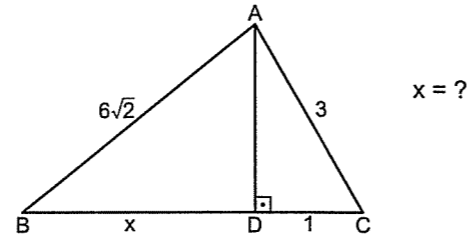
- A) 2 B) 3 C) $2\sqrt{3}$ D) 4 E) $3\sqrt{2}$

8.



- A) $\sqrt{5}$ B) $\sqrt{6}$ C) $\sqrt{7}$ D) $2\sqrt{2}$ E) 3

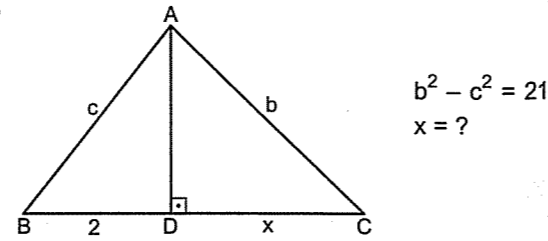
11.



- A) 6 B) 7 C) 8 D) $\sqrt{65}$ E) $\sqrt{70}$

İki dik üçgenin birer kenarı ortak ise büyük bi olasılıkla iki üçgende de pisagor bağıntısını yazıp bu kenarları eşitlersiniz.

12.

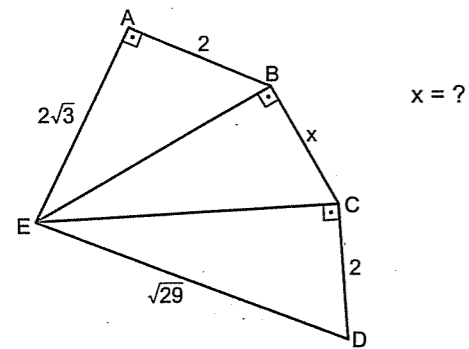


- A) 5 B) 7 C) 8 D) 9 E) 10



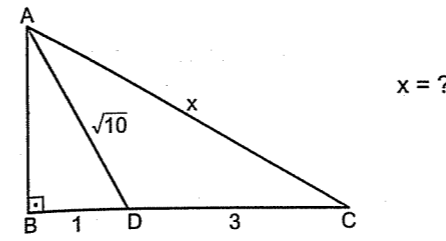
Şu soruda |AD|'yi bir sağdan bir de soldan Pisagor olarak yazın bakalım.

9.



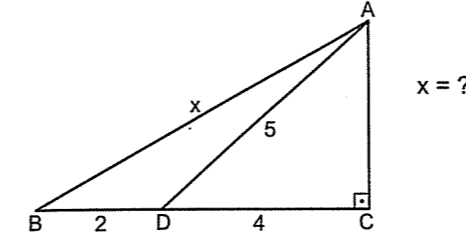
- A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) 3

1.



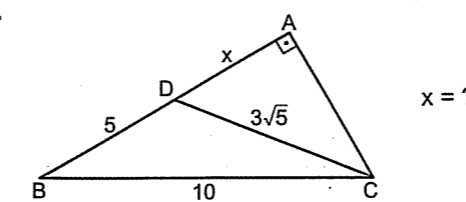
- A) 4 B) $3\sqrt{2}$ C) $2\sqrt{6}$ D) 5 E) $3\sqrt{3}$

2.



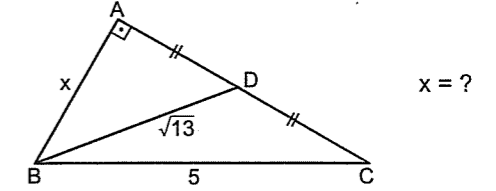
- A) $2\sqrt{5}$ B) $3\sqrt{3}$ C) $4\sqrt{2}$ D) 6 E) $3\sqrt{5}$

3.



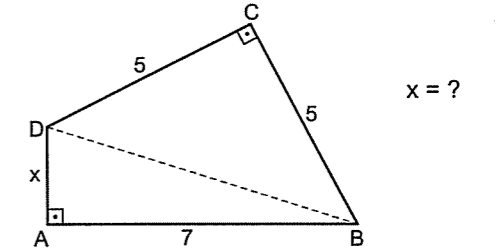
- A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) 3

4.



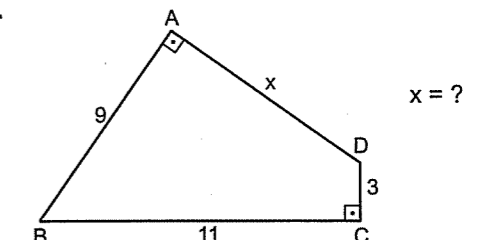
- A) 3 B) $2\sqrt{3}$ C) $\sqrt{13}$ D) 4 E) $3\sqrt{2}$

5.



- A) 1 B) 2 C) $\sqrt{5}$ D) $\sqrt{6}$ E) 3

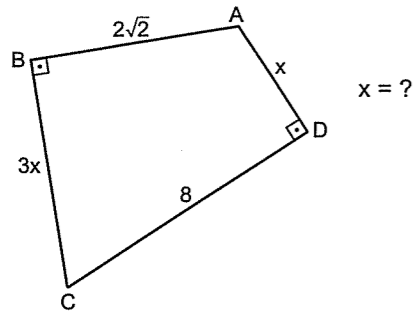
6.



- A) 8 B) 7 C) 6 D) 5 E) 4

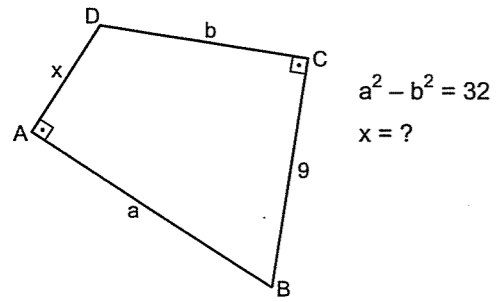
Geometri sorusu çözerken sık karşılaştığınız bi durum da şu. Soruda hipotenüsleri eşit iki dik üçgen olabilir. Bu sorularda iki Pisagorla işi halledin. Burdaki kesik çizgi de yok aslında. 😊 Anlayın gari. 😊

7.



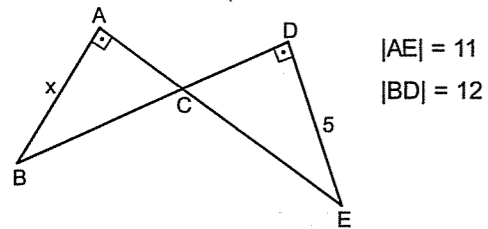
- A) 1 B) 2 C) $\sqrt{5}$ D) $\sqrt{7}$ E) 3

8.



- A) 5 B) 6 C) 7 D) 8 E) 9

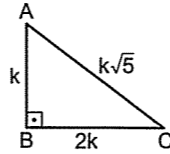
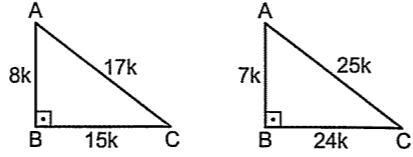
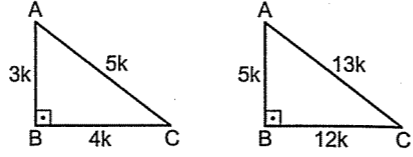
9.



- A) 6 B) 7 C) $4\sqrt{3}$ D) $2\sqrt{13}$ E) $\sqrt{65}$

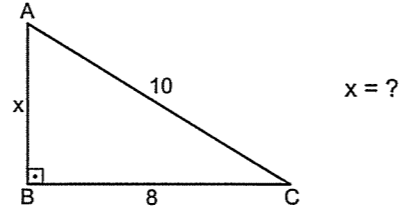
● Kenarlarına Göre Özel Dik Üçgenler

Çok sık kullanıldığından bilmekte fayda var. Hız kazandırır. Yoksa Pisagordan yine çıkıyor.



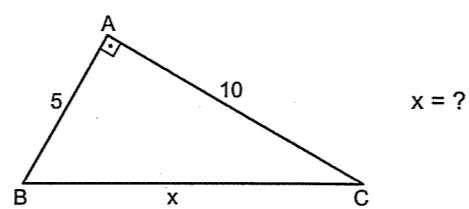
Bunların hepside çok kullanılır. Ama şu ilk yazdığım 3k - 4k - 5k üçgeninde k'nin 5 katına kadar ezberlerseniz hiç de fena olmaz.

10.



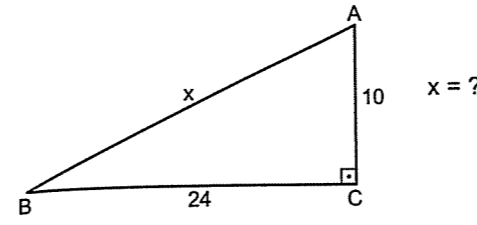
- A) 3 B) 4 C) 5 D) 6 E) 7

11.



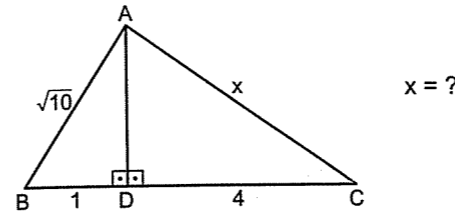
- A) $6\sqrt{3}$ B) 11 C) $5\sqrt{5}$ D) 12 E) 13

1.



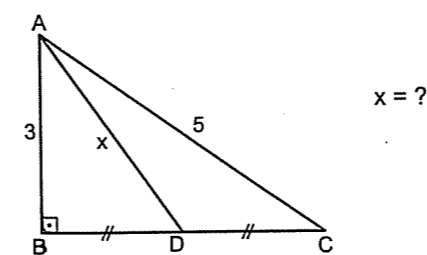
- A) 15 B) 17 C) 20 D) 25 E) 26

2.



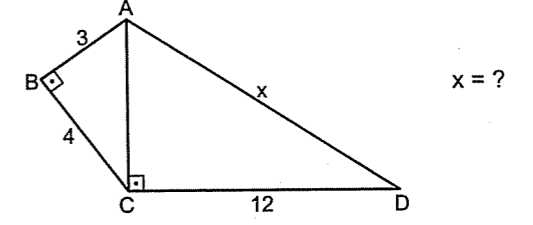
- A) 5 B) 6 C) 7 D) 8 E) 9

3.



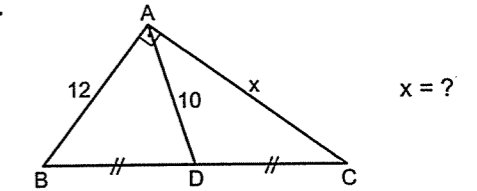
- A) $2\sqrt{3}$ B) $\sqrt{13}$ C) $\sqrt{14}$ D) $\sqrt{15}$ E) $3\sqrt{2}$

4.



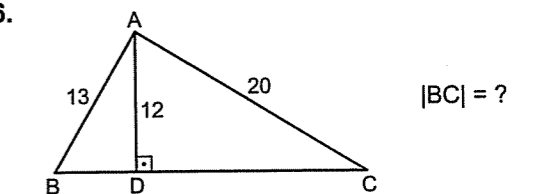
- A) 13 B) 14 C) 15 D) $12\sqrt{2}$ E) $12\sqrt{3}$

5.

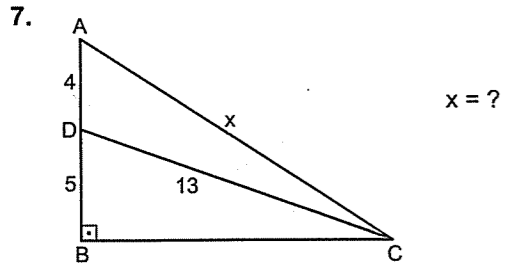


- A) 8 B) 10 C) 13 D) 15 E) 16

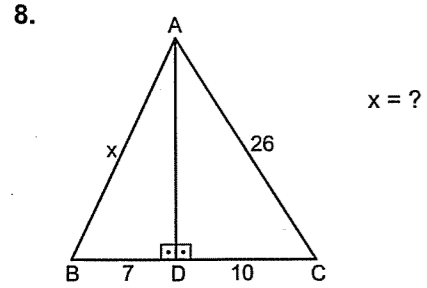
6.



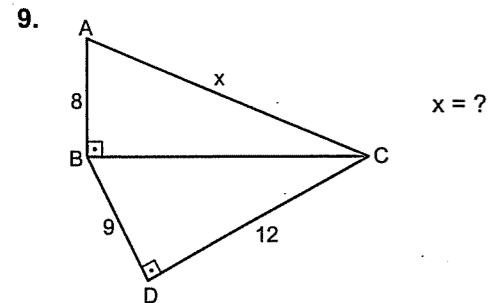
- A) 15 B) 17 C) 18 D) 19 E) 21



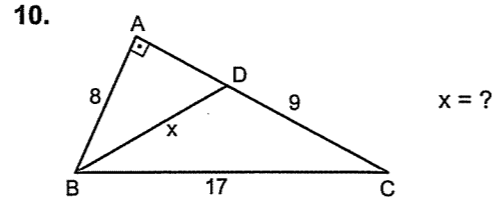
- A) 14 B) 15 C) 17 D) 18 E) 20



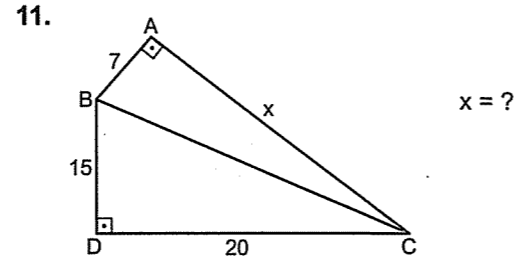
- A) 13 B) 17 C) 20 D) 25 E) 27



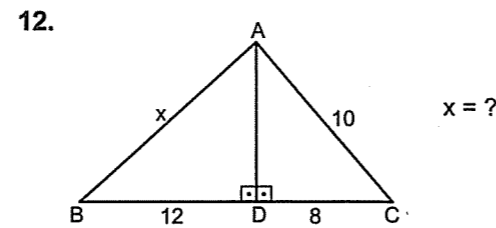
- A) 10 B) 13 C) 15 D) 17 E) 20



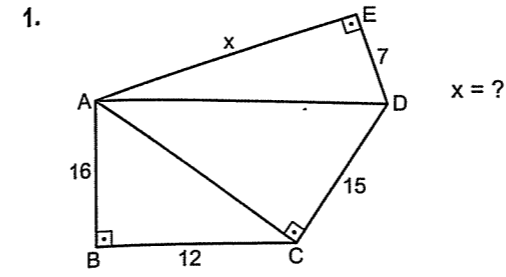
- A) 9 B) 10 C) 11 D) 12 E) 13



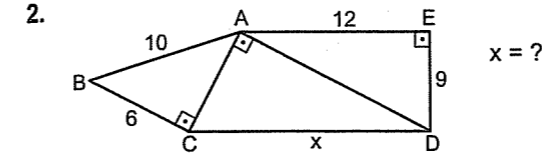
- A) 15 B) 16 C) 17 D) 18 E) 24



- A) 13 B) 17 C) $6\sqrt{5}$ D) 18 E) 20

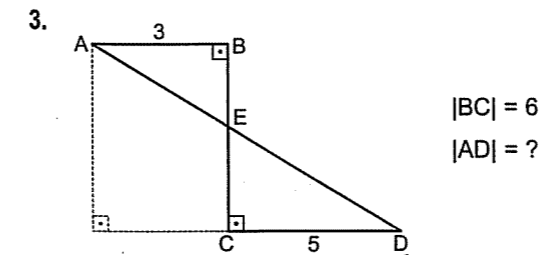


- A) 12 B) 13 C) 15 D) 18 E) 24

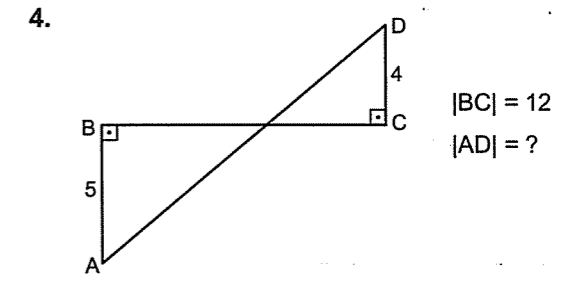


- A) 17 B) 15 C) 13 D) 12 E) 10

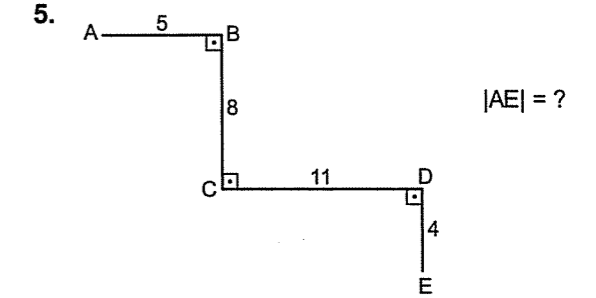
Yine kesik çizgiyi çizme muhabbeti ☺



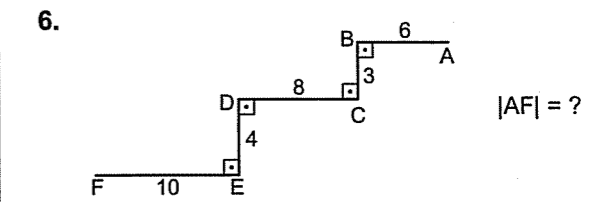
- A) 6 B) 7 C) $6\sqrt{2}$ D) 8 E) 10



- A) 10 B) 13 C) 15 D) 17 E) 19



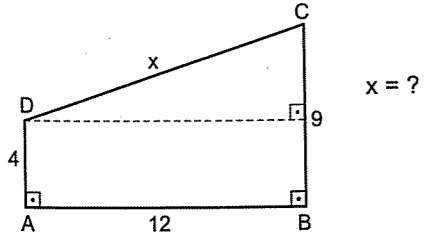
- A) 15 B) 17 C) 20 D) 25 E) 30



- A) 20 B) 24 C) 25 D) 27 E) 30

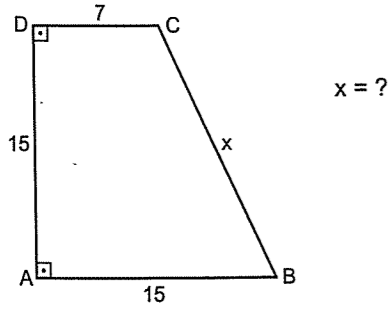
Anlarsınız ☺

7.



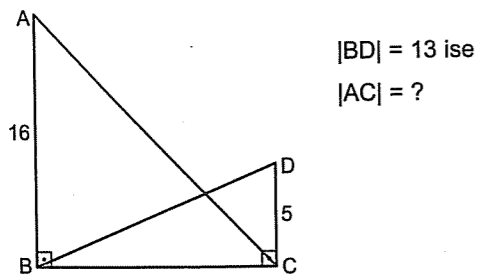
- A) 13 B) 14 C) 15 D) 16 E) 17

8.



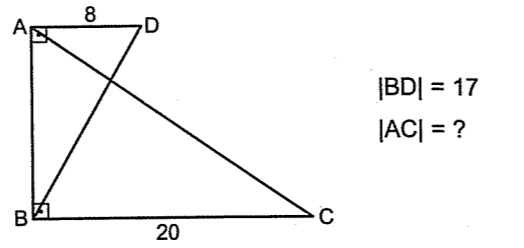
- A) 10 B) 13 C) 15 D) 17 E) 20

9.



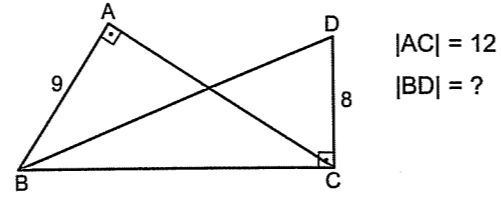
- A) 15 B) 16 C) 17 D) 18 E) 20

10.



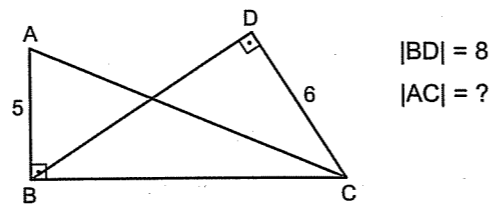
- A) 17 B) 20 C) 25 D) 30 E) 35

11.



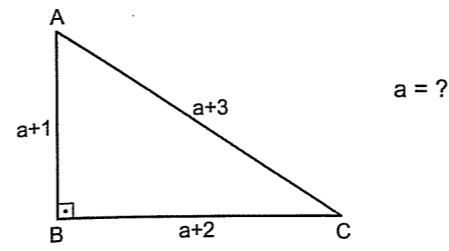
- A) 15 B) 17 C) 20 D) 24 E) 25

12.



- A) 10 B) $5\sqrt{5}$ C) $6\sqrt{5}$ D) 17 E) 20

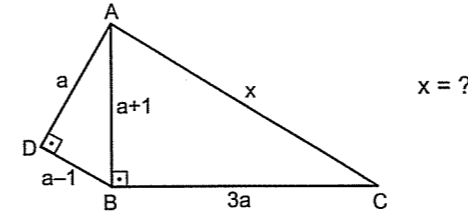
1.



Aklınızda olsun. Bir dik üçgenin kenarları birer birer artıyorsa bu üçgen 3-4-5 üçgenidir. En küçük kenarı 3'e eşitleyin ve bilinmeyeni bulun.

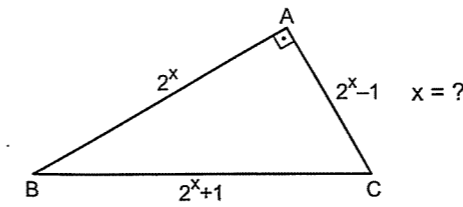
- A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) 3

2.



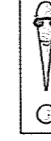
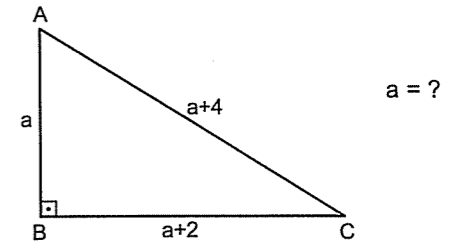
- A) 5 B) 10 C) 13 D) 15 E) 17

3.



- A) 1 B) 2 C) 3 D) 4 E) 5

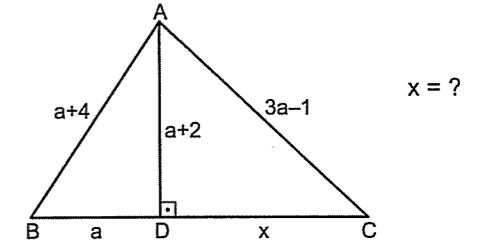
4.



Dik üçgende kenarlar harfli ve ikiye ikiye artıyorsa bu üçgen 6-8-10 üçgenidir. Gerçi pisagordan da bulabilirsiniz. Ama böyle daha pırt oluyor. ☺

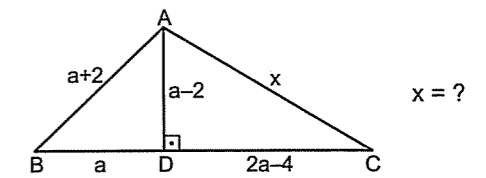
- A) 3 B) 4 C) 5 D) 6 E) 8

5.



- A) 8 B) 10 C) 12 D) 13 E) 15

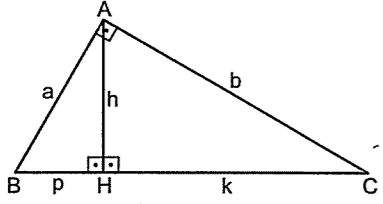
6.



- A) 13 B) 15 C) $5\sqrt{5}$ D) $6\sqrt{5}$ E) $8\sqrt{5}$

● Öklid Bağlıları

Soruda bir dik üçgende dikten hipotenüze dik inilmişse öklit bağlantıları yazılabilir.



Öklit bağlantıları içinde en çok kullanılanı $h^2 = p.k$ dir. Diğerlerini de verecem. Ama önce bunu bi hazmedin. ☺

7. $x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

8. $x = ?$

A) 3 B) 4 C) 5 D) 6 E) 7

9. $x = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

10. $x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

11. $x = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

1. $x = ?$

A) 8 B) 12 C) 16 D) 18 E) 24

2. $x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

3. $x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

Sizin için kesikli çizgileri yine ben çizip gösteriyorum. ☺
Ama biliyorsunuz. ☺

4. $x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

Tabii ki bu tür bir soruyu çözerken uzunlukları öklit uygulayacağınız üçgene taşmanız icap eder.

5. $x = ?$

A) 5 B) 6 C) $2\sqrt{10}$ D) 7 E) $3\sqrt{6}$

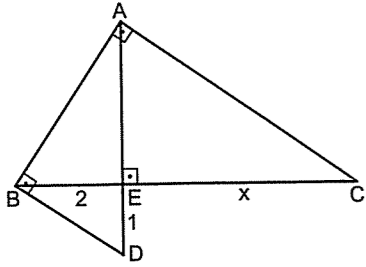
6. $x = ?$

A) 5 B) 4 C) 3 D) 2 E) 1

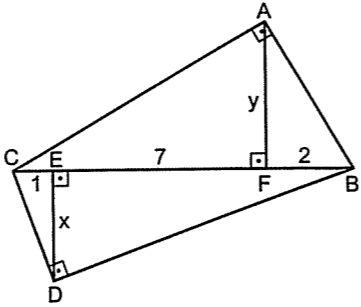
- DİK ÜÇGEN

7. Antrenman

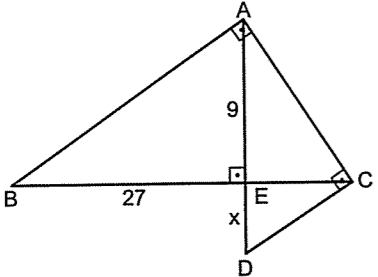
Bazen ökliti işin içine iki defa sokmak lazım.

7.  $x = ?$

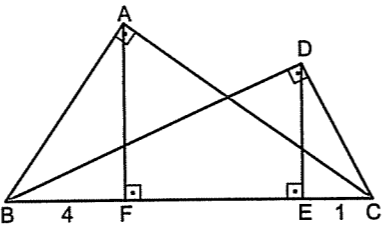
A) 6 B) 8 C) 10 D) 12 E) 16

10.  $x + y = ?$

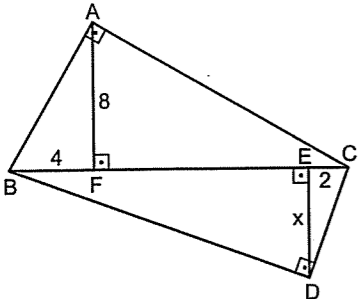
A) 3 B) 4 C) 5 D) 6 E) 7

8.  $x = ?$

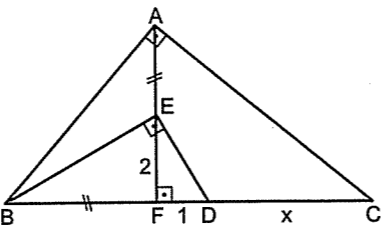
A) 5 B) 4 C) 3 D) 2 E) 1

11.  $|AF| = 6$
 $|DE| = ?$

A) 4 B) $3\sqrt{3}$ C) $2\sqrt{3}$ D) 3 E) $\sqrt{3}$

9.  $x = ?$

A) 3 B) 4 C) 5 D) 6 E) 7

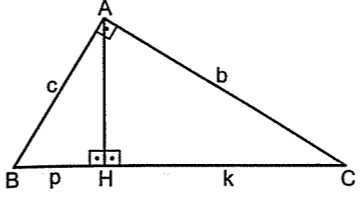
12.  $x = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

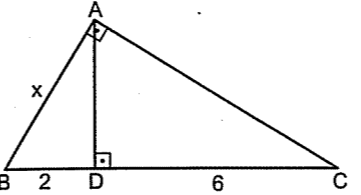
- DİK ÜÇGEN

8. Antrenman

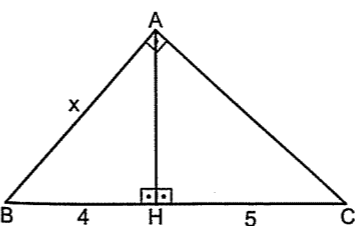
Öklit bağıntılarından ikincisi şu:



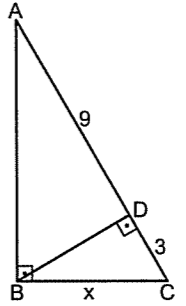
Dik kenarlardan öklit bağıntıları yazıldığında $c^2 = p.(p+k)$ ve $b^2 = k.(p+k)$ olur.

1.  $x = ?$

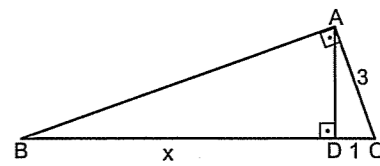
A) 3 B) 4 C) 5 D) 6 E) 7

2.  $x = ?$

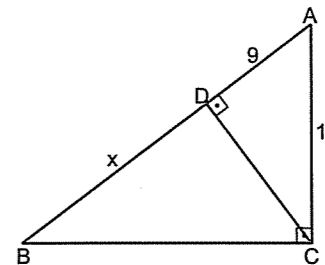
A) 5 B) 6 C) $4\sqrt{3}$ D) $2\sqrt{13}$ E) 8

3.  $x = ?$

A) 4 B) 5 C) $3\sqrt{3}$ D) $4\sqrt{2}$ E) 6

4.  $x = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

5.  $x = ?$

A) 10 B) 12 C) 14 D) 16 E) 17

Şunda ikisini de yazıp taraf tarafa bölmek lazım. ☺

6.

$\frac{x}{y} = ?$

A) $\frac{2}{3}$ B) $\frac{3}{2}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ E) 2

7.

$\frac{x}{y} = ?$

A) $\frac{1}{3}$ B) 3 C) $\frac{1}{\sqrt{3}}$ D) $\sqrt{3}$ E) 2

8.

$x = ?$

A) 3 B) 4 C) 5 D) 6 E) 7

9.

$x = ?$

A) 17 B) 21 C) 24 D) 27 E) 29

10.

$x + y = ?$

A) 25 B) $\frac{27}{2}$ C) 33 D) $\frac{35}{2}$ E) 35

11.

$\frac{x}{y} = ?$

A) 2 B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) 4 E) $2\sqrt{2}$

1.

$\frac{x}{y} = ?$

A) $\frac{\sqrt{2}}{\sqrt{3}}$ B) $\frac{\sqrt{3}}{\sqrt{2}}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ E) $\frac{9}{\sqrt{2}}$

2.

$x = ?$

A) 3 B) 4 C) $3\sqrt{2}$ D) $2\sqrt{2}$ E) $4\sqrt{2}$

3.

$x = ?$

Bu soruda bir içerdeki üçgende öklid bir de dışarıda üçgende öklid yapmak lâzım.

A) 7 B) 8 C) 9 D) 10 E) 12

4.

$\frac{x}{y} = ?$

A) $\frac{1}{2}$ B) $\frac{1}{\sqrt{2}}$ C) $\frac{1}{3}$ D) $\frac{1}{\sqrt{3}}$ E) $\frac{1}{4}$

5.

$\frac{|BF|}{|BC|} = ?$

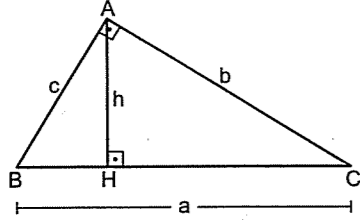
A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{1}{9}$ E) $\frac{1}{5}$

6.

$\frac{x}{y} = ?$

A) $\sqrt{2}$ B) $\sqrt{3}$ C) 2 D) 3 E) $\sqrt{5}$

● Bir diğer öklit bağıntısı şu:



Şimdi yazacağım bağıntı üçgende alandan çıkan bir sonuç aslında. Ama Öklit bağıntıları arasında var. $a \cdot h = b \cdot c$ dir.

7. $x = ?$

A) 2 B) $\frac{9}{5}$ C) $\frac{12}{5}$ D) $\frac{12}{7}$ E) 3

8. $x = ?$

A) $3\sqrt{5}$ B) $3\sqrt{3}$ C) 5 D) $2\sqrt{5}$ E) $\sqrt{5}$

9. $|AC| \cdot |BC| = ?$

A) 24 B) 36 C) 40 D) 56 E) 60

Bakın ne dicem.
ÖSYM'deki amcalar şu sorudaki uzunlukları kullanarak öklit muhabbetine girmeyi çok seviyor.

10. $x = ?$

A) 8 B) 9 C) 10 D) 12 E) 13

11. $b \cdot c = ?$

A) 78 B) 72 C) 68 D) 64 E) 58

1. $b \cdot c = 64$
 $x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

2. $x = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

3. $|AC| \cdot |BC| = ?$

A) 15 B) 30 C) 45 D) 60 E) 75

4. $x = ?$

A) $\frac{12}{5}$ B) $\frac{60}{13}$ C) $\frac{60}{17}$ D) $\frac{30}{17}$ E) $\frac{15}{13}$

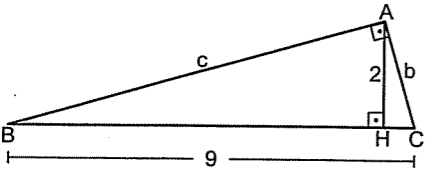
5. $|AD| \cdot |BD| = 48$
 $x = ?$

A) 3 B) 4 C) 5 D) 6 E) 7

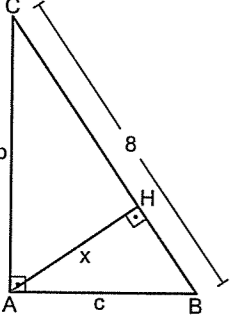
Bazı sorularda parantez kareye gerek duyulabilir. $(b + c)^2 = b^2 + c^2 + 2bc$ olduğunu matematikten hatırlayın. Bu soruda lazım da. ☺

6. $b + c = ?$

A) $6\sqrt{2}$ B) 9 C) $4\sqrt{6}$ D) 10 E) $6\sqrt{3}$

7.  $c-b = ?$

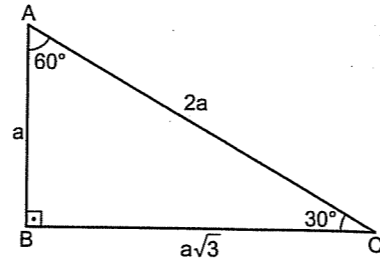
A) 4 B) 5 C) 6 D) $2\sqrt{10}$ E) $3\sqrt{5}$

8.  $b+c = 10$
 $x = ?$

A) 2 B) $\frac{5}{4}$ C) $\frac{9}{4}$ D) $\frac{7}{4}$ E) 3

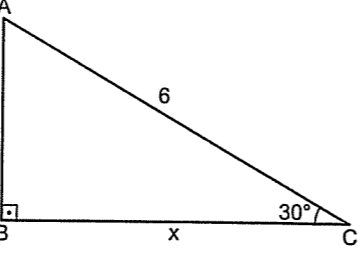
● Açılarına Göre Özel Üçgenler

$30^\circ-60^\circ-90^\circ$ üçgeni

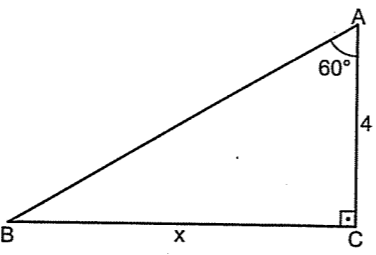


Üstteki şeklin Türkçesi şu:

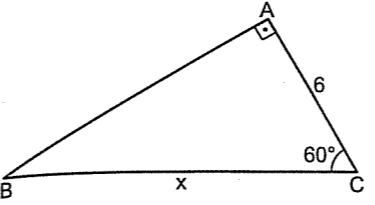
$30^\circ - 60^\circ - 90^\circ$ üçgeninde hipotenüs uzunluğu verildiğinde 30° 'nin karşısındaki kenar hipotenüsün yarısına, 60° 'nin karşısındaki ise 30° 'nin karşısındaki kenarın $\sqrt{3}$ katına eşittir.

10.  $x = ?$

A) 3 B) 4 C) $3\sqrt{2}$ D) $3\sqrt{3}$ E) $6\sqrt{3}$

11.  $x = ?$

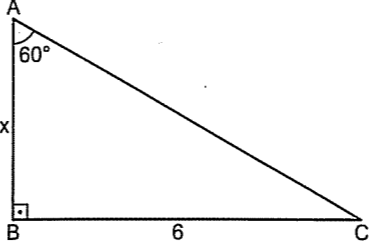
A) 8 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) $4\sqrt{5}$ E) 6

1.  $x = ?$

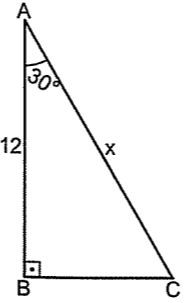
A) 6 B) $6\sqrt{2}$ C) $6\sqrt{3}$ D) 12 E) $12\sqrt{2}$

Peki sadece 60° 'nin karşısı verilirse o zaman n'tce-niz?

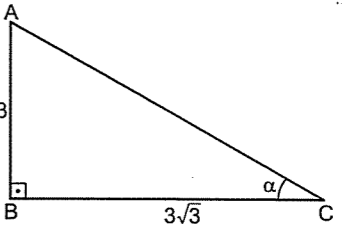
Söylim... 60° 'nin karşısı verildiğinde 30° karşısını bulmak için 60° 'nin karşısını $\sqrt{3}$ 'e bölün. Çıkıyor. 😊

2.  $x = ?$

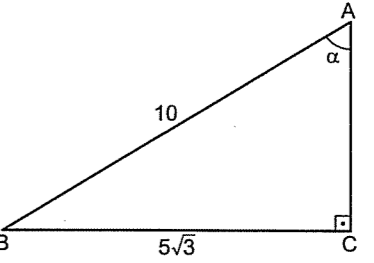
A) $6\sqrt{3}$ B) $3\sqrt{3}$ C) 3 D) $2\sqrt{3}$ E) 2

3.  $x = ?$

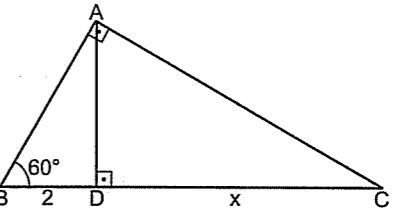
A) $4\sqrt{3}$ B) 6 C) $6\sqrt{3}$ D) 8 E) $8\sqrt{3}$

4.  $\alpha = ?$

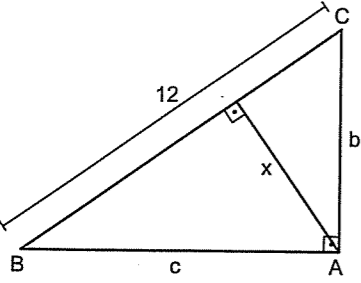
A) 15 B) 30 C) 45 D) 60 E) 75

5.  $\alpha = ?$

A) 15 B) 30 C) 45 D) 60 E) 75

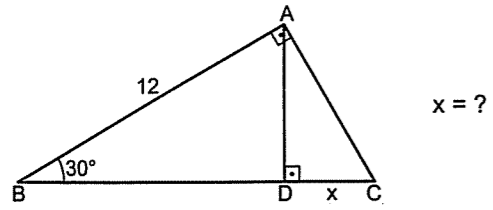
6.  $x = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

9.  $b-c = 8$
 $x = ?$

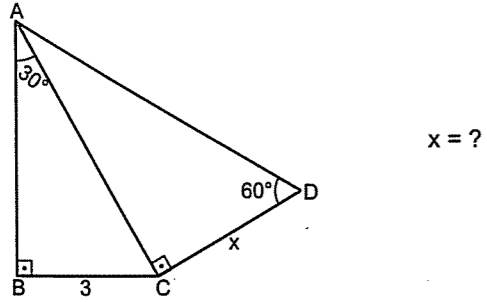
A) 3 B) $\frac{10}{3}$ C) $\frac{11}{3}$ D) 4 E) $\frac{13}{3}$

7.



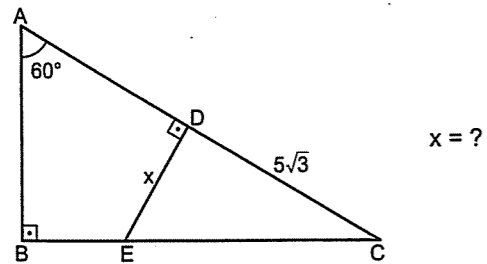
- A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $2\sqrt{3}$

8.



- A) $2\sqrt{3}$ B) $\sqrt{13}$ C) 4 D) $3\sqrt{2}$ E) $2\sqrt{6}$

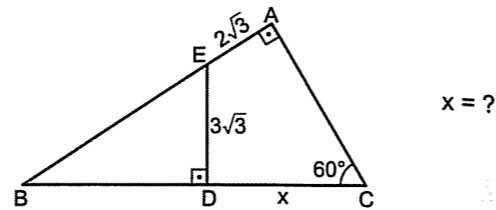
9.



- A) 3 B) 4 C) 5 D) 6 E) 7

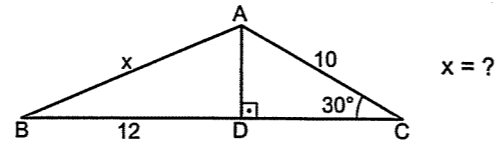
1-D 2-D 3-E 4-B 5-D 6-C

10.



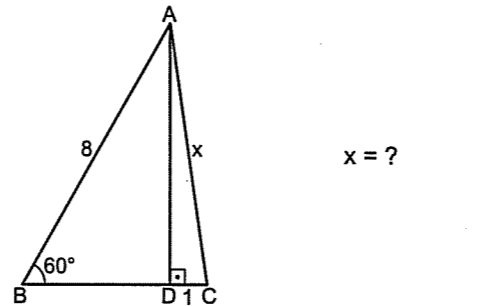
- A) 5 B) $4\sqrt{2}$ C) 6 D) 7 E) $4\sqrt{3}$

11.



- A) 13 B) 15 C) 17 D) 20 E) 25

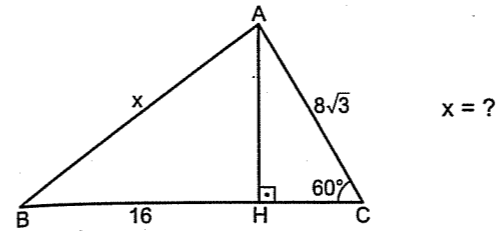
12.



- A) 6 B) $4\sqrt{3}$ C) 7 D) $2\sqrt{13}$ E) 8

7-E 8-A 9-C 10-D 11-A 12-C

1.

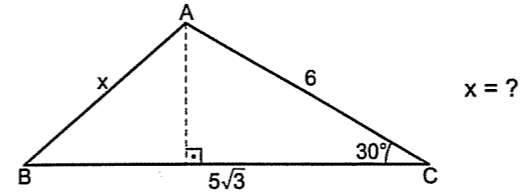


- A) 17 B) 18 C) 20 D) 25 E) 30

Aklınızda olsun.

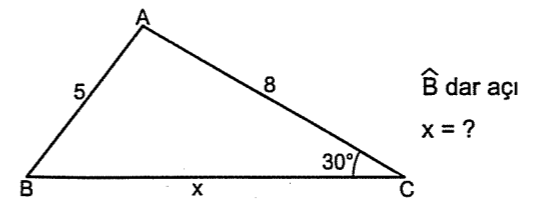
Üçgende 30° , 60° , 45° gibi özel açılar varsa büyük bir olasılıkla bu açının karşısından dik çizmek işinizi kolaylaştırır.

2.



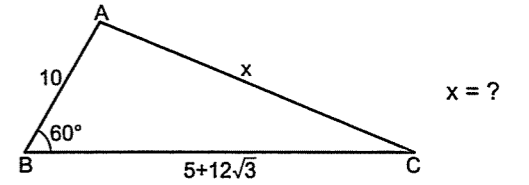
- A) 4 B) $3\sqrt{2}$ C) $\sqrt{21}$ D) $2\sqrt{6}$ E) $3\sqrt{3}$

3.



- A) 7 B) $4+\sqrt{3}$ C) $4+3\sqrt{3}$ D) $3+3\sqrt{3}$ E) $3+4\sqrt{3}$

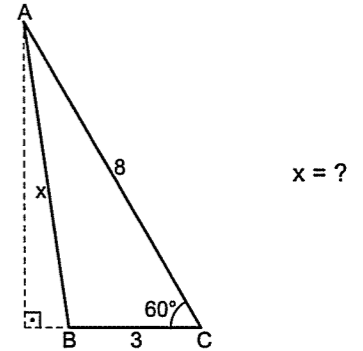
4.



- A) 13 B) $13\sqrt{3}$ C) $13\sqrt{2}$ D) 15 E) $17\sqrt{3}$

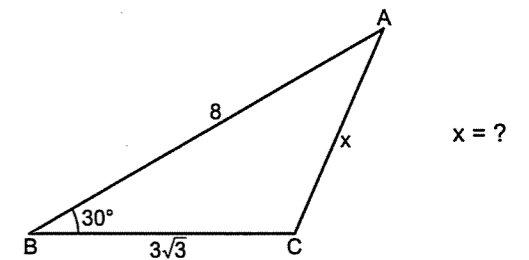
Geniş açılı üçgende yüksekliği dışardan çizmek bazen çözümü hızlandırır.

5.



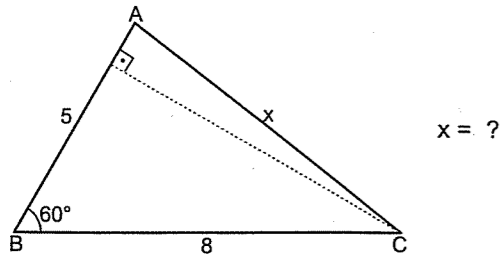
- A) 6 B) $4\sqrt{3}$ C) 7 D) $2\sqrt{13}$ E) 8

6.



- A) 4 B) $3\sqrt{2}$ C) $\sqrt{19}$ D) $\sqrt{21}$ E) $2\sqrt{6}$

7.



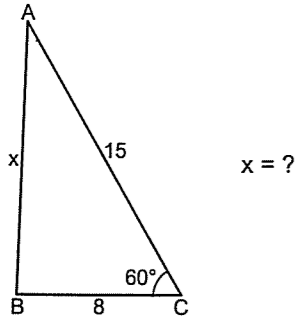
$x = ?$



30°, 60°'nin karşısından dik çizeceğiniz zaman kararsız kalırsanız, çift sayıları hipotenüs olacak şekilde çizmek daha mantıklı bence. ☺ Meselâ üstteki soruyu daha kolay çözmek için çift sayıyı hipotenüs yapacak şekilde dik çizin. Yani \hat{C} dan dik çizin.

- A) $4\sqrt{3}$ B) 7 C) $2\sqrt{13}$ D) $3\sqrt{6}$ E) $\sqrt{4}$

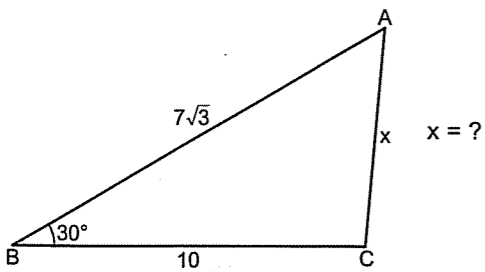
8.



$x = ?$

- A) 13 B) 12 C) 11 D) 10 E) 9

9.



$x = ?$

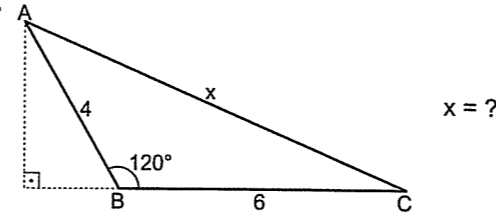
- A) $\sqrt{31}$ B) $4\sqrt{2}$ C) 6 D) $\sqrt{37}$ E) $\sqrt{39}$

Canlar! Şu önemli şeyi tekrar diyeyim.

120°, 135°, 150°'lik geniş açısı olan üçgenlerde üçgenin kenar uzunluklarından birini sorarlarsa şunu yapın.

Kenarlardan birini uzatıp yükseklik çizin. Hangi yüksekliği çizeceğiniz konusunda kararsız kaldığınızda çift olan uzunluğu hipotenüs olacak şekilde çizin. Sıkıntı çıkmaz. Ama ikisi de çift ise ne alâ. Hangisini çizerseniz çizin farketmez. İşinizi ikisi de görür. ☺

10.

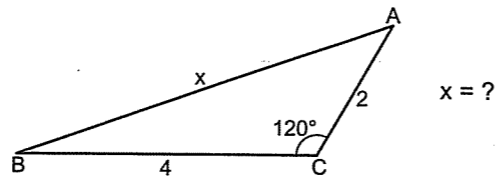


$x = ?$

Geniş açılı üçgenlerde dışarıdan dik çiziorduk. Gerisi bildiğiniz Pisagor olayı.

- A) $2\sqrt{13}$ B) $3\sqrt{6}$ C) $2\sqrt{17}$ D) $6\sqrt{2}$ E) $2\sqrt{19}$

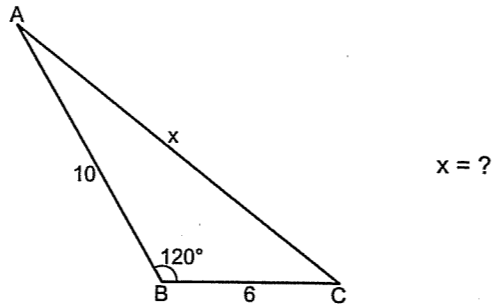
11.



$x = ?$

- A) $3\sqrt{2}$ B) 5 C) $2\sqrt{7}$ D) $4\sqrt{2}$ E) 6

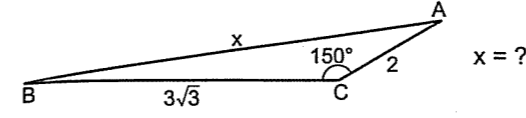
12.



$x = ?$

- A) 14 B) 13 C) 12 D) 15 E) 17

1.

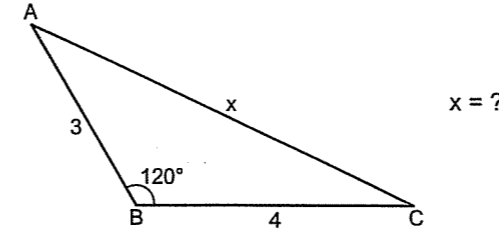


$x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

Meselâ bu soruda dik \hat{A} 'dan inince çözüm çok sinir. C'den inince daha şık. ☺

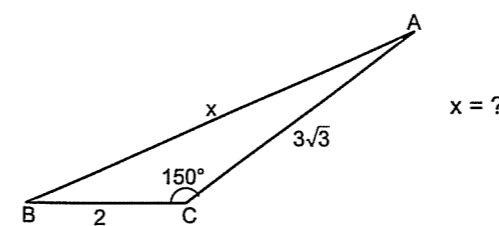
2.



$x = ?$

- A) 5 B) $3\sqrt{3}$ C) 6 D) $\sqrt{37}$ E) $\sqrt{39}$

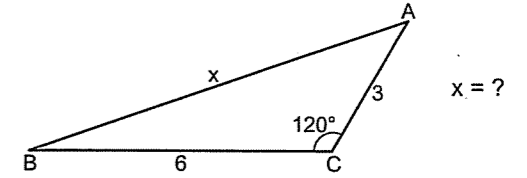
3.



$x = ?$

- A) 6 B) 7 C) 8 D) 9 E) 10

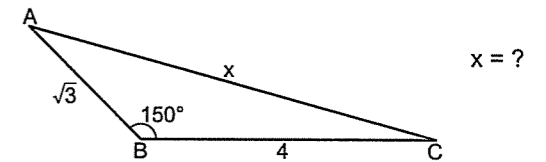
4.



$x = ?$

- A) $2\sqrt{13}$ B) $3\sqrt{6}$ C) $2\sqrt{17}$ D) $3\sqrt{7}$ E) 8

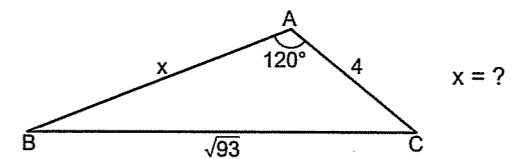
5.



$x = ?$

- A) 5 B) $3\sqrt{3}$ C) $2\sqrt{7}$ D) $\sqrt{31}$ E) $\sqrt{33}$

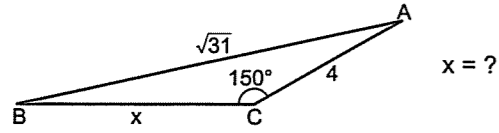
6.



$x = ?$

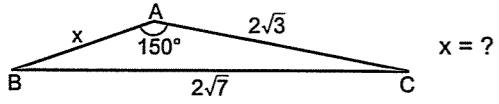
- A) 8 B) 7 C) 6 D) 5 E) 4

7.



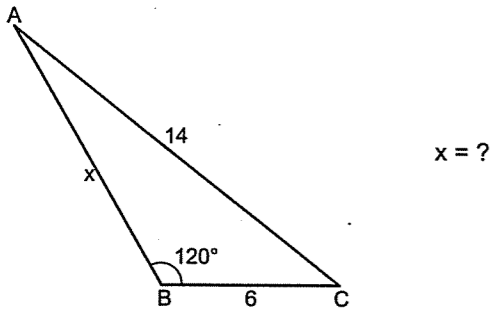
- A) $\sqrt{3}$ B) 2 C) 3 D) $2\sqrt{2}$ E) $3\sqrt{3}$

8.



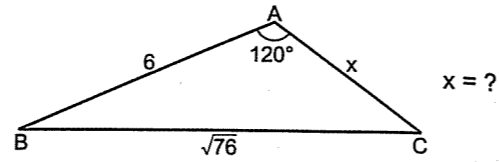
- A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $\sqrt{5}$

9.



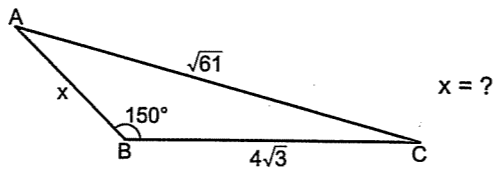
- A) 6 B) 7 C) 8 D) 9 E) 10

10.



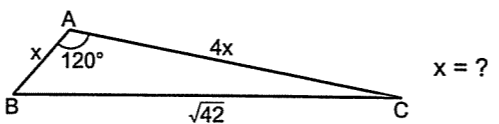
- A) $2\sqrt{3}$ B) $\sqrt{13}$ C) 4 D) $3\sqrt{2}$ E) 5

11.



- A) $2\sqrt{3}$ B) 3 C) $\sqrt{5}$ D) 2 E) 1

12.

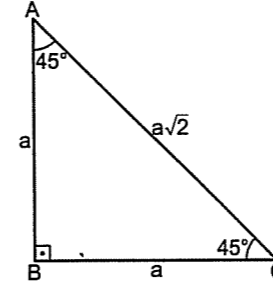


- A) $\sqrt{2}$ B) $\sqrt{3}$ C) 2 D) $\sqrt{5}$ E) $2\sqrt{2}$

● $45^\circ-45^\circ-90^\circ$ üçgeni (ikizkenar dik üçgen)

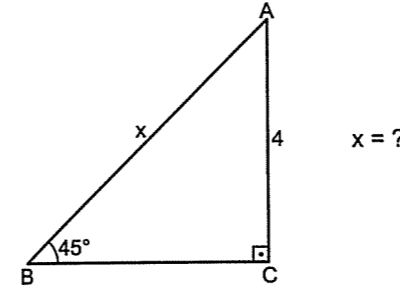
Kenar uzunluklarını çok kolay bi şekilde bulmanız gereken iki üçgenden biri bu. Ve gerçekten çok kolay. ☺

Bu üçgende ya dik kenar uzunluğu ya da hipotenüs verilir.



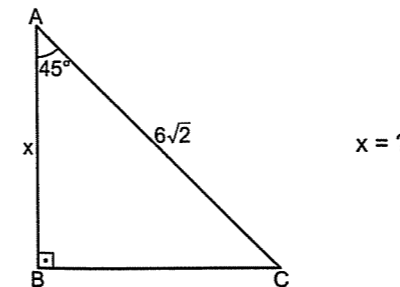
$45^\circ - 45^\circ - 90^\circ$ üçgeninde dik kenar verilip hipotenüs sorulursa şunu bilmek yetiyor. Hipotenüs bir dik kenarın $\sqrt{2}$ katına eşittir.

1.



- A) $2\sqrt{2}$ B) $2\sqrt{3}$ C) 4 D) $4\sqrt{2}$ E) $4\sqrt{3}$

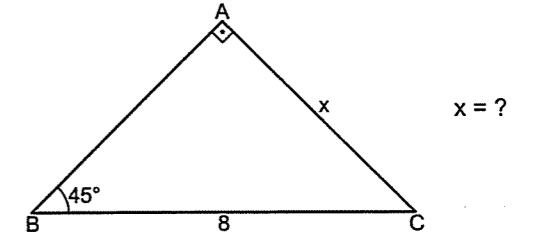
2.



Ama hipotenüs verilip de dik kenarlardan biri sorulursa şöylesi daha pırt. Dik kenarı bulmak için hipotenüsü $\sqrt{2}$ 'ye bölün tamam.

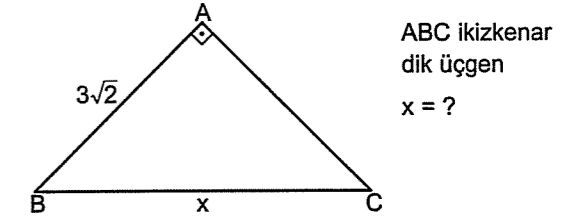
- A) 3 B) $3\sqrt{2}$ C) 6 D) $3\sqrt{3}$ E) $6\sqrt{3}$

3.



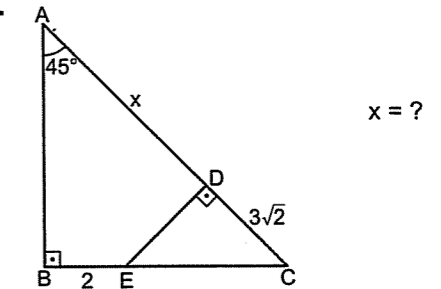
- A) 4 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) $4\sqrt{5}$ E) 6

4.

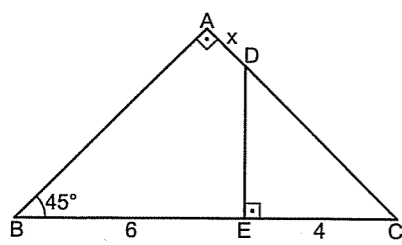


- A) 6 B) $6\sqrt{2}$ C) $6\sqrt{3}$ D) $3\sqrt{6}$ E) $3\sqrt{5}$

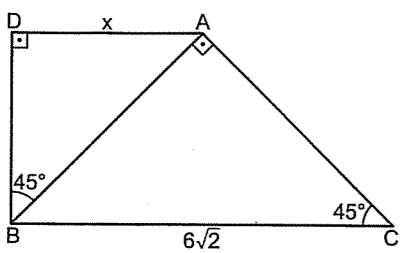
5.



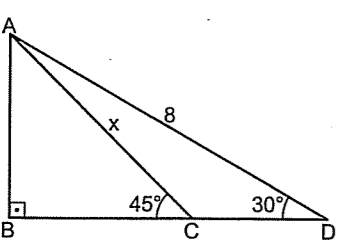
- A) $4\sqrt{2}$ B) 5 C) $5\sqrt{2}$ D) $5\sqrt{3}$ E) $6\sqrt{2}$

6.  $x = ?$

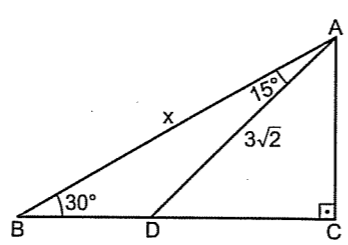
A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $\sqrt{5}$

7.  $x = ?$

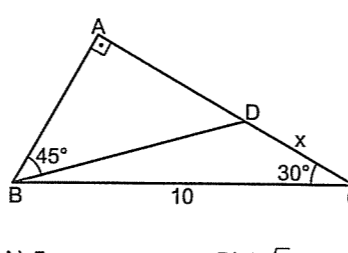
A) $5\sqrt{2}$ B) $4\sqrt{2}$ C) $3\sqrt{3}$ D) $3\sqrt{2}$ E) $2\sqrt{2}$

8.  $x = ?$

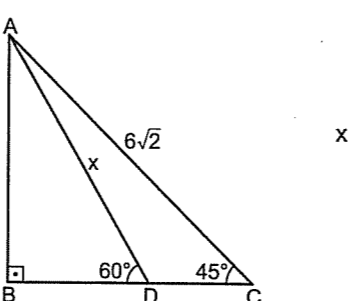
A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $3\sqrt{2}$ D) $4\sqrt{2}$ E) $5\sqrt{2}$

9.  $x = ?$

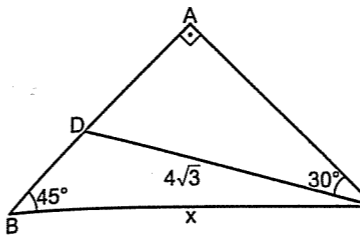
A) 4 B) $2\sqrt{6}$ C) 5 D) $2\sqrt{7}$ E) 6

10.  $x = ?$

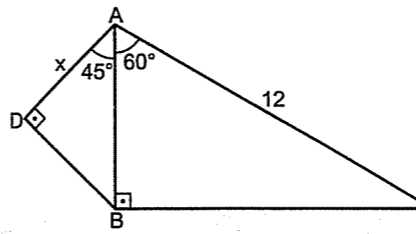
A) 5 B) $5\sqrt{3}$ C) $5\sqrt{3}+5$ D) $5-\sqrt{3}$ E) $5\sqrt{3}-5$

11.  $x = ?$

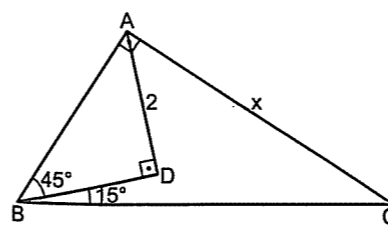
A) $4\sqrt{3}$ B) $2\sqrt{11}$ C) 6 D) $4\sqrt{2}$ E) $2\sqrt{7}$

1.  $x = ?$

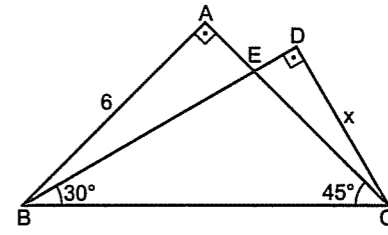
A) 7 B) $2\sqrt{13}$ C) $3\sqrt{6}$ D) 8 E) $6\sqrt{2}$

2.  $x = ?$

A) $2\sqrt{2}$ B) $3\sqrt{2}$ C) $2\sqrt{6}$ D) $3\sqrt{3}$ E) $2\sqrt{7}$

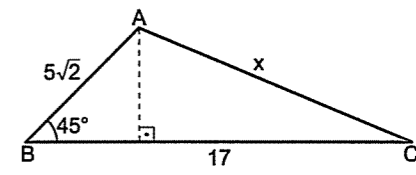
3.  $x = ?$

A) 4 B) $3\sqrt{2}$ C) $2\sqrt{6}$ D) 5 E) $3\sqrt{3}$

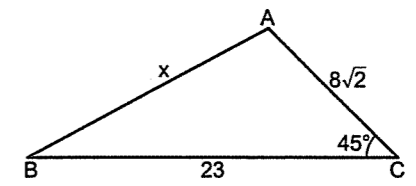
4.  $x = ?$

A) 3 B) $3\sqrt{2}$ C) $3\sqrt{6}$ D) $4\sqrt{2}$ E) $3\sqrt{3}$

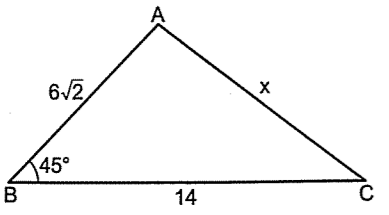
Aklınızda olsun. Üçgenin bir açısı 30° , 45° , 60° ve yükseklik filan da yoksa bu açılardan karşısına idarelik bir yükseklik çizin. Gerisinin kolay olduğunu göreceksiniz zaten. Birini ben çiziyim isterseniz.

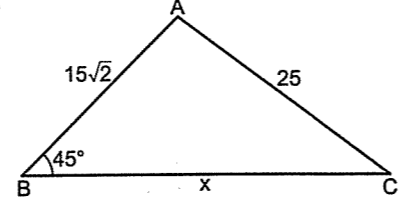
5.  $x = ?$

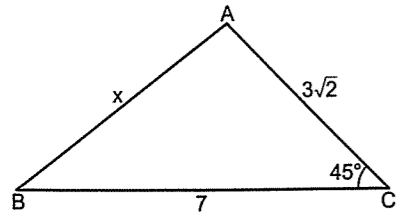
A) 10 B) 12 C) 13 D) 15 E) 16

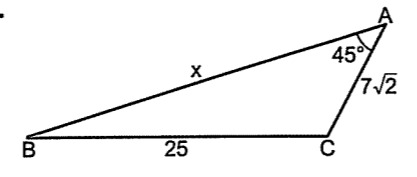
6.  $x = ?$

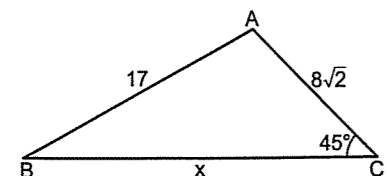
A) 10 B) 13 C) 15 D) 17 E) 20

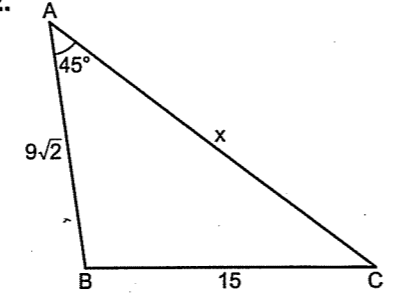
7.  $x = ?$
 A) 9 B) 10 C) 12 D) 13 E) 14

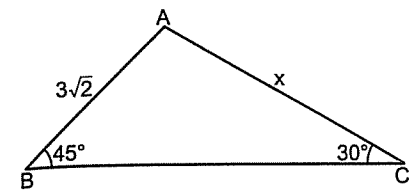
10.  $x = ?$
 A) 20 B) 24 C) 27 D) 30 E) 35

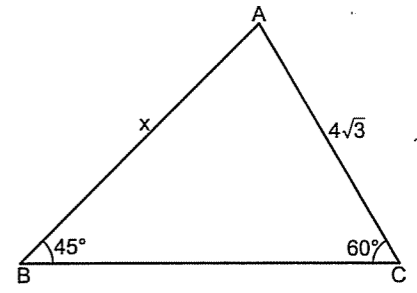
8.  $x = ?$
 A) 5 B) 6 C) $5\sqrt{2}$ D) $6\sqrt{2}$ E) 9

11.  $x = ?$
 A) 26 B) 27 C) 28 D) 31 E) 32

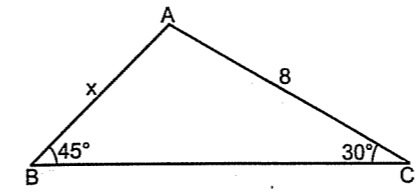
9.  $x = ?$
 A) 17 B) 18 C) 19 D) 20 E) 23

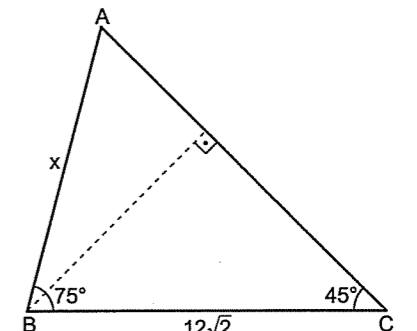
12.  $x = ?$
 A) 21 B) 23 C) 24 D) 25 E) 27

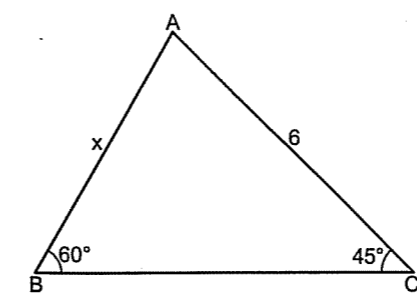
1.  $x = ?$
 A) 5 B) $3\sqrt{3}$ C) $2\sqrt{7}$ D) 6 E) 7

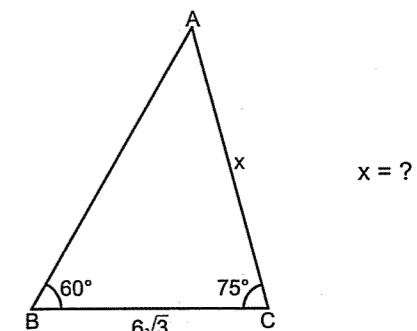
4.  $x = ?$
 A) 7 B) $3\sqrt{6}$ C) $6\sqrt{2}$ D) 8 E) 9

Ben 75°'nin karşısına dik çizim dediğimi hatırlamıyorum. ☺ Çizerseniz eğer önemli değil işinize yaramadığını anlayınca vazgeçersiniz zaten. İnat etmeye de gerek yok tabi ki. ☺

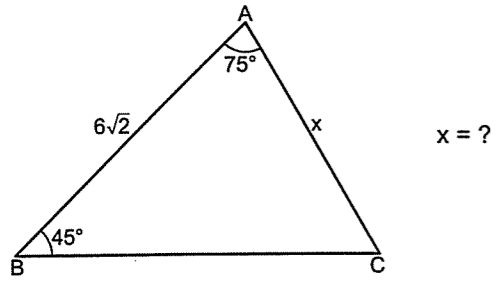
2.  $x = ?$
 A) 4 B) $4\sqrt{2}$ C) 5 D) $4\sqrt{3}$ E) 6

5.  $x = ?$
 A) 6 B) $6\sqrt{3}$ C) $7\sqrt{3}$ D) 10 E) $8\sqrt{3}$

3.  $x = ?$
 A) $2\sqrt{6}$ B) 5 C) $3\sqrt{3}$ D) $2\sqrt{7}$ E) $4\sqrt{2}$

6.  $x = ?$
 A) 8 B) $8\sqrt{2}$ C) 9 D) $9\sqrt{2}$ E) $9\sqrt{3}$

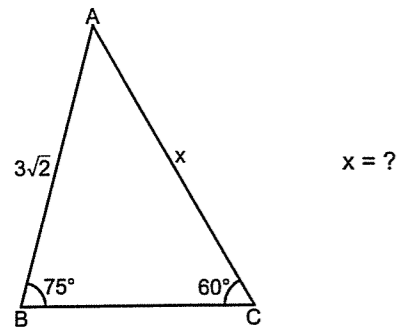
7.



$x = ?$

- A) $2\sqrt{7}$ B) $3\sqrt{3}$ C) $4\sqrt{3}$ D) 7 E) $3\sqrt{6}$

8.

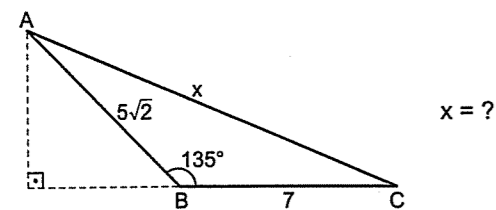


$x = ?$

- A) $3+\sqrt{3}$ B) $3+2\sqrt{3}$ C) $6+\sqrt{3}$
D) $6+2\sqrt{3}$ E) $4+2\sqrt{3}$

Geniş açılı üçgenlerde dışarıdan dik çizin. Çizin ama çizerken şuna dikkat edin. Açı 135° ise hangi kenar $\sqrt{2}$ nin katı ise o kenarı hipotenüs yapın. Ve daha sonra da büyük üçgende pisagor yazın. Gerçi alttaki soruda C den dik çizseniz de soru yine çözülür. Ama size kafayı da yedirtir. ☺

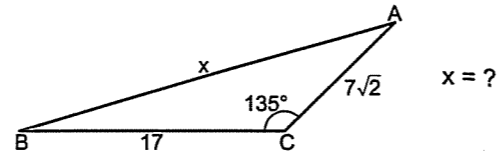
9.



$x = ?$

- A) 12 B) 13 C) 15 D) 17 E) 20

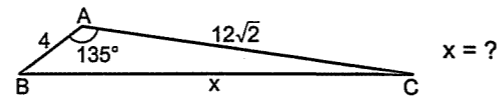
10.



$x = ?$

- A) 18 B) 20 C) 25 D) 27 E) 30

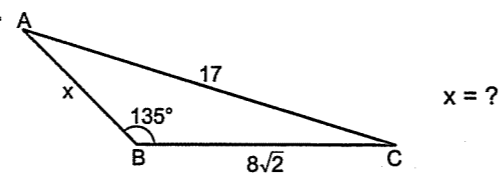
11.



$x = ?$

- A) 13 B) 15 C) 17 D) 19 E) 20

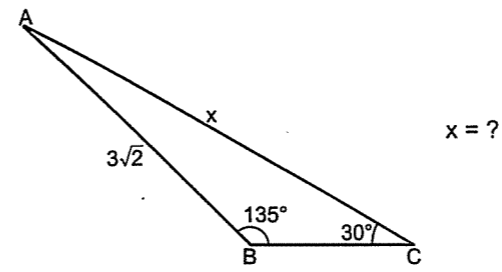
12.



$x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

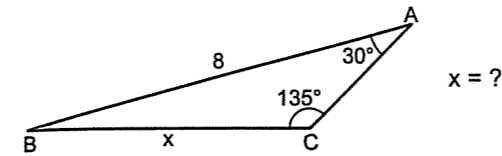
1.



$x = ?$

- A) $2\sqrt{6}$ B) 5 C) $3\sqrt{3}$ D) 6 E) 7

2.



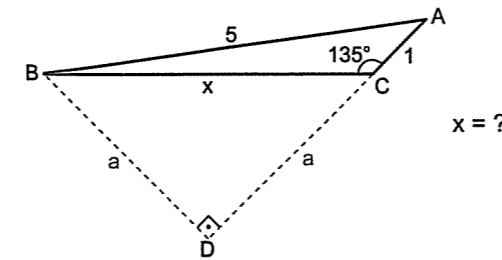
$x = ?$

- A) 4 B) $3\sqrt{2}$ C) $3\sqrt{3}$ D) $4\sqrt{2}$ E) 6

Şu iki soruda yükseklikleri çizip ikizkenar dik üçgende kenarlara a deyip öyle çözün. Zaten dikkat ettiyseniz ilk hareketten sonra genelde uzunluklarını kolaylıkla bulabileceğiniz özel üçgenler çıkıyor karşınıza.

Sizin için çözüyorum. ☺

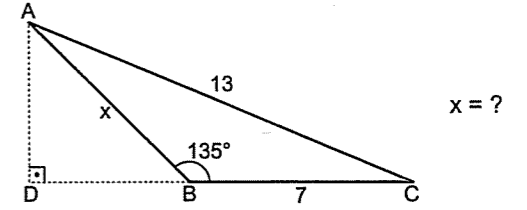
3.



$x = ?$

- A) $2\sqrt{3}$ B) $3\sqrt{2}$ C) 4 D) 3 E) $2\sqrt{2}$

4.

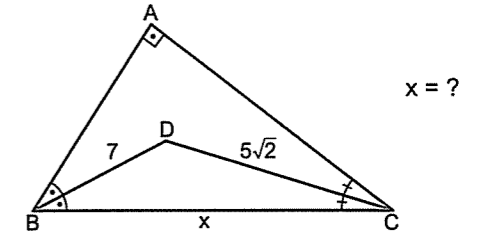


$x = ?$

- A) 4 B) $4\sqrt{2}$ C) 5 D) $5\sqrt{2}$ E) 6

Şu iki soruda önce D açısını bulmanız gerek. Gerisi bildiğiniz gibi. ☺

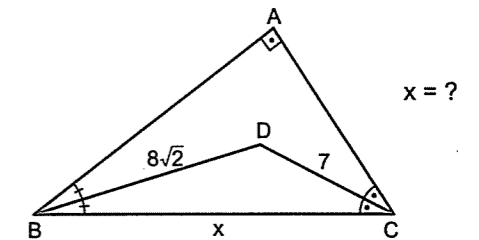
5.



$x = ?$

- A) 17 B) 15 C) 13 D) 12 E) 10

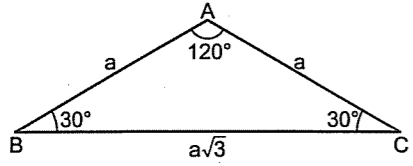
6.



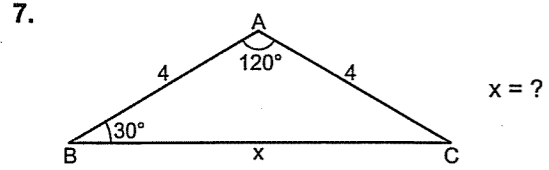
$x = ?$

- A) 17 B) 16 C) 15 D) 13 E) 10

● 30°-30°-120° üçgeni

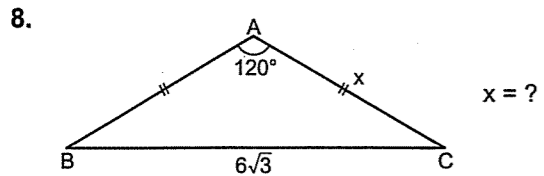


Çok sık olmasa da baya kullanacağınız bir üçgen de bu. Buradaki olay şu: 30°'nin karşısındaki kenar verildiğinde 120°'nin karşısındaki kenar, 30°'nin karşısındaki kenarın $\sqrt{3}$ katına eşittir.



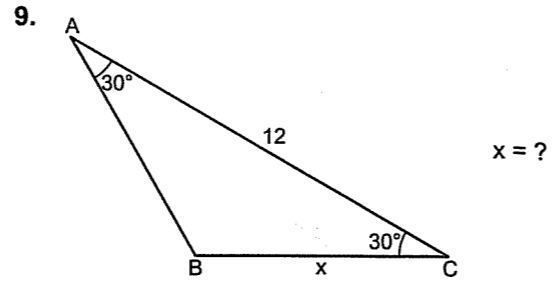
- A) 8 B) 7 C) 6 D) $4\sqrt{2}$ E) $4\sqrt{3}$

120°'nin karşısındaki kenarı verirlerse eşit kenarları bulmak için 120° nin karşısındaki kenarı $\sqrt{3}$ 'e bölün.

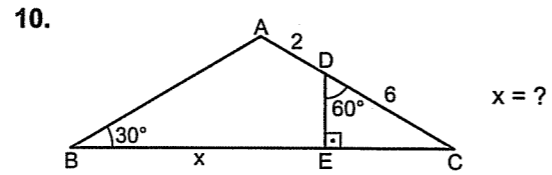


- A) $6\sqrt{2}$ B) $3\sqrt{3}$ C) 6 D) 12 E) $4\sqrt{3}$

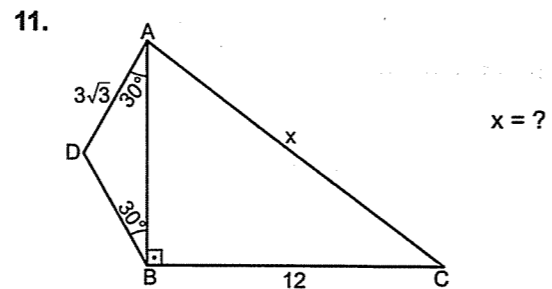
1-D 2-D 3-B 4-D 5-C



- A) $3\sqrt{2}$ B) $3\sqrt{3}$ C) $4\sqrt{2}$ D) $4\sqrt{3}$ E) 7



- A) $5\sqrt{3}$ B) $6\sqrt{2}$ C) $4\sqrt{3}$ D) 6 E) $3\sqrt{3}$



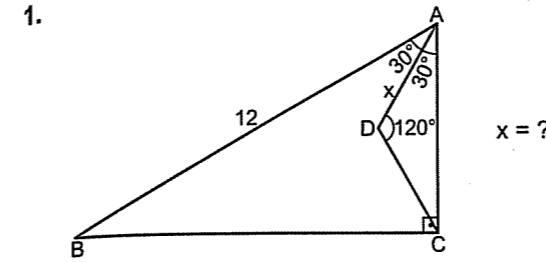
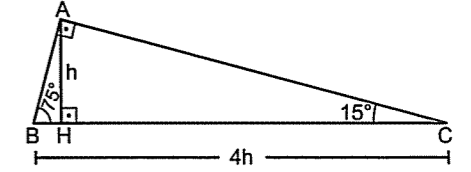
- A) 13 B) 14 C) 15 D) 16 E) 17

6-A 7-E 8-C 9-D 10-A 11-C

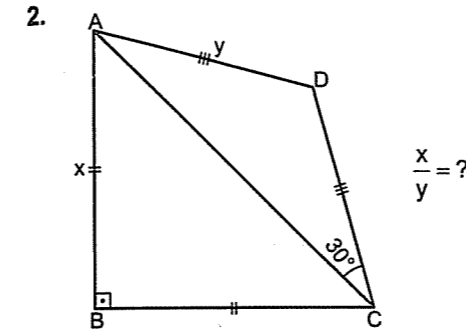
● 15°-75°-90° üçgeni

Bu üçgende bilmeniz gereken iki şey var. Önünüze en fazla gelecek olanı şu:

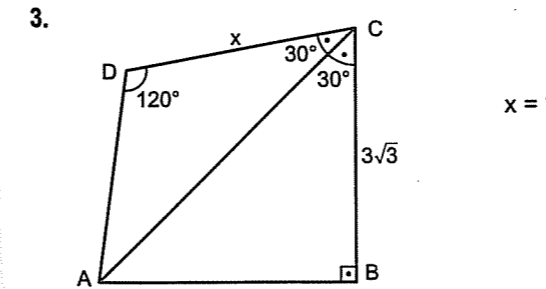
15° - 75° - 90° üçgeninde 90° den hipotenüse inilen dik hipotenüsün 4'te birine eşittir.



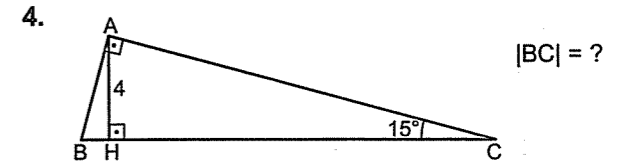
- A) 4 B) $3\sqrt{2}$ C) 3 D) $2\sqrt{3}$ E) $\sqrt{3}$



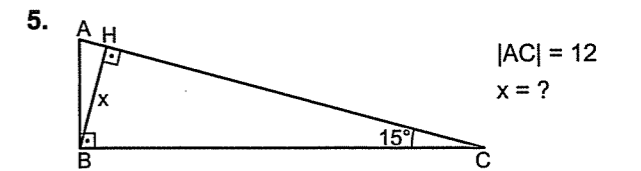
- A) 2 B) $\sqrt{3}$ C) $\sqrt{6}$ D) $\frac{\sqrt{3}}{2}$ E) $\frac{\sqrt{6}}{2}$



- A) 3 B) $2\sqrt{3}$ C) $\sqrt{13}$ D) $3\sqrt{2}$ E) $2\sqrt{5}$

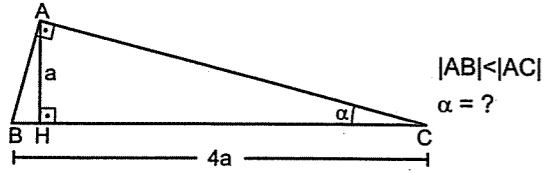


- A) 1 B) 4 C) 12 D) 16 E) 20



- A) 1 B) 3 C) 4 D) 6 E) 8

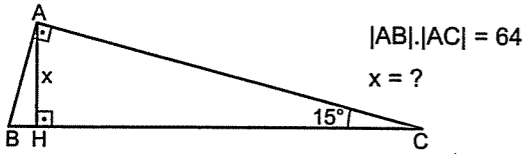
6.



- A) 15 B) 22,5 C) 30 D) 45 E) 75

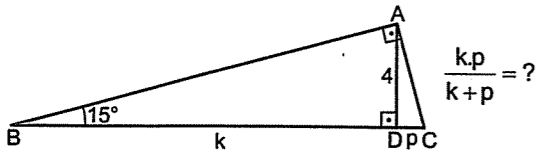
Öklit bağıntılarını unutmadınız değil mi?

7.



- A) 2 B) 3 C) 4 D) 6 E) 8

8.

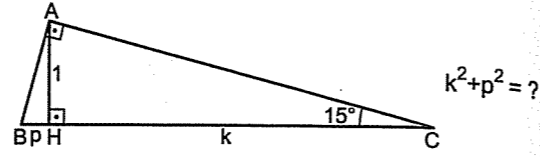


- A) 1 B) 2 C) 3 D) 4 E) 5

1-D 2-E 3-B 4-D 5-B

9.

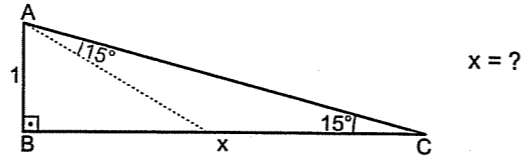
Bu soruda parantez kareyi açma olayını da bilmek lazım. $(k + p)^2 = k^2 + p^2 + 2kp$ olduğunu yani.



- A) 16 B) 15 C) 14 D) 12 E) 13

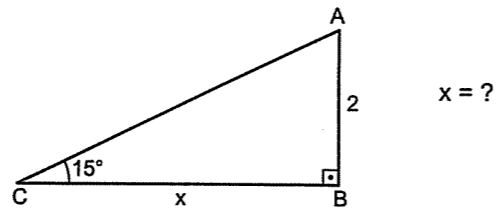
15° - 75° - 90° üçgeniyle ilgili bilmeniz gereken diğer husus, yüksekliğin veya hipotenüsün verilmediği sorulardaki şu husus. Yol gösterdim yine. ☺

10.



- A) $\sqrt{3}$ B) $1+\sqrt{3}$ C) $1+\sqrt{2}$ D) $2+\sqrt{3}$ E) $2+\sqrt{2}$

11.



- A) $2+\sqrt{3}$ B) $3+\sqrt{3}$ C) $3+2\sqrt{3}$
D) $4+\sqrt{3}$ E) $4+2\sqrt{3}$

6-A 7-C 8-A 9-C 10-D 11-E

4.

Bölüm

İKİZKENAR ÜÇGEN

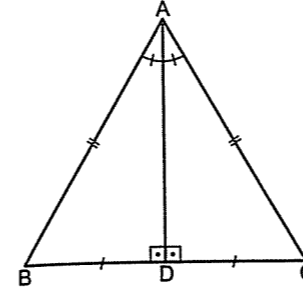
Zor bir iş, zamanında yapmamız gerekir de
yapmadığımız kolay şeylerin birikmesiyle oluşur. .
Henry Ford

Plansız çalışan kimse, ülke ülke dolaşip hazine
arayan bir insana benzer.
Descartes

İKİZKENAR ÜÇGEN

İKİZKENAR ÜÇGEN

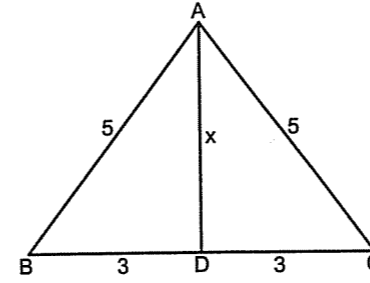
Acayip önemli. Ama rahatlıkla halledebileceğiniz bir
üçgen bu üçgen ☺



$\hat{A} \rightarrow$ Tepe açısı
 $|BC| \rightarrow$ Taban

Hatırladınız mı? İkizkenar üçgende tepe açısından tabana inilen yükseklik hem açıortaydır hem de kenarortay. Buna daha önceden Y.A.K. demiştik.

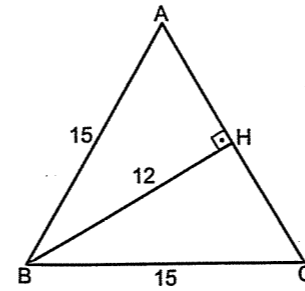
1.



$x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

2.

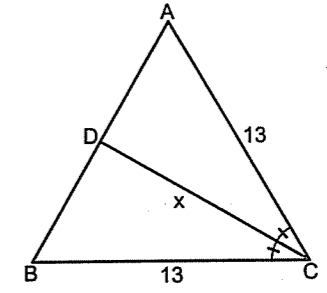


$|AC| = ?$

A) 12 B) 14 C) 16 D) 17 E) 18

1. Antrenman

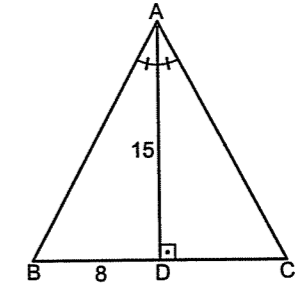
3.



$|AB| = 10$
 $x = ?$

A) 12 B) 10 C) 9 D) 8 E) 7

4.

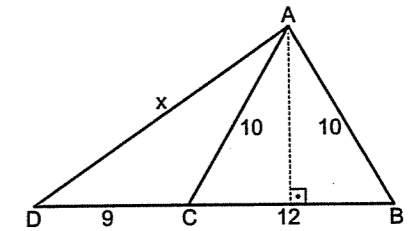


$\text{Çevre}(ABC) = ?$

A) 54 B) 50 C) 48 D) 40 E) 36

Şu söyleyeceğim şey acayip derecede önemli.
İkizkenar üçgende uzunluk sorularında tepeden
inilen yükseklik baya bi işe yarıyor. Bir sürü soruyu
bu şekilde çözüyoruz. Göreceksiniz zaten. ☺

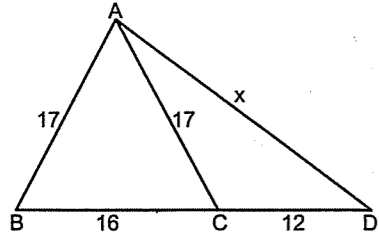
5.



$x = ?$

A) 12 B) 13 C) 15 D) 16 E) 17

6.

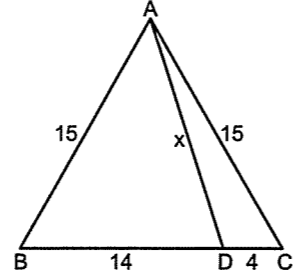


$x = ?$

- A) 20 B) 24 C) 25 D) 28 E) 30

İkizkenar üçgen bazen en dıştaki üçgen olur. Ama çözüm yolu yine aynı. İkizkenar üçgenin yüksekliğini çizin ve pisagora devam. ☺

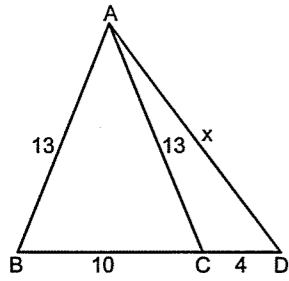
9.



$x = ?$

- A) 10 B) 11 C) 12 D) 13 E) 14

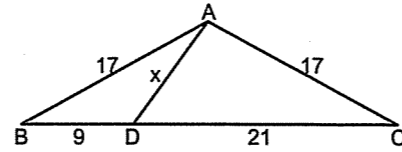
7.



$x = ?$

- A) 14 B) 15 C) 16 D) 17 E) 18

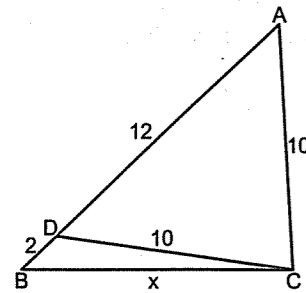
10.



$x = ?$

- A) 10 B) 9 C) 8 D) 6 E) 5

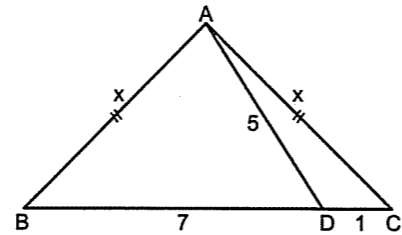
8.



$x = ?$

- A) $6\sqrt{3}$ B) 11 C) $8\sqrt{2}$ D) 12 E) 13

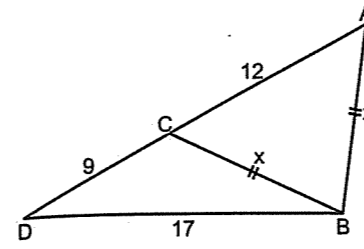
11.



$x = ?$

- A) 3 B) $3\sqrt{2}$ C) 4 D) $4\sqrt{2}$ E) 5

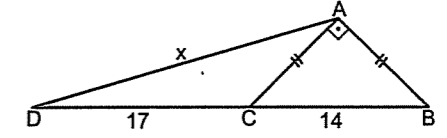
1.



$x = ?$

- A) $6\sqrt{2}$ B) 10 C) $8\sqrt{2}$ D) 15 E) 16

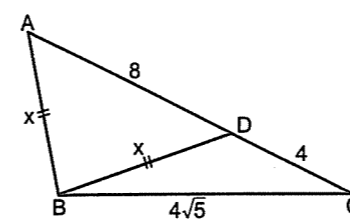
4.



$x = ?$

- A) 10 B) 13 C) 15 D) 20 E) 25

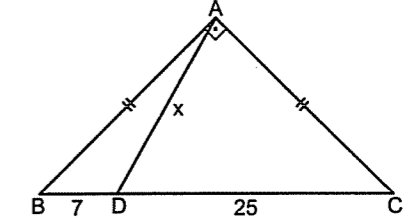
2.



$x = ?$

- A) 5 B) $4\sqrt{2}$ C) 6 D) 7 E) 8

5.

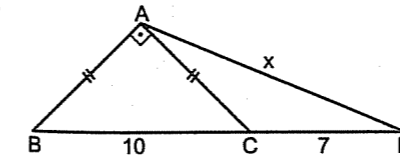


$x = ?$

- A) 10 B) 12 C) 13 D) 15 E) 18

Üçgen hem ikizkenar, hem de dik olunca işiniz daha kolay. Bence ☺

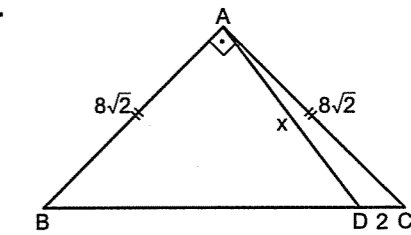
3.



$x = ?$

- A) 10 B) 12 C) 13 D) 15 E) 18

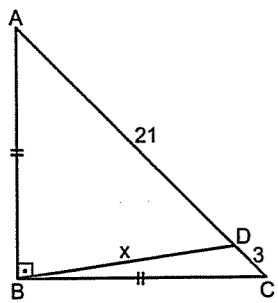
6.

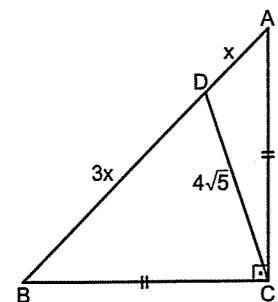


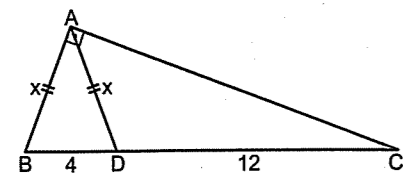
$[BA] \perp [AC]$

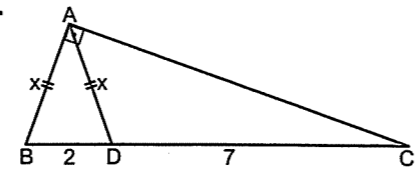
$x = ?$

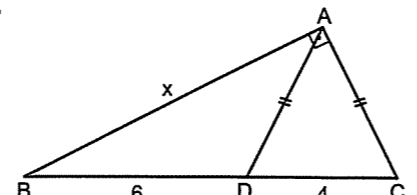
- A) 5 B) 8 C) 10 D) 13 E) 15

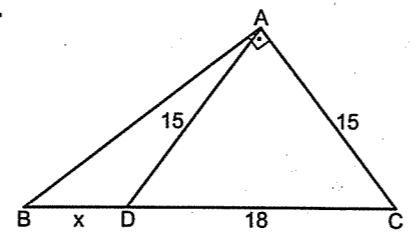
7.  $x = ?$
 A) 10 B) 13 C) 15 D) 17 E) 20

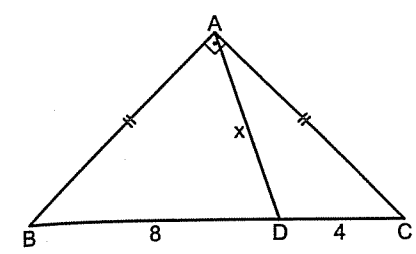
8.  $x = ?$
 A) 2 B) 3 C) 4 D) 5 E) 6

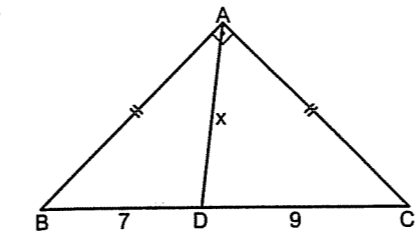
9. Bu soruda dik indikten sonra Öklit muhabetine girin. Gerisi cebirsel işlem. ☺
 $x = ?$
 A) 3 B) 4 C) 5 D) $4\sqrt{2}$ E) $4\sqrt{3}$

10.  $x = ?$
 A) 2 B) 3 C) 4 D) 5 E) 6

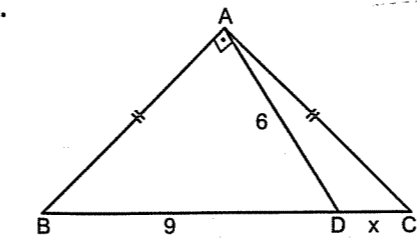
11.  $x = ?$
 A) 7 B) 8 C) $4\sqrt{5}$ D) 9 E) 10

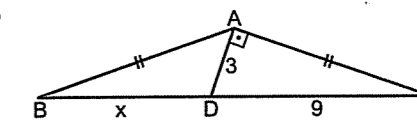
12.  $x = ?$
 A) 3 B) 5 C) 6 D) 7 E) 8

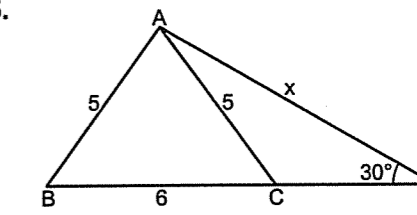
1.  $x = ?$
 A) $\sqrt{10}$ B) 4 C) $2\sqrt{5}$ D) 6 E) $2\sqrt{10}$

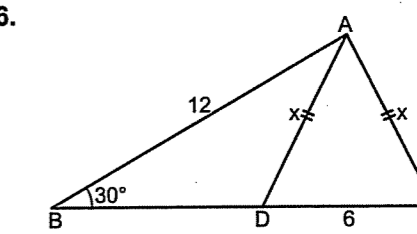
2.  $x = ?$
 A) $\sqrt{65}$ B) 8 C) $\sqrt{61}$ D) $\sqrt{58}$ E) 7

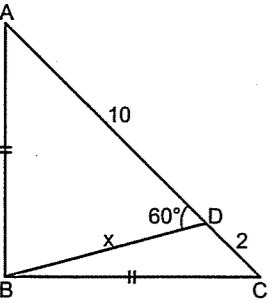
İkizkenarın yüksekliğini çizin ilk önce. Ama bu soruda da öklit var. Yalnız $h^2 = p.k$ değil. Diğerleri ☺

3.  $x = ?$
 A) $\frac{1}{2}$ B) 1 C) $\frac{3}{2}$ D) 2 E) $\frac{5}{2}$

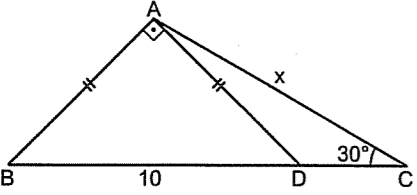
4.  $x = ?$
 A) 8 B) 7 C) 6 D) 5 E) 4

5.  $x = ?$
 A) 4 B) $4\sqrt{2}$ C) 6 D) $4\sqrt{3}$ E) 8

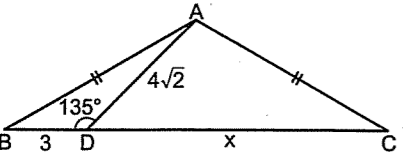
6.  $x = ?$
 A) 5 B) 6 C) $3\sqrt{5}$ D) 7 E) $3\sqrt{6}$

7.  $x = ?$

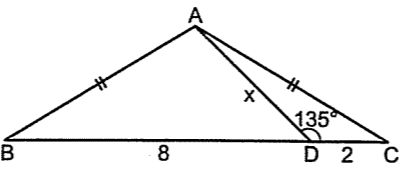
A) 8 B) $\sqrt{58}$ C) 7 D) $4\sqrt{3}$ E) $3\sqrt{5}$

8.  $x = ?$

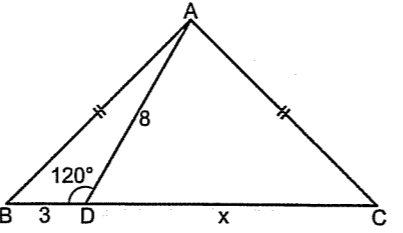
A) 6 B) 7 C) 8 D) 9 E) 10

9.  $x = ?$

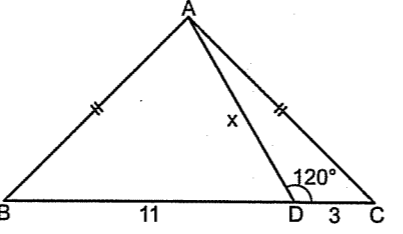
A) 11 B) 10 C) 9 D) 8 E) 7

10.  $x = ?$

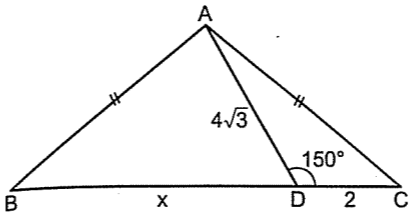
A) $2\sqrt{2}$ B) 3 C) 4 D) $3\sqrt{2}$ E) $4\sqrt{2}$

11.  $x = ?$

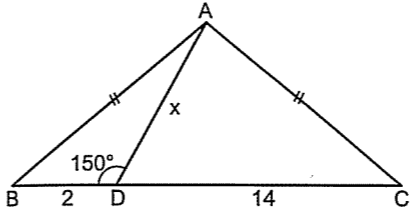
A) 8 B) 9 C) 10 D) 11 E) 12

12.  $x = ?$

A) $3\sqrt{5}$ B) 8 C) $4\sqrt{5}$ D) $4\sqrt{6}$ E) 10

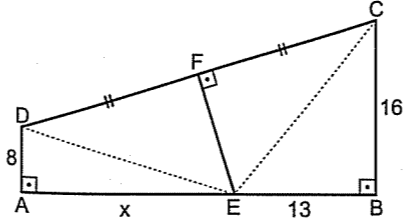
1.  $x = ?$

A) 15 B) 14 C) 13 D) 12 E) 10

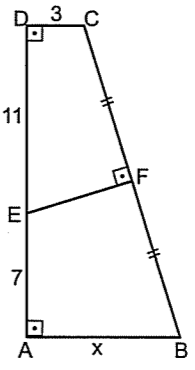
2.  $x = ?$

A) 5 B) 6 C) $4\sqrt{3}$ D) $5\sqrt{3}$ E) 10

İkizkenar üçgeni bazen sizin oluşturmanız lâzım. Birini ben göstereyim. Ama bundan sonrası sizin.

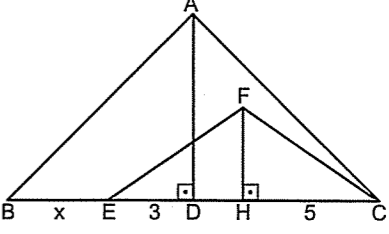
3.  $x = ?$

A) 20 B) 19 C) 18 D) 17 E) 16

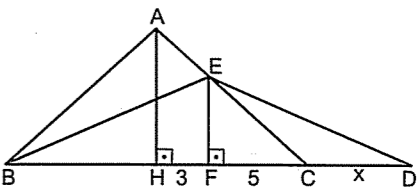
4.  $x = ?$

A) 6 B) 7 C) 8 D) 9 E) 10

Şekil karışıkmiş gibi gelebilir. Korkmayın. Her bir ikizkenar üçgeni ayrı ayrı düşünün. Gerisi kolay. ☺

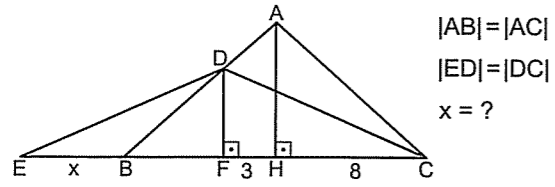
5.  $|AB| = |AC|$
 $|EF| = |FC|$
 $x = ?$

A) 1 B) 2 C) 3 D) 4 E) 5

6.  $|AB| = |AC|$
 $|BE| = |ED|$
 $x = ?$

A) 3 B) 4 C) 5 D) 6 E) 7

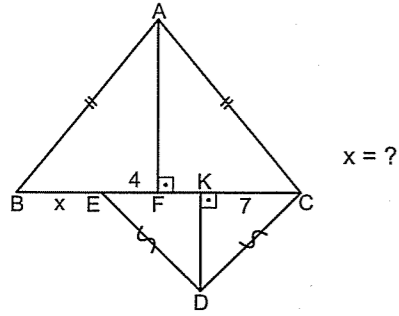
7.



$|AB|=|AC|$
 $|ED|=|DC|$
 $x=?$

- A) 8 B) 7 C) 6 D) 5 E) 4

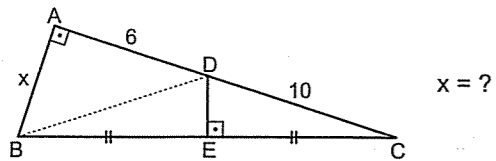
8.



$x=?$

- A) 6 B) 5 C) 4 D) 3 E) 2

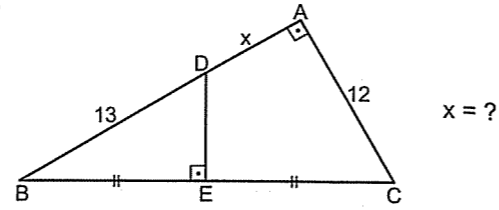
9.



$x=?$

- A) 5 B) 6 C) 7 D) 8 E) 10

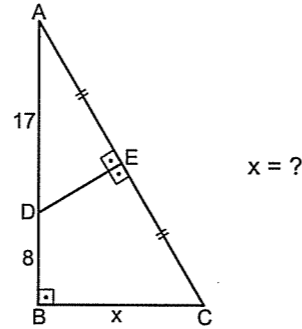
10.



$x=?$

- A) 5 B) 6 C) 8 D) 10 E) 13

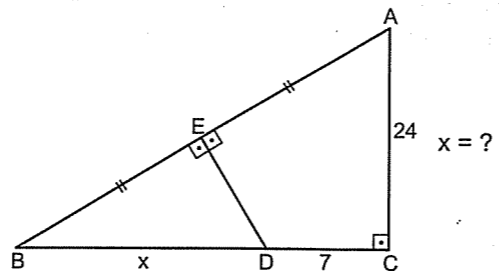
11.



$x=?$

- A) 10 B) 12 C) 13 D) 15 E) 17

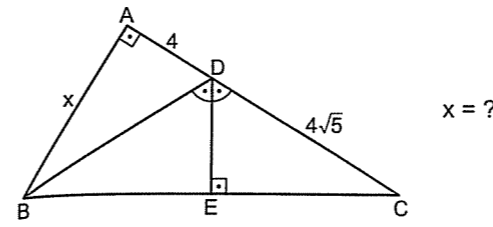
12.



$x=?$

- A) 30 B) 25 C) 20 D) 15 E) 13

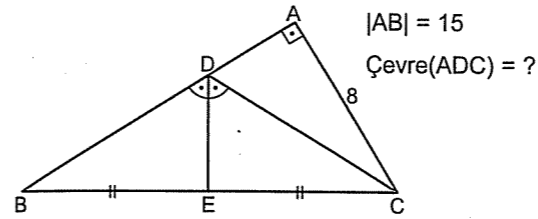
1.



$x=?$

- A) 5 B) 6 C) 7 D) 8 E) 9

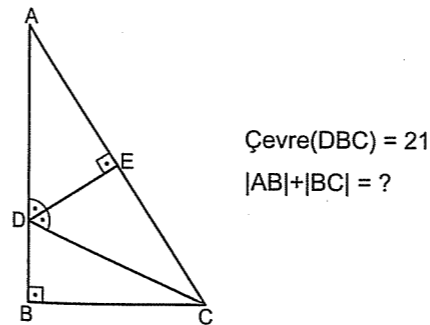
2.



$|AB|=15$
 $\text{Çevre}(ADC)=?$

- A) 24 B) 23 C) 20 D) 17 E) 15

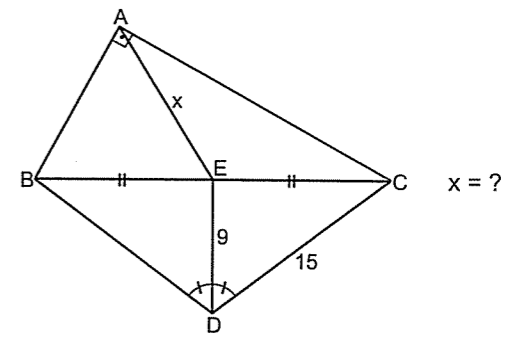
3.



$\text{Çevre}(DBC)=21$
 $|AB|+|BC|=?$

- A) 15 B) 16 C) 18 D) 20 E) 21

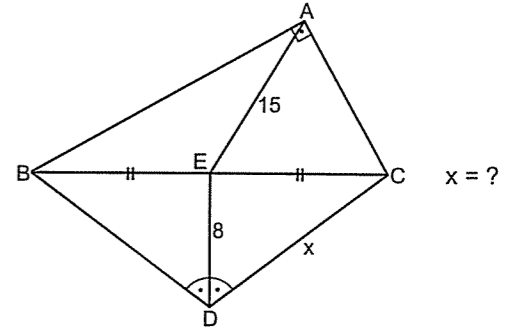
4.



$x=?$

- A) 9 B) 12 C) 13 D) 15 E) 17

5.

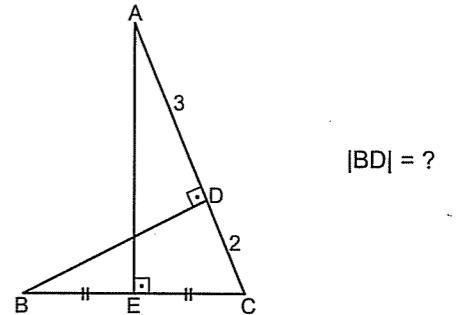


$x=?$

- A) 10 B) 12 C) 13 D) 15 E) 17

Bundan sonraki üç soruda ikizkenar üçgeni sizin oluşturmanız lazım.

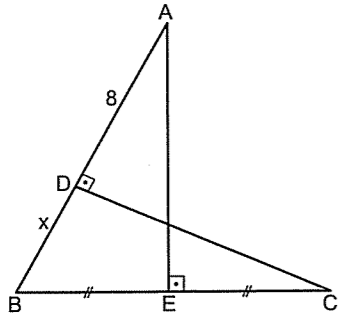
6.



$|BD|=?$

- A) 3 B) 4 C) 5 D) 6 E) 7

7.

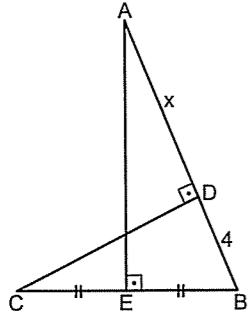


$$|DC| = 15$$

$$x = ?$$

- A) 5 B) 6 C) 7 D) 8 E) 9

8.



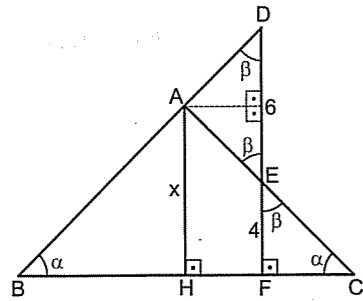
$$|DC| = 8$$

$$x = ?$$

- A) 9 B) 8 C) 7 D) 6 E) 5

Şu dört soruda aynı şeyi yapmanız lazım. İlkini göstereyim.

9.



$$|AB| = |AC|$$

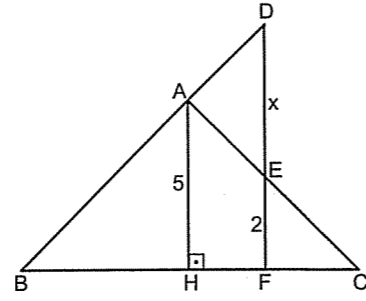
$$x = ?$$

İkizkenar üçgenin DAE üçgenini ikizkenar üçgen olarak bulun ve \hat{A} dan $|DE|$ uzunluğuna dik çizin.

- A) 5 B) 6 C) 7 D) 8 E) 9

1-D 2-B 3-E 4-B 5-E 6-B

10.

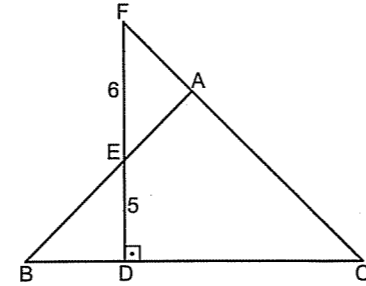


$$|AB| = |AC|$$

$$x = ?$$

- A) 5 B) 6 C) 7 D) 8 E) 10

11.

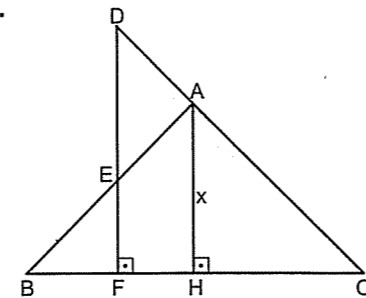


$$|AB| = |AC| = 10$$

$$|BC| = ?$$

- A) 11 B) 12 C) 14 D) 15 E) 18

12.



$$|AB| = |AC|$$

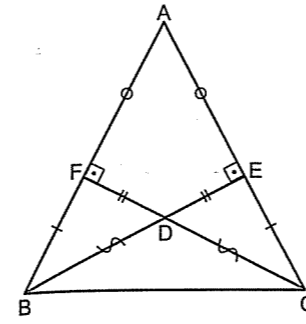
$$|EF| + |DF| = 16$$

$$x = ?$$

- A) 10 B) 9 C) 8 D) 7 E) 6

7-E 8-D 9-C 10-B 11-B 12-C

1.

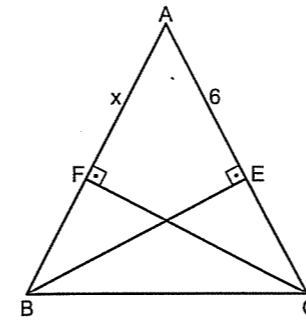


$$|AB| = |AC|$$

İkizkenar üçgende eşit kenarlara inilen yükseklikler birbirine eşittir.

Yani, $|BE| = |FC|$ dir. Ayrıca kenarlarda ayrılan parçaların üstte kalan parçaları ve altta kalan parçaları da eşittir. Şekli iyice hıfz edin. Birazdan lazım olacak da. 😊

1.

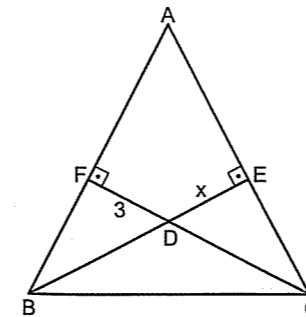


$$|AB| = |AC|$$

$$x = ?$$

- A) 5 B) 6 C) 7 D) 8 E) 9

2.

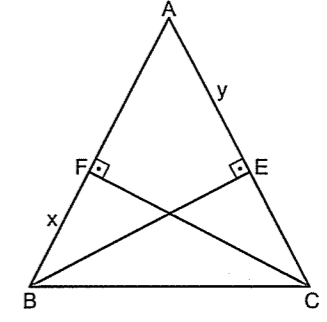


$$|AB| = |AC|$$

$$x = ?$$

- A) 1 B) 2 C) 3 D) 4 E) 5

3.



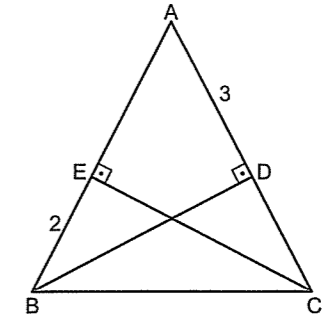
$$|AB| = |AC|$$

$$x + y = 13$$

$$|AB| = ?$$

- A) 5 B) 7 C) 9 D) 12 E) 13

4.

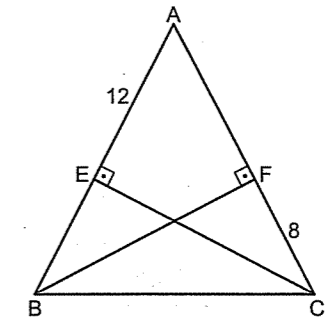


$$|AB| = |AC|$$

$$|EC| = ?$$

- A) 3 B) 4 C) 5 D) 6 E) 7

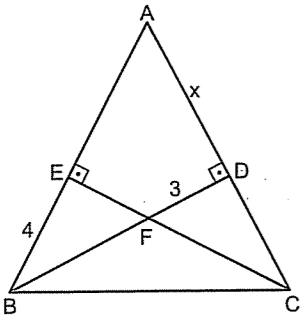
5.



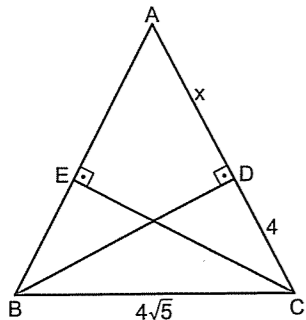
$$|AB| = |AC|$$

$$|BF| = ?$$

- A) 12 B) 13 C) 14 D) 15 E) 16

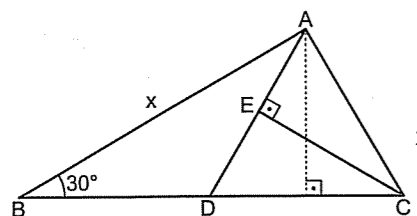
6.  $|AB| = |AC|$
 $x = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

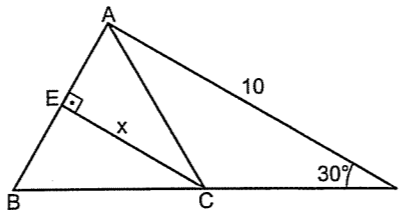
7.  $|AB| = |AC|$
 $x = ?$

A) 6 B) 7 C) 8 D) 9 E) 10

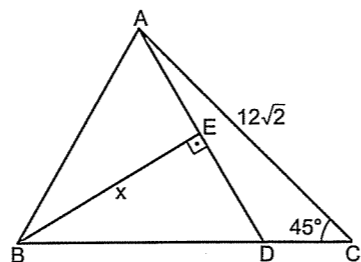
Bazı sorularda eşit olan kenarlara ait diğer yüksekliği çizmeniz lâzım. Ki soru çözülebilir.

8.  $|AD| = |DC|$
 $|EC| = 3$
 $x = ?$

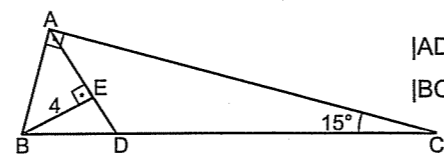
A) 4 B) $3\sqrt{2}$ C) $3\sqrt{3}$ D) 5 E) 6

9.  $|AB| = |BC|$
 $x = ?$

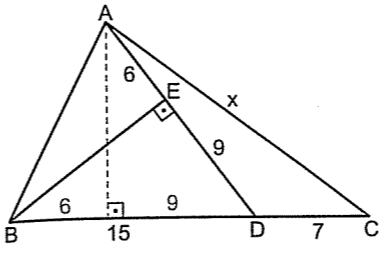
A) 5 B) 6 C) 7 D) 8 E) 9

10.  $|AD| = |BD|$
 $x = ?$

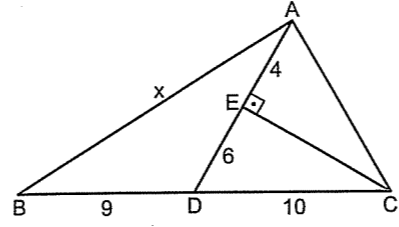
A) 6 B) $6\sqrt{2}$ C) $6\sqrt{3}$ D) 8 E) 12

11.  $|AD| = |BD|$
 $|BC| = ?$

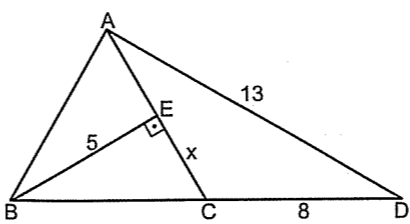
A) 8 B) 10 C) 14 D) 16 E) 20

1.  $x = ?$

A) 16 B) 17 C) 18 D) 20 E) 25

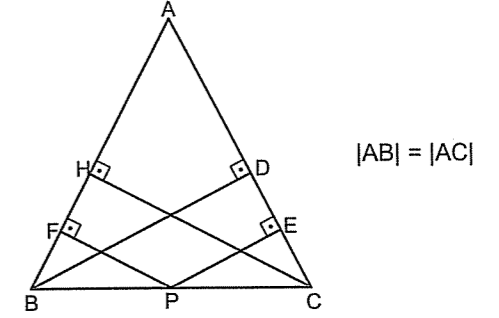
2.  $x = ?$

A) 13 B) 15 C) 17 D) 19 E) 21

3.  $|AC| = |BC|$
 $x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

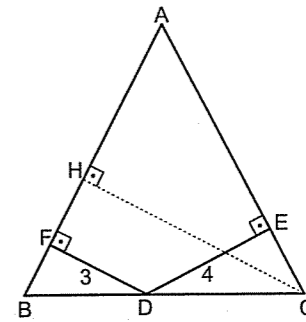
Yine ikizkenar üçgende,



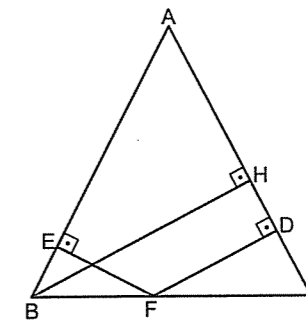
Tabanda bir nokta alıp eşit kenarlara dikler çizer-seniz bu diklerin toplamı \hat{B} ve \hat{C} den çizilen yüksekliklerden birine (İkisi eşitti zaten. ☺) eşit olur.

Mesela üstteki şekilde $|PE| + |PF| = |CH| = |BD|$ dir.

★ Aklınızda olsun. İkizkenar üçgende tabandan ikiz kenarlara dikmeler çizilmişse soru büyük ihtimalle bu özellikle ilgilidir.

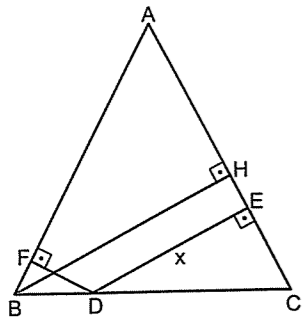
4.  $|AB| = |AC|$
 $|CH| = ?$

A) 1 B) 3 C) 4 D) 5 E) 7

5.  $|AB| = |AC|$
 $|BH| = 9$
 $|FD| = 5$
 $|EF| = ?$

A) 4 B) 5 C) 9 D) 12 E) 14

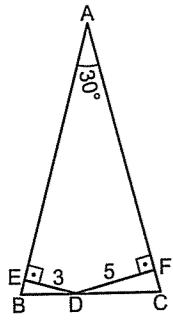
6.



$|AB| = |AC|$
 $|DE| = 3|DF|$
 $|BH| = 12$
 $x = ?$

- A) 6 B) 8 C) 9 D) 10 E) 11

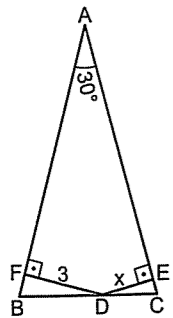
7.



$|AB| = |AC| = ?$

- A) 6 B) 10 C) 12 D) 14 E) 16

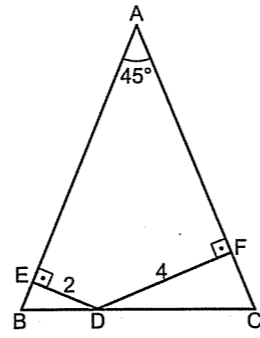
8.



$|AB| = |AC| = 10$
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

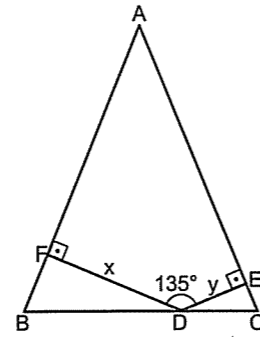
9.



$|AB| = |AC| = ?$

- A) 6 B) $6\sqrt{2}$ C) $6\sqrt{3}$ D) 12 E) $12\sqrt{2}$

10.

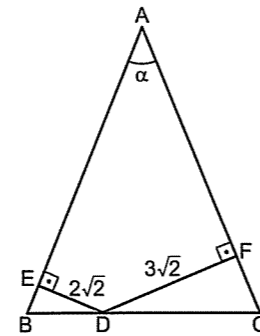


$|AB| = |AC| = 7\sqrt{2}$
 $x + y = ?$

- A) 7 B) 8 C) 10 D) 14 E) $14\sqrt{2}$

Yükseklği çizince bazen özel açılı tanıdık bir üçgene rastlayabilirsiniz. Onun için gözlerinizi dört açın. ☺

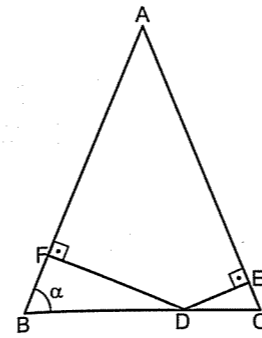
11.



$|AB| = |AC| = 10$
 $\alpha = ?$

- A) 15° B) 30° C) 45° D) 60° E) 75°

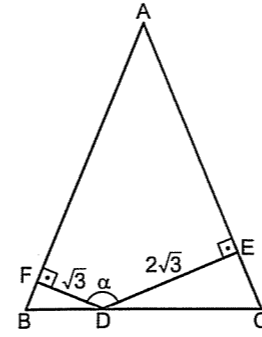
1.



$|AB| = |AC| = 12$
 $|DF| + |DE| = 6$
 $\alpha = ?$

- A) 30° B) 45° C) 60° D) 75° E) 80°

2.

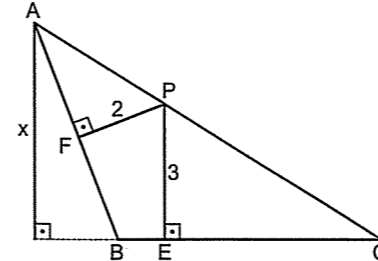


$|AB| = |AC| = 6$
 $\alpha = ?$

- A) 75° B) 90° C) 120° D) 135° E) 150°

Canlar! Üçgenin geniş açılı filan olması birşeyi değiştirmez. Özellik aynen geçerli.

3.



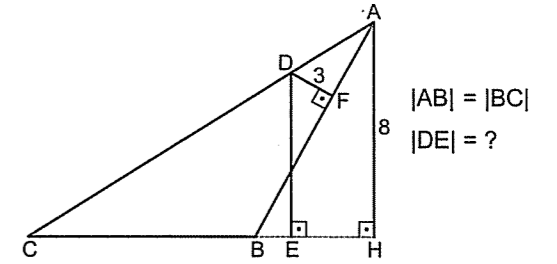
$|AB| = |BC|$



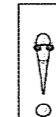
Geniş açılı ikizkenar üçgenlerde eşit kenarlara ait yükseklikler üçgenin dışından çizilir.

- A) 4 B) 5 C) 6 D) 7 E) 8

4.



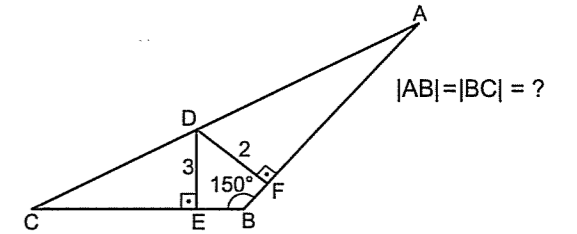
$|AB| = |BC|$
 $|DE| = ?$



$|DE|$ yüksekliği biraz kafanızı karıştırmış olabilir. $|CB|$ nin dışına inmiş. Hiç önemli değil. Yükseklik kenarın üzerine ya da dışına inebilir farketmez. Önemli olan yüksekliklerin $|AC|$ üzerindeki bir noktadan inmesidir.

- A) 7 B) 6 C) 5 D) 4 E) 3

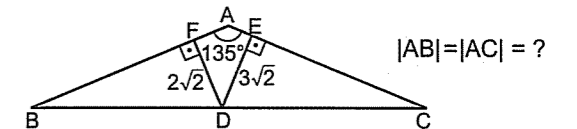
5.



$|AB| = |BC| = ?$

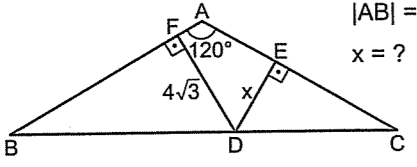
- A) 6 B) 8 C) $6\sqrt{2}$ D) 10 E) $10\sqrt{2}$

6.

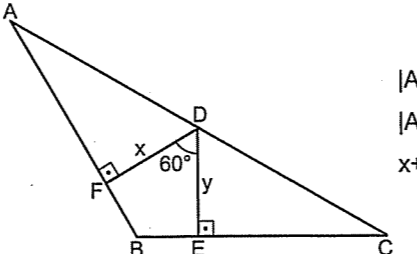


$|AB| = |AC| = ?$

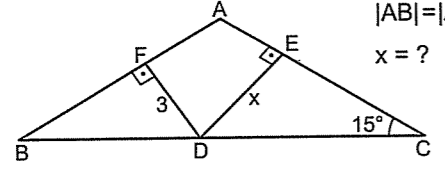
- A) 8 B) 10 C) $6\sqrt{2}$ D) $8\sqrt{2}$ E) 12

7.  $|AB| = |AC| = 12$
 $x = ?$

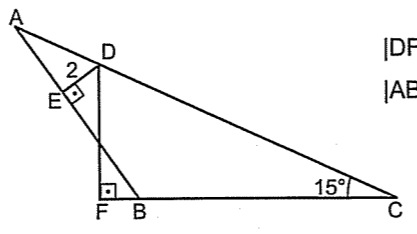
A) $2\sqrt{3}$ B) 4 C) $3\sqrt{3}$ D) 6 E) $6\sqrt{3}$

10.  $|AB| = |BC|$
 $|AC| = 12$
 $x + y = ?$

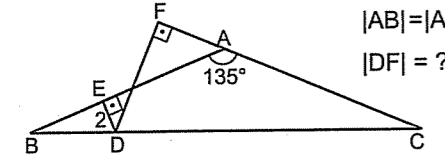
A) 3 B) 4 C) 6 D) 8 E) 10

8.  $|AB| = |AC| = 14$
 $x = ?$

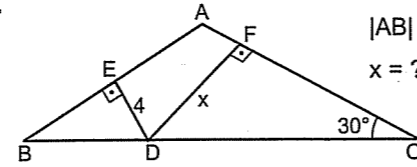
A) 4 B) 5 C) $4\sqrt{2}$ D) $4\sqrt{3}$ E) 6

11.  $|DF| = 7$
 $|AB| = |BC| = ?$

A) 10 B) 12 C) 14 D) 16 E) 18

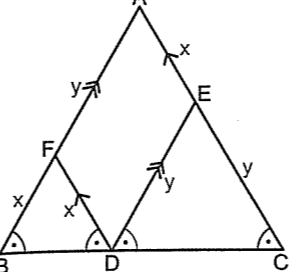
9.  $|AB| = |AC| = 8\sqrt{2}$
 $|DF| = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

12.  $|AB| = |AC| = 6\sqrt{3}$
 $x = ?$

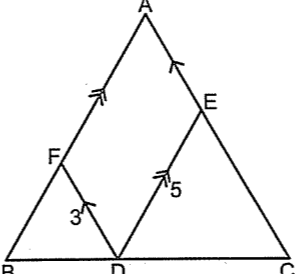
A) 4 B) 5 C) 6 D) 7 E) 8

Yine ikizkenar üçgende,

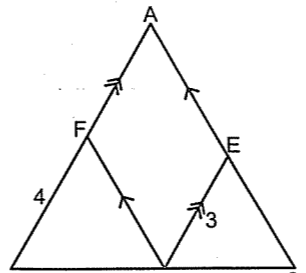
 $|AB| = |AC|$

Tabanda bir nokta alıp eşit kenarlara paraleller çizerseniz, bu paralellerin toplamı eşit kenarlardan birine eşit olur.

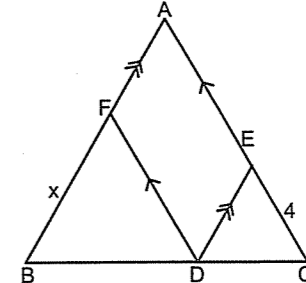
Yani, üstteki şekilde $x + y = |AB| = |AC|$ dir. Tabii şekilde hangi uzunlukların eşit olduğuna da dikkat edin. Bu arada şunu da söyleyeyim. Çizdiğim şekillerdeki aynı yönlü oklar o doğruların paralel olduğu anlamına geliyor. Olur ya unutanlar olabilir. 😊

1.  $|AB| = |AC| = ?$

A) 6 B) 7 C) 8 D) 9 E) 10

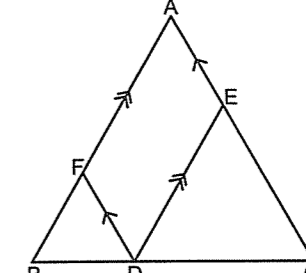
2.  $|AB| = |AC| = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

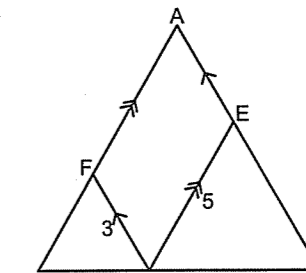
3.  $|AB| = |AC| = 10$
 $x = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

Çevre filan sorarlarsa eşit uzunluklara aynı harfi verip de çözün. Daha kolay oluyor da. 😊

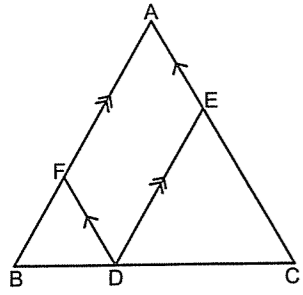
4.  $|AB| = |AC| = 12$
Çevre(DEAF) = ?

A) 12 B) 16 C) 20 D) 24 E) 30

5.  $|AB| = |AC|$
 $|BC| = 12$
Çevre(ABC) = ?

A) 15 B) 17 C) 20 D) 24 E) 28

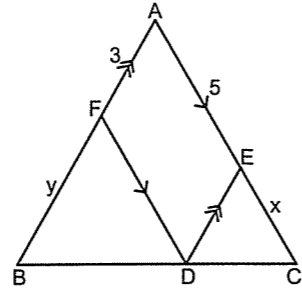
6.



Çevre(BFD) = 12
Çevre(EDC) = 16
Çevre(ABC) = ?

- A) 32 B) 30 C) 29 D) 28 E) 26

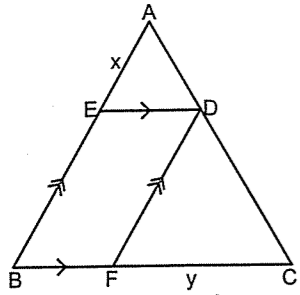
9.



$|AB| = |AC|$
 $x + y = ?$

- A) 5 B) 6 C) 7 D) 8 E) 10

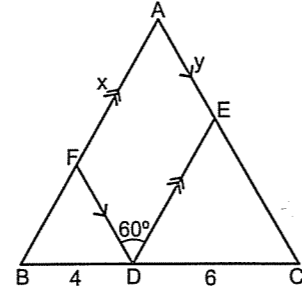
7.



$|AB| = |BC|$
 $x + y = 10$
Çevre(BFDE) = ?

- A) 10 B) 15 C) 20 D) 25 E) 30

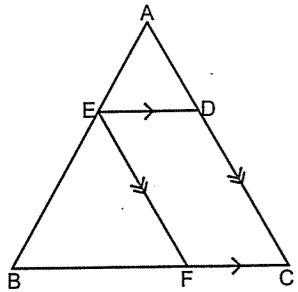
10.



$|AB| = |AC|$
 $x + y = ?$

- A) 4 B) 6 C) 8 D) 10 E) 12

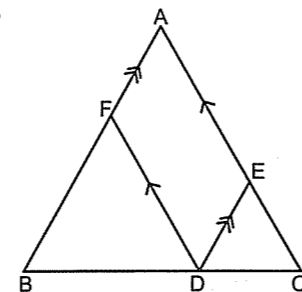
8.



$|AC| = |BC|$
Çevre(DEFC) = 18
 $|AB| = 8$
Çevre(ABC) = ?

- A) 24 B) 26 C) 28 D) 30 E) 36

11.



$|AB| = |AC|$
Çevre(BFD) = 14
Çevre(EDC) = 6
 $|BC| = 8$
Çevre(DEAF) = ?

- A) 12 B) 13 C) 14 D) 15 E) 16

5. Bölüm

EŞKENAR ÜÇGEN

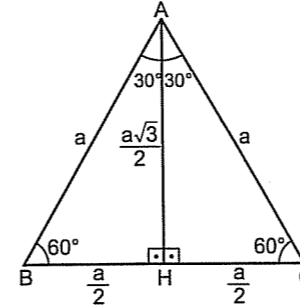
Dün yaptığınız şey size hala çok iyi görünüyorsa
bugün yeterli değilsiniz demektir.
Earle Wilson

Hayatta bir gayesi olmayan insanlar, bir nehir
üzerinde akıp giden saman çöplerine
benzerler; onlar gitmezler, ancak suyun akışına
kapılırlar.
Seneca

EŞKENAR ÜÇGEN

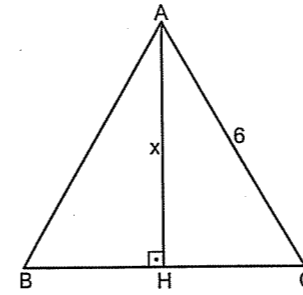
EŞKENAR ÜÇGEN

Eşkenar üçgende bütün kenar uzunlukları birbirine eşittir. Ve bütün iç açıları da 60° 'dir. Bunları bilmeyen var mı ki? ☺



Ayrıca eşkenar üçgende yükseklikler hem kenarortay hem de açıortaydır. Ve yüksekliklerin hepsi eşittir. Yani, alayı birbirine eşittir. Yeter ki üçgen eşkenar üçgen olsun. Zaten göreceksiniz.
Eşkenar üçgende yükseklik çizilmişse soru $30^\circ - 60^\circ - 90^\circ$ üçgeni sorusudur.

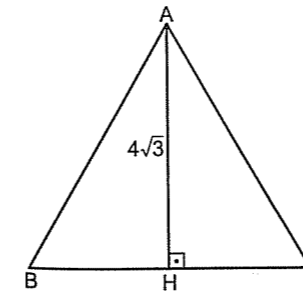
1.



ABC eşkenar
üçgen
 $x = ?$

- A) 3 B) $4\sqrt{2}$ C) $3\sqrt{2}$ D) $3\sqrt{3}$ E) 5

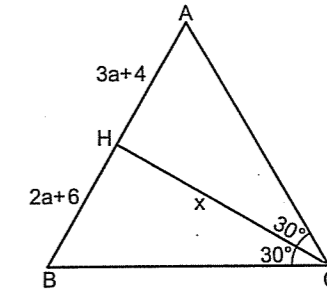
2.



ABC eşkenar
üçgen
Çevre(ABC) = ?

- A) 12 B) 16 C) 20 D) 22 E) 24

3.

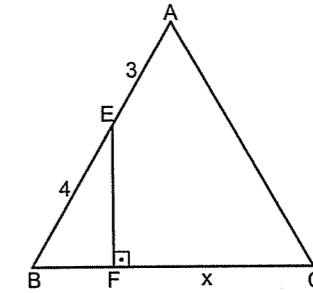


ABC eşkenar
üçgen
 $x = ?$

- A) $6\sqrt{3}$ B) $7\sqrt{3}$ C) $8\sqrt{3}$ D) $9\sqrt{3}$ E) $10\sqrt{3}$

Eşkenar üçgende yeter ki bi diklik versinler. Gerisi kolay. ☺

4.

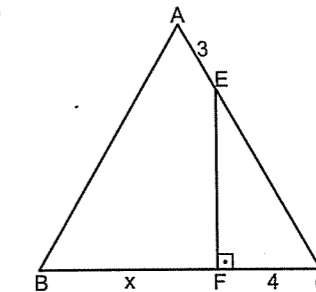


ABC eşkenar
üçgen
 $x = ?$

Açıları yazın ve eşkenar üçgende üç kenarın da eşit olduğunu aklınızdan çıkarmayın. Cevap çıkıyor zaten.

- A) 6 B) 5 C) 4 D) 3 E) 2

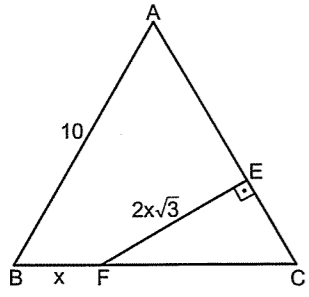
5.



ABC eşkenar
üçgen
 $x = ?$

- A) 11 B) 10 C) 9 D) 8 E) 7

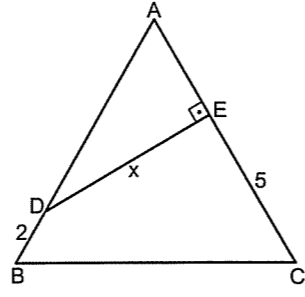
6.



ABC eşkenar
üçgen
 $x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6

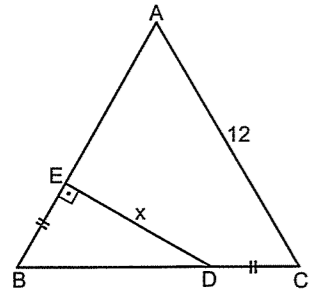
9.



ABC eşkenar
üçgen
 $x = ?$

- A) 5 B) $3\sqrt{3}$ C) 6 D) $4\sqrt{3}$ E) 7

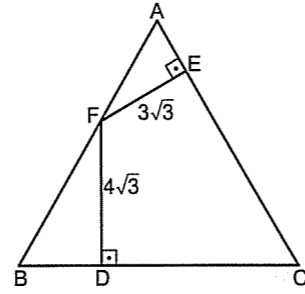
7.



ABC eşkenar
üçgen
 $x = ?$

- A) 4 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) 6 E) $6\sqrt{3}$

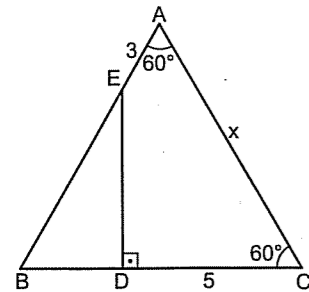
10.



ABC eşkenar
üçgen
Çevre(ABC) = ?

- A) 24 B) 28 C) 30 D) 36 E) 42

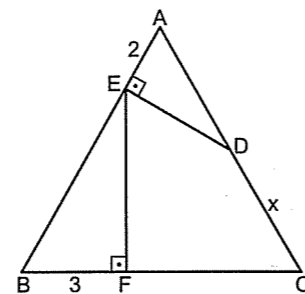
8.



$x = ?$

- A) 6 B) 7 C) 8 D) 9 E) 10

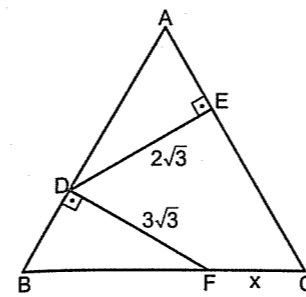
11.



ABC eşkenar
üçgen
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

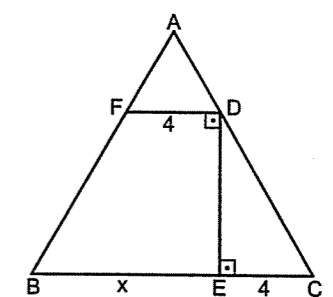
1.



ABC eşkenar
üçgen
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

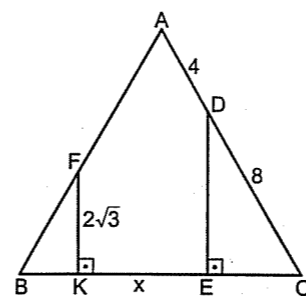
4.



ABC eşkenar
üçgen
 $x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

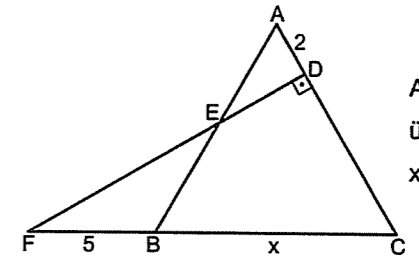
2.



ABC eşkenar
üçgen
 $x = ?$

- A) 4 B) 6 C) 8 D) 9 E) 10

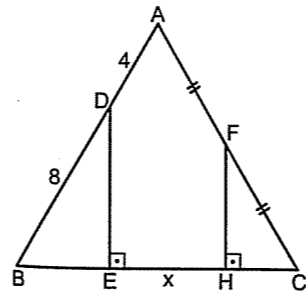
5.



ABC eşkenar
üçgen
 $x = ?$

- A) 6 B) 7 C) 8 D) 9 E) 10

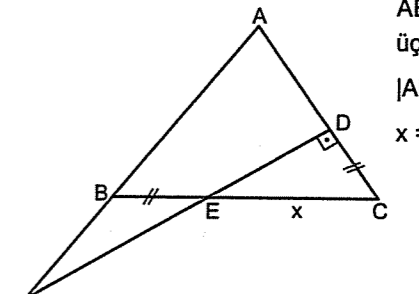
3.



ABC eşkenar
üçgen
 $x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

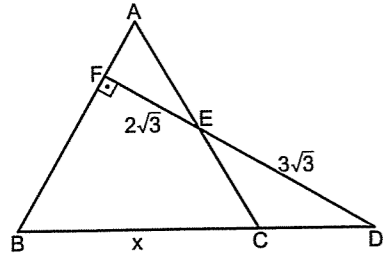
6.



ABC eşkenar
üçgen
 $|AF| = 16$
 $x = ?$

- A) 12 B) 10 C) 8 D) 7 E) 6

7.

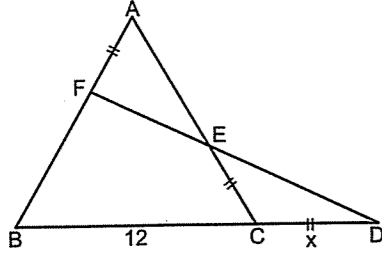


ABC eşkenar
üçgen
 $x = ?$

- A) 4 B) 5 C) 7 D) 9 E) 11

Bazen soruda diklik filan vermezler. Bu durumda açıları yazıp dikliği sizin görmemiz lazım. ☺

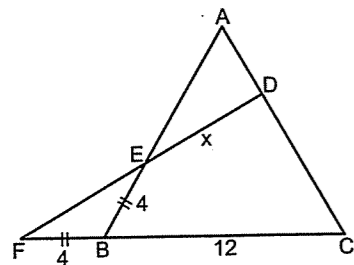
8.



ABC eşkenar
üçgen
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

9.

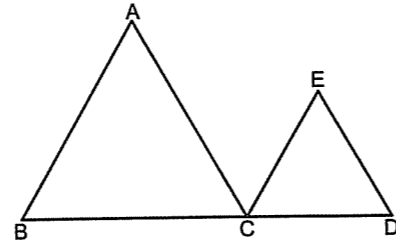


ABC eşkenar
üçgen
 $x = ?$

- A) $2\sqrt{3}$ B) 4 C) $3\sqrt{3}$ D) 6 E) $4\sqrt{3}$

Şeklin çevresinin sorulduğu sorularda eşit uzunluklara aynı harfi verin. Cevap kendiliğinden çıkar. ☺

10.

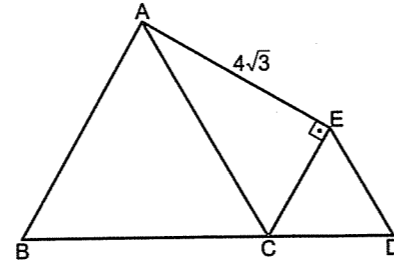


ABC ve CED
eşkenar
üçgen
 $|BD| = 12$

Şeklin tamamının çevresi kaçtır?

- A) 18 B) 24 C) 28 D) 30 E) 36

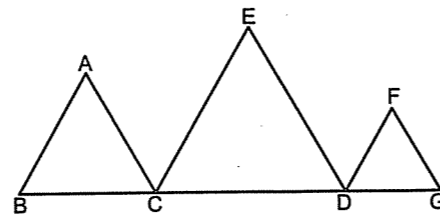
11.



ABC ve CED
eşkenar
üçgen
 $|BD| = ?$

- A) 36 B) 30 C) 24 D) 18 E) 12

12.

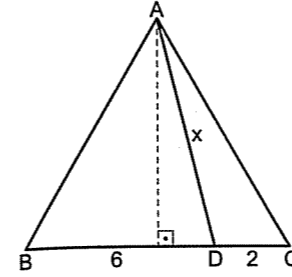


Şekildeki üçgenlerin hepsi eşkenar üçgen
 $|BG|=10$ ise şeklin tamamının çevresi kaçtır?

- A) $10\sqrt{3}$ B) 20 C) $20\sqrt{3}$ D) 30 E) $30\sqrt{3}$

Biliyorsunuz. Normalde kesik çizgiler soruda verilmiyor. Yol göstermek için çiziyorum. İşe yarıyor di mi?

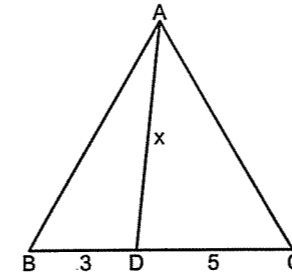
1.



ABC eşkenar
üçgen
 $x = ?$

- A) 6 B) 7 C) $4\sqrt{3}$ D) $2\sqrt{13}$ E) $3\sqrt{6}$

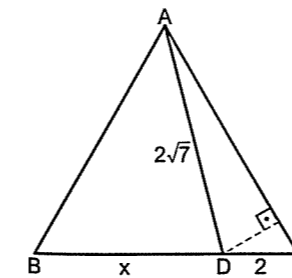
2.



ABC eşkenar
üçgen
 $x = ?$

- A) 6 B) $\sqrt{38}$ C) $2\sqrt{10}$ D) $3\sqrt{5}$ E) 7

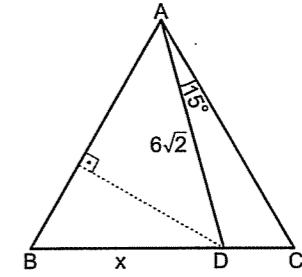
3.



ABC eşkenar
üçgen
 $x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

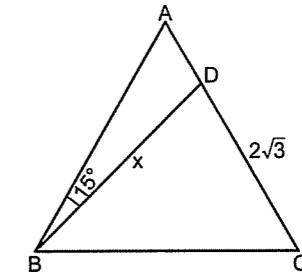
4.



ABC eşkenar
üçgen
 $x = ?$

- A) 6 B) $4\sqrt{3}$ C) 7 D) 8 E) $6\sqrt{2}$

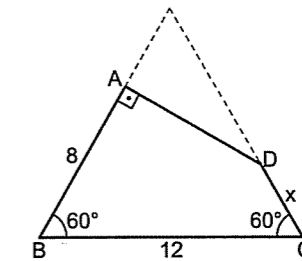
5.



ABC eşkenar
üçgen
 $x = ?$

- A) 3 B) 4 C) $3\sqrt{2}$ D) $3\sqrt{3}$ E) $2\sqrt{7}$

6.



$x = ?$

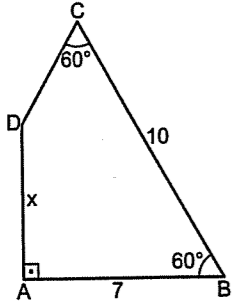
Bu tip kesik üçgen sorularında genellikle üçgen ya eşkenar üçgene ya da dik üçgene tamamlanarak çözülüyor.

- A) 1 B) 2 C) 3 D) 4 E) 5

EŞKENAR ÜÇGEN

3. Antrenman

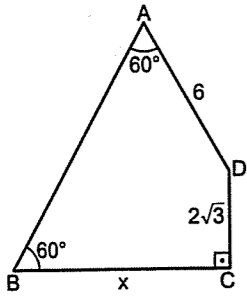
7.



$x = ?$

- A) 2 B) $2\sqrt{3}$ C) 3 D) 4 E) $3\sqrt{3}$

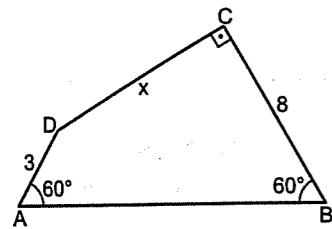
8.



$x = ?$

- A) 8 B) 7 C) 6 D) 5 E) 4

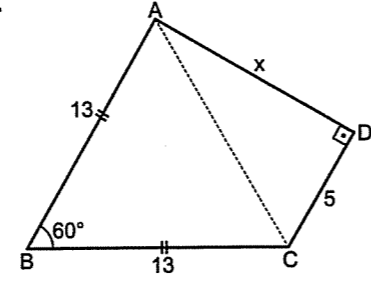
9.



$x = ?$

- A) $5\sqrt{3}$ B) $5\sqrt{2}$ C) 5 D) $4\sqrt{3}$ E) $4\sqrt{2}$

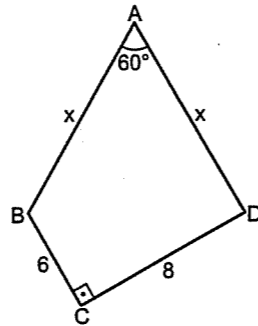
10.



$x = ?$

- A) 13 B) 12 C) 11 D) 10 E) 8

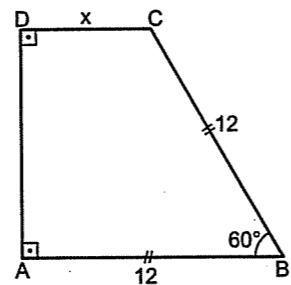
11.



$x = ?$

- A) 14 B) 12 C) 10 D) 8 E) 6

12.



$x = ?$

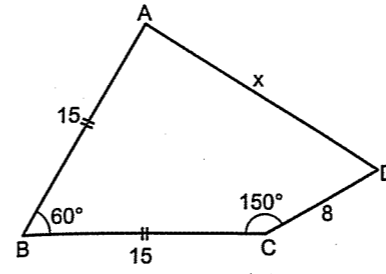
- A) 3 B) 4 C) 6 D) 8 E) $6\sqrt{3}$

Şekilde 60° 'lik açının kollarını eşit görürseniz, burada büyük bir olasılıkla eşkenar üçgen oluşturarak çözüme giderseniz.

EŞKENAR ÜÇGEN

4. Antrenman

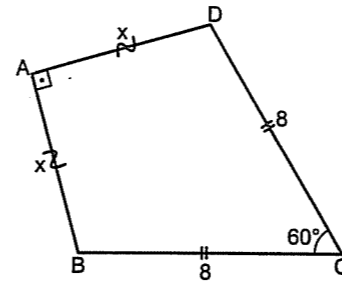
1.



$x = ?$

- A) 17 B) 15 C) 13 D) 10 E) 8

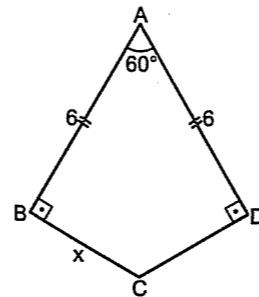
2.



$x = ?$

- A) 4 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) 7 E) 8

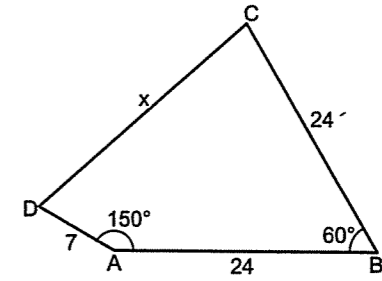
3.



$x = ?$

- A) 6 B) 5 C) $2\sqrt{3}$ D) 3 E) $\sqrt{3}$

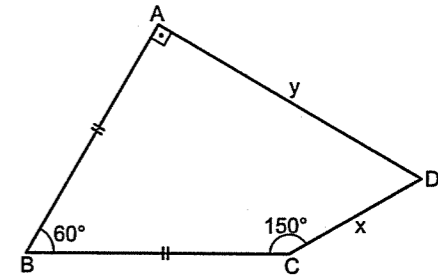
4.



$x = ?$

- A) 15 B) 18 C) 21 D) 23 E) 25

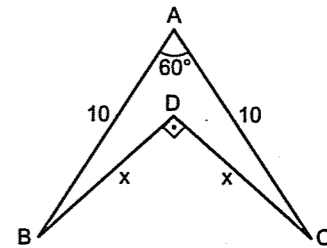
5.



$\frac{x}{y} = ?$

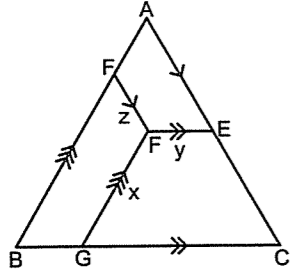
- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) 1 E) 2

6.



$x = ?$

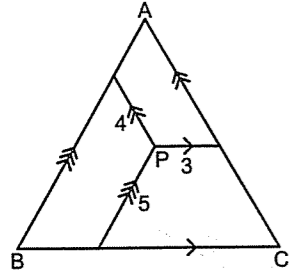
- A) 8 B) 6 C) $6\sqrt{2}$ D) $5\sqrt{2}$ E) 5



Eşkenar üçgenin içinde herhangi bir nokta alınmış ve bu noktadan şekildeki gibi kenarlara paraleller çizilmişse, bu paralellerin toplamı bir kenara eşittir. Yani, üstte $x + y + z = |AB| = |BC| = |AC|$ dir.

Tekrardan diyeyim. Aynı yönlü oklar o doğruların paralel olduğu anlamına geliyor. Gerçi ÖSYM'deki amcalar paralellikleri yazarak veriyorlar. Ama ben şekle odaklanın istedim.

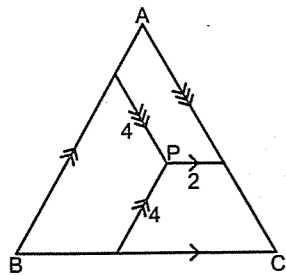
7.



ABC eşkenar
üçgen
 $|BC| = ?$

- A) 7 B) 8 C) 9 D) 10 E) 12

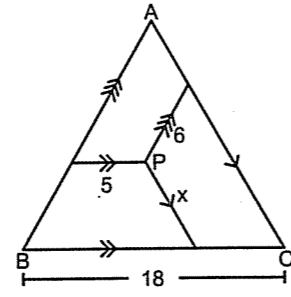
8.



ABC eşkenar
üçgen
Çevre(ABC) = ?

- A) 30 B) 27 C) 24 D) 20 E) 18

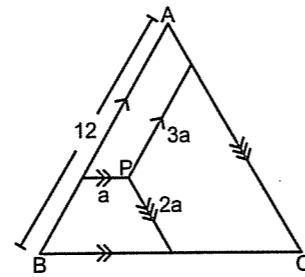
9.



ABC eşkenar
üçgen
 $x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

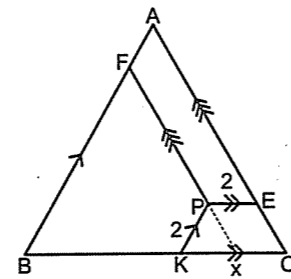
10.



ABC eşkenar
üçgen
 $a = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

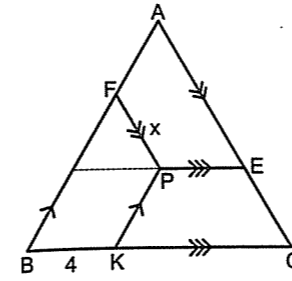
11.



ABC eşkenar
üçgen
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

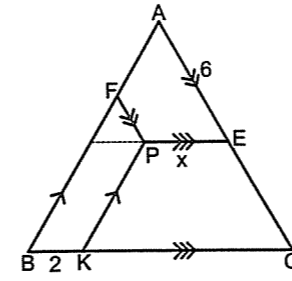
1.



ABC eşkenar
üçgen
 $x = ?$

- A) 2 B) $2\sqrt{3}$ C) 4 D) $2\sqrt{5}$ E) 5

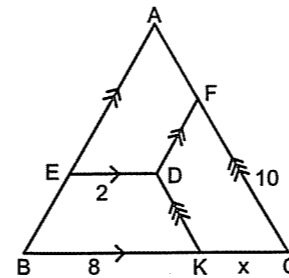
2.



ABC eşkenar
üçgen
 $x = ?$

- A) 2 B) 3 C) $2\sqrt{3}$ D) 4 E) $2\sqrt{5}$

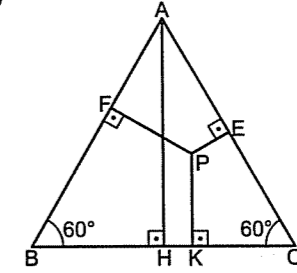
3.



ABC eşkenar
üçgen
 $x = ?$

- A) 5 B) 4 C) 3 D) 2 E) 1

4.



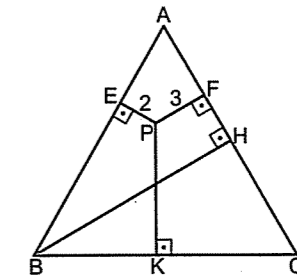
Eşkenar üçgenin içinde herhangi bir nokta alınmış ve bu noktadan şekildeki gibi kenarlara dikler çizilmişse, bu diklerin toplamı yüksekliğe eşittir.

Yani, şekilde $|PE| + |PK| + |PF| = |AH|$ dir.

ABC eşkenar
üçgen
 $|PE| = 4$
 $|AH| = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

5.



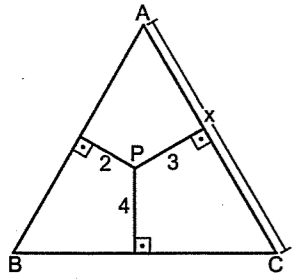
ABC eşkenar
üçgen
 $|BH| = 12$
 $|PK| = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

— EŞKENAR ÜÇGEN

Bazı sorularda, önce yüksekliği bulup öyle devam etmeniz gerekebilir. ☺

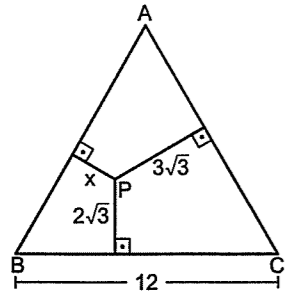
6.



ABC eşkenar
üçgen
 $x = ?$

- A) 12 B) $6\sqrt{3}$ C) 10 D) 9 E) $6\sqrt{2}$

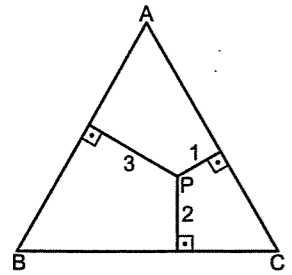
7.



ABC eşkenar
üçgen
 $x = ?$

- A) 1 B) $\sqrt{3}$ C) 2 D) $2\sqrt{3}$ E) $3\sqrt{3}$

8.



ABC eşkenar
üçgen
Çevre(ABC) = ?

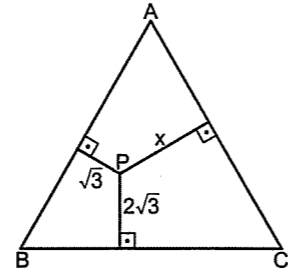
- A) $6\sqrt{3}$ B) 12 C) 18 D) $12\sqrt{3}$ E) 24

1-C 2-D 3-B 4-E 5-C

6-B

152

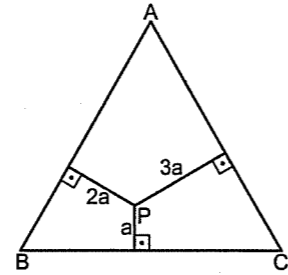
9.



ABC eşkenar
üçgen
Çevre(ABC) = 30
 $x = ?$

- A) 1 B) $\sqrt{3}$ C) 2 D) $2\sqrt{3}$ E) $3\sqrt{3}$

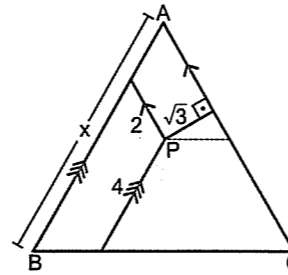
10.



ABC eşkenar
üçgen
Çevre(ABC) = 36
 $a = ?$

- A) $3\sqrt{3}$ B) 3 C) $2\sqrt{3}$ D) 2 E) $\sqrt{3}$

11.



ABC eşkenar
üçgen
 $x = ?$



İki paralel ve bir dik verilmişse üç paralel haline getirin.

- A) 6 B) 7 C) 8 D) 9 E) 10

7-B

8-D

9-D

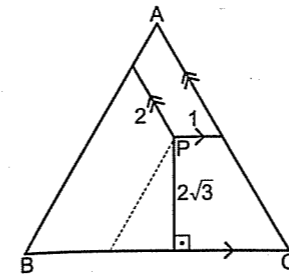
10-E

11-C

5. Antrenman

— EŞKENAR ÜÇGEN

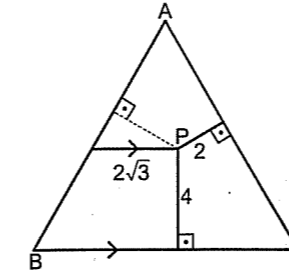
1.



ABC eşkenar
üçgen
Çevre(ABC) = ?

- A) 12 B) 15 C) 18 D) 21 E) 24

2.



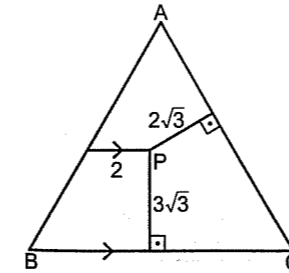
ABC eşkenar
üçgen
 $|AC| = ?$



Soruda iki dik ve bir paralel çizilmişse üç dik haline getirin ki soru kolay çözülebsin.

- A) $6\sqrt{3}$ B) $7\sqrt{3}$ C) $8\sqrt{3}$ D) $9\sqrt{3}$ E) $10\sqrt{3}$

3.

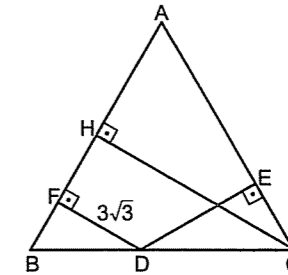


ABC eşkenar
üçgen
Çevre(ABC) = ?

- A) 12 B) 18 C) 20 D) 24 E) 36

6. Antrenman

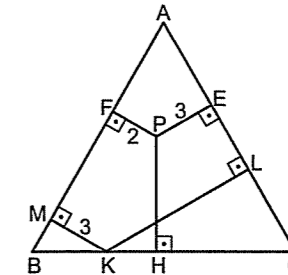
4.



ABC eşkenar
üçgen
 $|DE| = 4\sqrt{3}$
 $|CH| = ?$

- A) $7\sqrt{3}$ B) $6\sqrt{3}$ C) $5\sqrt{3}$ D) 7 E) 6

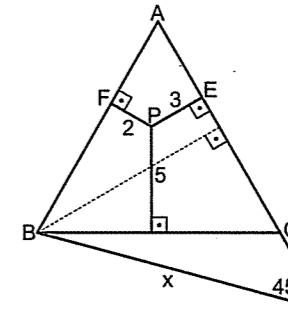
5.



ABC eşkenar
üçgen
 $|KL| = 6$
 $|PH| = ?$

- A) 8 B) 7 C) 6 D) 5 E) 4

6.

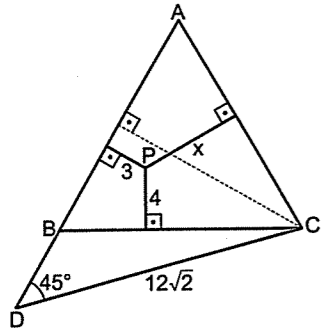


ABC eşkenar
üçgen
 $x = ?$

- A) 10 B) $10\sqrt{2}$ C) $10\sqrt{3}$ D) 20 E) $20\sqrt{2}$

153

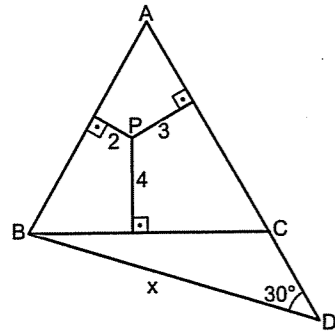
7.



ABC eşkenar
üçgen
 $x = ?$

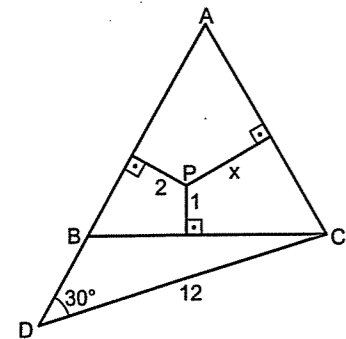
- A) 5 B) 6 C) 7 D) 8 E) 9

8.



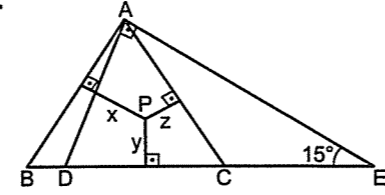
- A) 10 B) 12 C) 14 D) 16 E) 18

9.



- A) 1 B) 2 C) 3 D) 4 E) 5

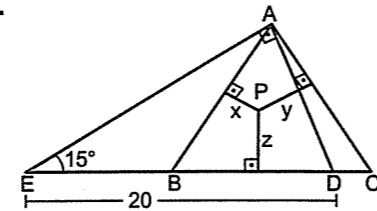
10.



ABC eşkenar
üçgen
 $x + y + z = 4$
 $|DE| = ?$

- A) 8 B) 12 C) 16 D) 20 E) 24

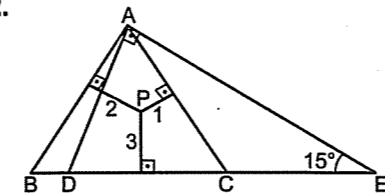
11.



ABC eşkenar
üçgen
 $x + y + z = ?$

- A) 6 B) 5 C) 4 D) 3 E) 2

12.



ABC eşkenar
üçgen
 $|DE| = ?$

- A) 12 B) 15 C) 18 D) 24 E) 30

6.

Bölüm

ÜÇGENDE ALAN

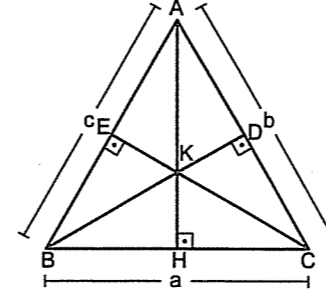
Limiti koyan zihindir. Zihin bir şeyi yapabileceğini kestirebildiği kadar başarılı olur. Yüzde 100 inandığın sürece her şeyi yapabilirsiniz.
Arnold Schwarzenegger

Kararlılık insan iradesinin uyandırma zilidir.
Anthony Robbins

ÜÇGENDE ALAN

● ÜÇGENDE ALAN

Üçgende bir sürü alan hesaplama yöntemi var. Onun için verilen soruya göre, alanı bulma şekli değişebilir. Ama en geneli şu:



$$\text{Alan(ABC)} = \frac{a \cdot |AH|}{2} = \frac{b \cdot |BD|}{2} = \frac{c \cdot |CE|}{2}$$

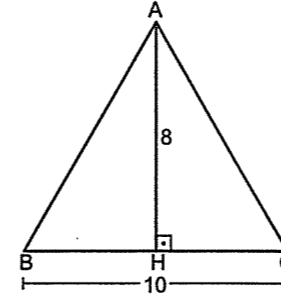
Bunun Türkçesi şu: **Üçgenin alanı** eşittir taban çarpı yükseklik bölü iki.

Bir daha okuyun bakiim. Bi daha..

Aferin. ☺

Üçgende yüksekliklerin kesim noktasına **diklik merkezi** denir. K, ABC üçgeninde diklik merkezidir.

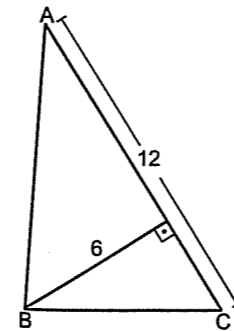
1.



Alan(ABC) = ?

- A) 80 B) 64 C) 48 D) 40 E) 36

2.

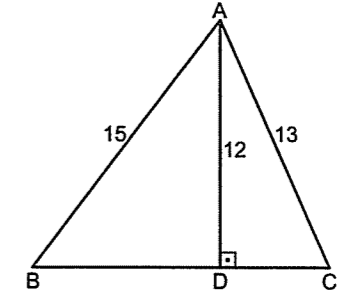


Alan(ABC) = ?

- A) 24 B) 28 C) 30 D) 32 E) 36

I. Antrenman

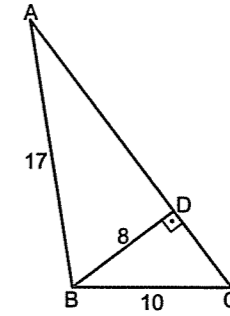
3.



Alan(ABC) = ?

- A) 36 B) 48 C) 64 D) 72 E) 84

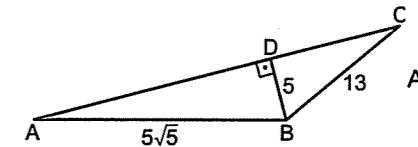
4.



Alan(ABC) = ?

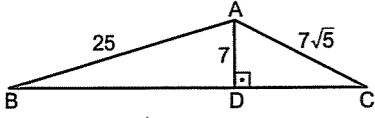
- A) 84 B) 76 C) 72 D) 64 E) 58

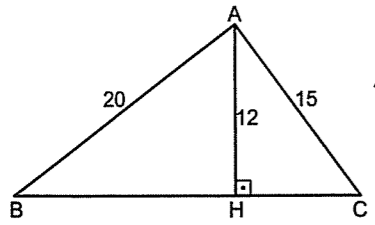
5.



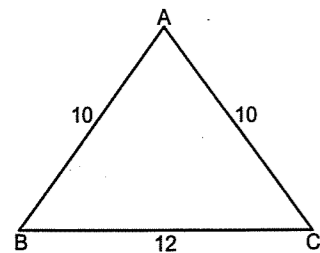
Alan(ABC) = ?

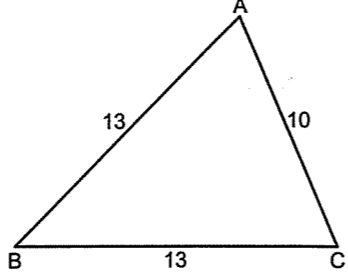
- A) 60 B) 55 C) 50 D) 45 E) 44

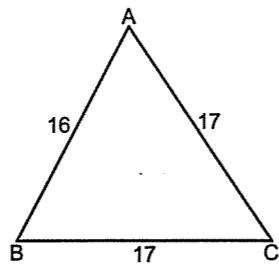
6.  Alan(ABC)=?
A) 100 B) 124 C) 133 D) 142 E) 151

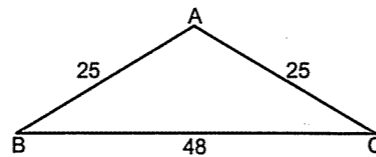
7.  Alan(ABC) = ?
A) 90 B) 100 C) 120 D) 150 E) 160

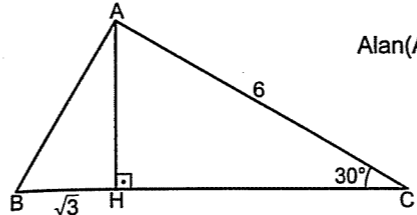
İkizkenar üçgende yüksekliği hesaplamak acayip kolaydı. Hatırlayın.

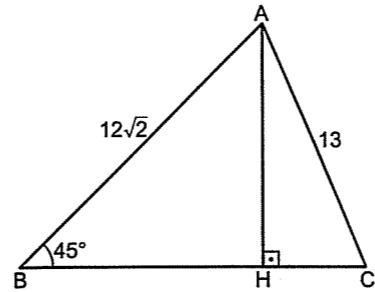
8.  Alan(ABC) = ?
A) 50 B) 48 C) 42 D) 36 E) 32

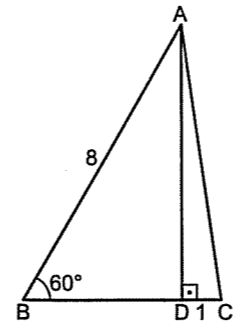
9.  Alan(ABC) = ?
A) 60 B) 65 C) 90 D) 120 E) 130

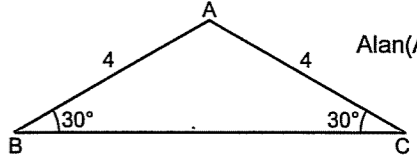
10.  Alan(ABC) = ?
A) 136 B) 130 C) 120 D) 110 E) 108

11.  Alan(ABC) = ?
A) 120 B) 128 C) 136 D) 144 E) 168

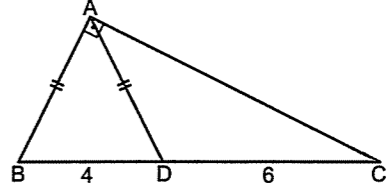
1.  Alan(ABC) = ?
A) 6 B) 6√2 C) 8 D) 6√3 E) 8√3

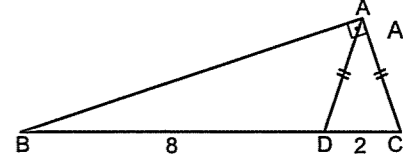
2.  Alan(ABC) = ?
A) 84 B) 92 C) 96 D) 102 E) 108

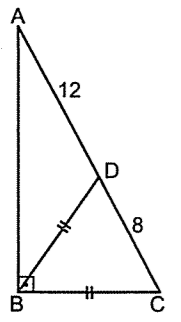
3.  Alan(ABC) = ?
A) 10√2 B) 10√3 C) 15 D) 18 E) 20

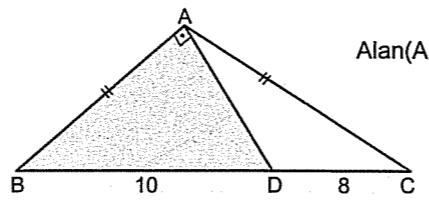
4.  Alan(ABC) = ?
A) 8 B) 7 C) 4√3 D) 3√5 E) 4√2

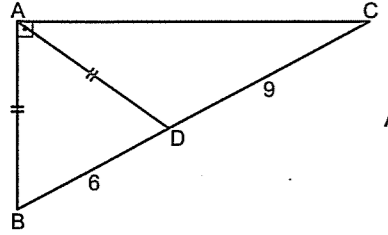
Şu soruda ikizkenarı görünce diki indirin. Sonra Öklit'e bi selam çakıp yüksekliği, sonra da alanı bulun.

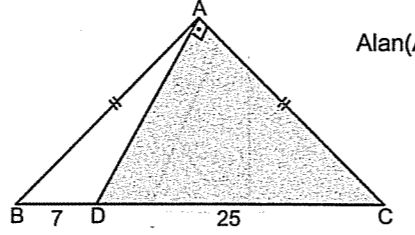
5.  Alan(ABC) = ?
A) 10 B) 15 C) 20 D) 25 E) 30

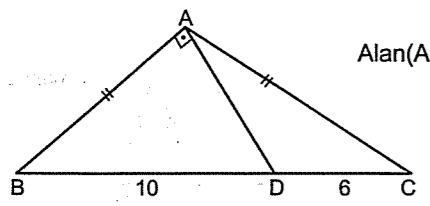
6.  Alan(ABC) = ?
A) 10 B) 15 C) 18 D) 20 E) 24

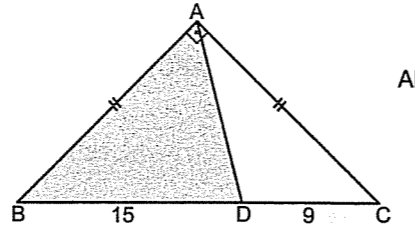
7.  Alan(ABC) = ?
A) 45 B) 50 C) 60 D) 70 E) 80

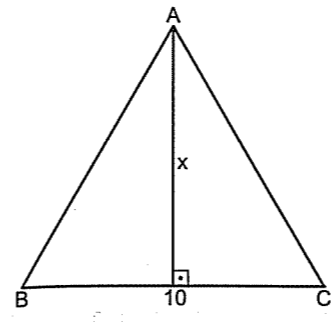
10.  Alan(ABD) = ?
A) 40 B) 30 C) 25 D) 20 E) 15

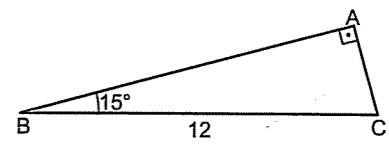
8.  Alan(ABC) = ?
A) 45 B) 42 C) 36 D) 32 E) 30

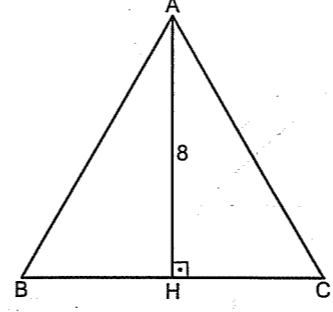
11.  Alan(ADC) = ?
A) 160 B) 150 C) 145 D) 120 E) 100

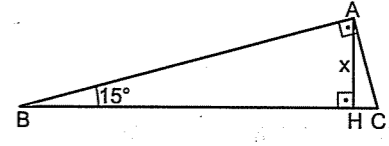
9.  Alan(ABC) = ?
A) 32 B) 30 C) 28 D) 24 E) 20

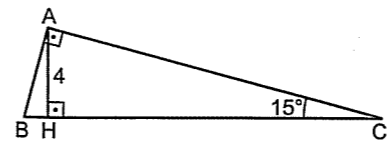

12.  Alan(ABD) = ?
A) 90 B) 85 C) 75 D) 60 E) 55

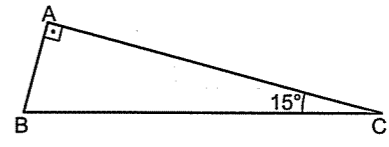
1.  Alan(ABC) = 60
x = ?
A) 12 B) 10 C) 8 D) 6 E) 4

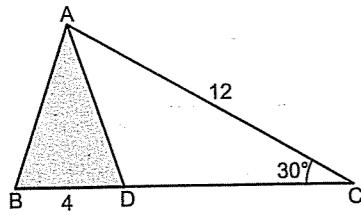
4.  Alan(ABC) = ?
A) 12 B) 16 C) 18 D) 20 E) 24

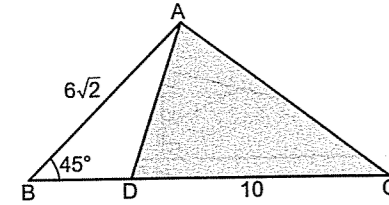
2.  Alan(ABC) = 36
|BC| = ?
A) 12 B) 9 C) 8 D) 6 E) 4

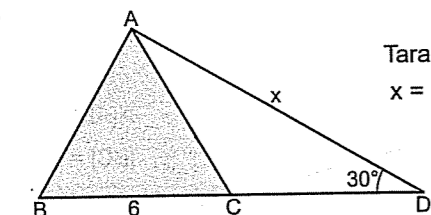
5.  Alan(ABC)=18
x = ?
A) 2 B) 3 C) 4 D) 5 E) 6

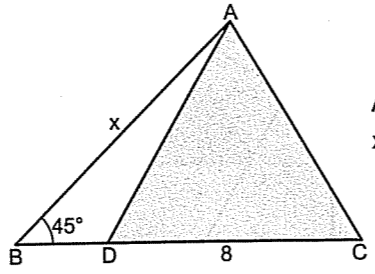
3.  Alan(ABC) = ?
 15°-75°-90° üçgeninde hipotenüse ait yükseklik h ise hipotenüs 4h olduğunu hatırlayın.
A) 8 B) 16 C) 20 D) 24 E) 32

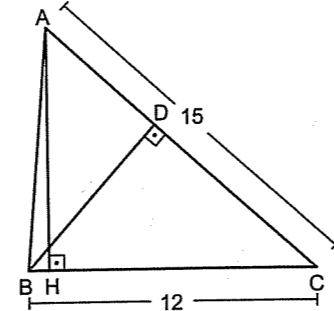
6.  A(ABC) = 8
|BC| = ?
A) 4 B) 6 C) 8 D) 10 E) 12

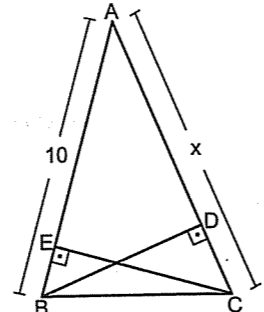
7.  Alan(ABD) = ?
A) 4 B) 8 C) 12 D) 18 E) 24

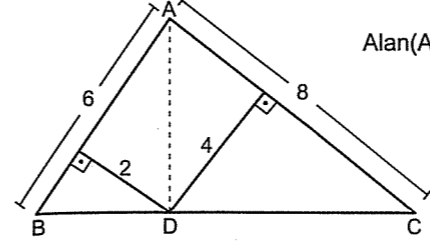
8.  Alan(ADC) = ?
A) 10 B) 15 C) 20 D) 25 E) 30

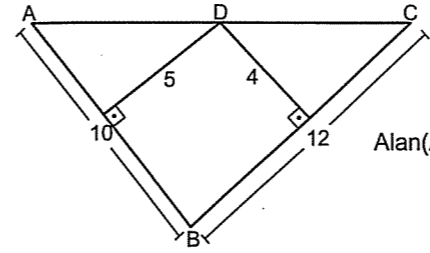
9.  Taralı alan = 24
 $x = ?$
A) 10 B) 12 C) 14 D) 16 E) 18

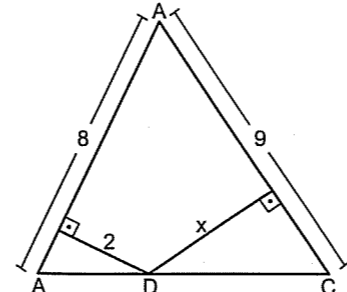
10.  Alan(ADC) = 24
 $x = ?$
A) 8 B) $6\sqrt{2}$ C) $3\sqrt{10}$ D) $6\sqrt{3}$ E) 12

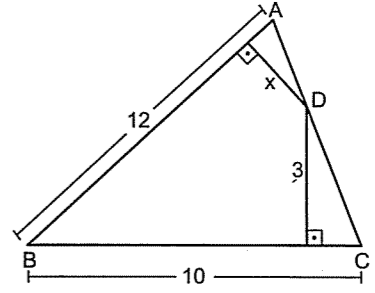
11.  |AH| = 10
|BD| = ?
A) 10 B) 8 C) 6 D) 5 E) 4

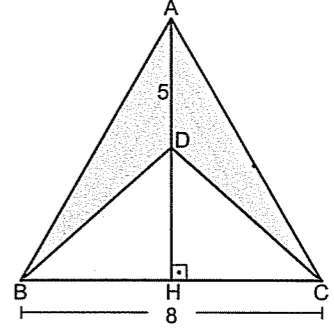
12.  |BD| = 5
|EC| = 4
 $x = ?$
A) 8 B) 7 C) 6 D) 5 E) 4


1.  Alan(ABC) = ?
A) 24 B) 22 C) 20 D) 18 E) 16

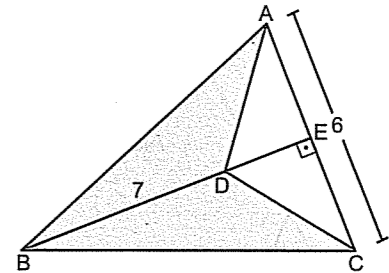
2.  Alan(ABC) = ?
A) 40 B) 44 C) 48 D) 49 E) 50

3.  Alan(ABC) = 26
 $x = ?$
A) 3 B) 4 C) 5 D) 6 E) 7

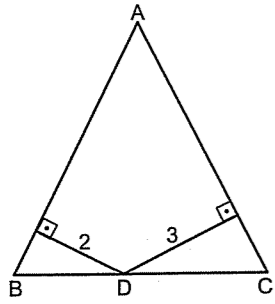
4.  Alan(ABC) = 27
 $x = ?$
A) 1 B) 2 C) 3 D) 4 E) 5

5.  Taralı alan = ?
A) 40 B) 36 C) 30 D) 20 E) 15

 Bu soruyu çözerken |DH| = a olsun deyin. Sonra da taralı alanı bulmak için büyük üçgenin alanından taralı olmayan üçgenin alanını çıkarın. Gerçi daha pıft yolu var. Ama boşverin bence bu daha mantıklı. 😊

6.  Taralı alan = ?
A) 14 B) 21 C) 28 D) 36 E) 42

7.

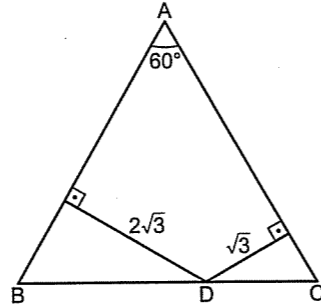


$|AB|=|AC|=10$
Alan(ABC) = ?

İkizkenara ait yüksekliği bulmak için ikizkenar üçgenin özelliklerini gözden geçirin bi. Bence fena olmaz.

- A) 30 B) 25 C) 20 D) 15 E) 10

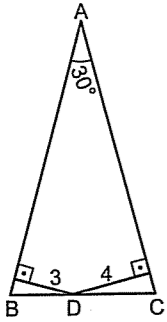
10.



$|AB|=|AC|$
Alan(ABC) = ?

- A) 9 B) $9\sqrt{2}$ C) $9\sqrt{3}$ D) 12 E) $12\sqrt{3}$

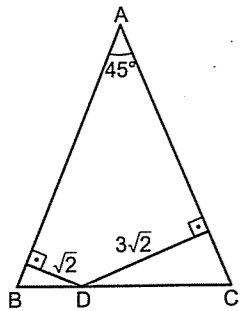
8.



$|AB|=|AC|$
Alan(ABC) = ?

- A) 14 B) 21 C) 28 D) 35 E) 49

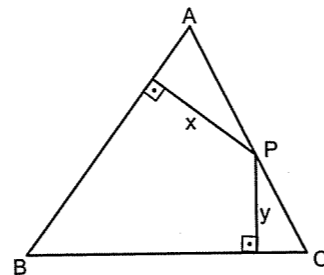
9.



$|AB|=|AC|$
Alan(ABC) = ?

- A) 16 B) $16\sqrt{2}$ C) 18 D) $18\sqrt{2}$ E) 20

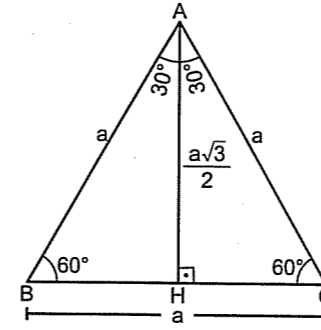
12.



$|AB|=|BC|=12$
Alan(ABC) = 48
 $x + y = ?$

- A) 12 B) 10 C) 8 D) 6 E) 4

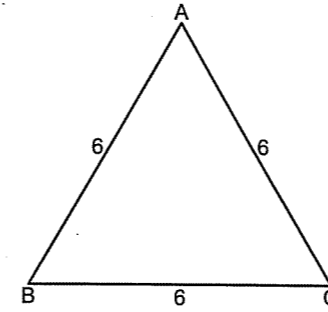
● Eşkenar Üçgenin Alanı



Eşkenar üçgenin bir kenarını biliyorsanız (üstte bir kenarı a) alanı $Alan(ABC) = \frac{a^2\sqrt{3}}{4}$ şeklinde bulabilirsiniz.

Gerçi her seferinde uzunlukları bulup "taban çarpı yükseklik bölü iki" deyip de hesaplayabilirsiniz. Ama gerek yok bence. Bi zahmet şu üstteki formülü bilin. ☺

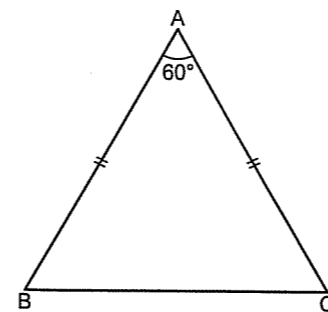
1.



Alan(ABC) = ?

- A) $9\sqrt{3}$ B) $9\sqrt{2}$ C) 12 D) 9 E) $6\sqrt{2}$

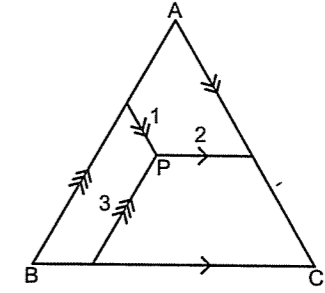
2.



Çevre(ABC) = 12
Alan(ABC) = ?

- A) 16 B) 12 C) $6\sqrt{3}$ D) $6\sqrt{2}$ E) $4\sqrt{3}$

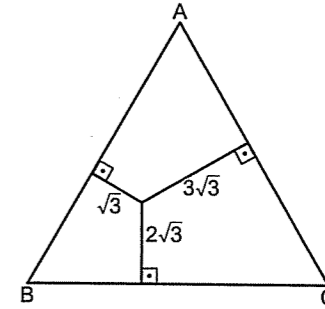
3.



ABC eşkenar üçgen
Alan(ABC) = ?

- A) 8 B) 12 C) $8\sqrt{3}$ D) $9\sqrt{2}$ E) $9\sqrt{3}$

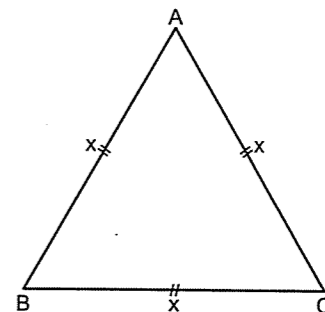
4.



ABC eşkenar üçgen
Alan(ABC) = ?

- A) $36\sqrt{3}$ B) 36 C) $30\sqrt{3}$ D) $24\sqrt{3}$ E) 24

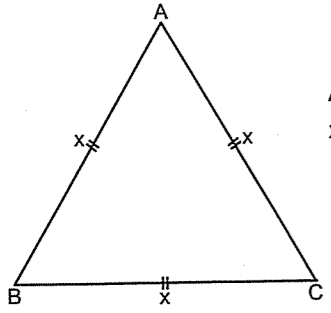
5.



Alan(ABC) = $12\sqrt{3}$
 $x = ?$

- A) 4 B) $3\sqrt{3}$ C) $4\sqrt{2}$ D) 6 E) $4\sqrt{3}$

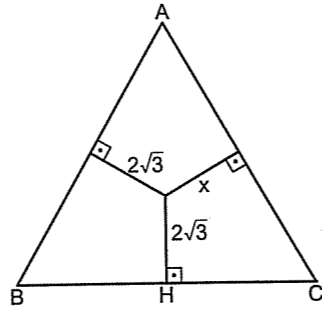
6.



Alan(ABC) = $16\sqrt{3}$
x = ?

- A) 6 B) 8 C) $6\sqrt{3}$ D) $8\sqrt{3}$ E) 12

9.

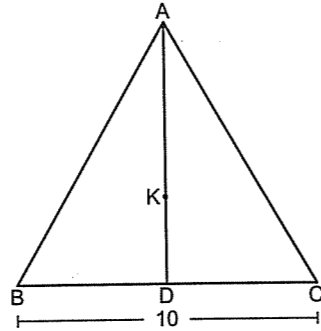


ABC eşkenar üçgen
Alan(ABC) = $25\sqrt{3}$
x = ?

- A) 1 B) $\sqrt{3}$ C) 2 D) $2\sqrt{3}$ E) 3

Hatırlayın! Üçgenin diklik merkezinden geçen doğru kenara ne zaman dik idi?

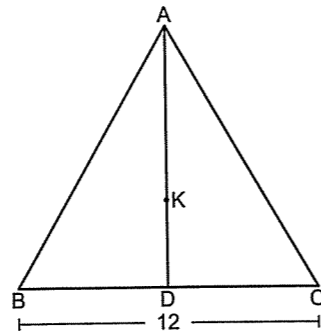
10.



K, ABC üçgeninin
diklik merkezi,
|AD| = 6
Alan(ABC) = ?

- A) 15 B) 20 C) 25 D) 30 E) 36

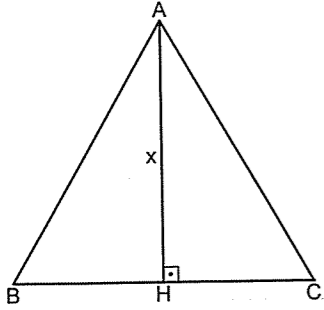
11.



K, ABC üçgeninin
diklik merkezi,
Alan(ABC) = 48
|AD| = ?

- A) 3 B) 4 C) 6 D) 8 E) 10

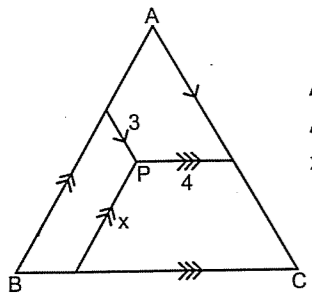
7.



ABC eşkenar üçgen
Alan(ABC) = $9\sqrt{3}$
x = ?

- A) 2 B) 3 C) $3\sqrt{3}$ D) 6 E) $4\sqrt{3}$

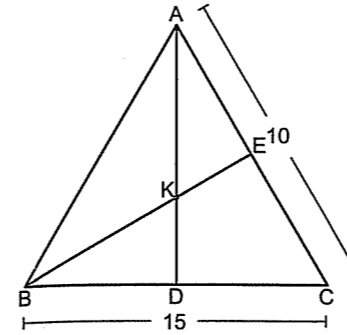
8.



ABC eşkenar üçgen
Alan(ABC) = $36\sqrt{3}$
x = ?

- A) 3 B) 4 C) 5 D) 6 E) 7

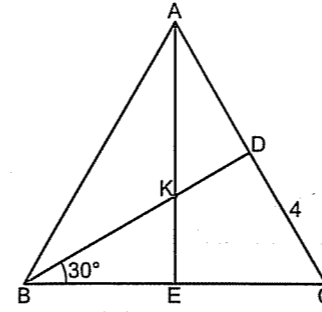
1.



K, ABC üçgeninin
diklik merkezi,
|BE| = 9
|AD| = ?

- A) 5 B) 6 C) 8 D) 10 E) 12

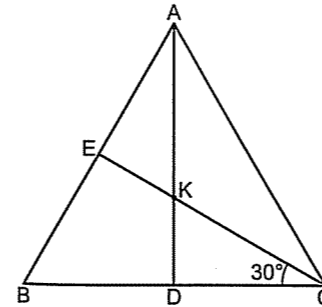
2.



K, ABC üçgeninin
diklik merkezi,
|BC| = ?

- A) 6 B) 8 C) 10 D) 12 E) 14

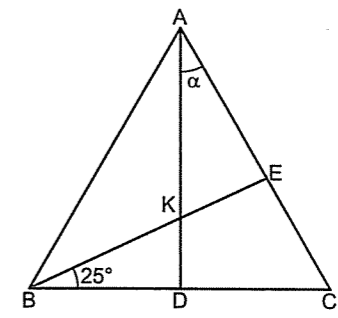
3.



K, ABC üçgeninin
diklik merkezi,
|AB| = 12
|BD| = ?

- A) $6\sqrt{3}$ B) 10 C) 8 D) $6\sqrt{2}$ E) 6

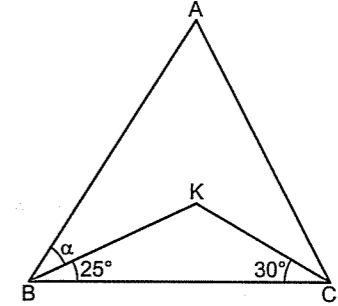
4.



K, ABC üçgeninin
diklik merkezi,
α = ?

- A) 20° B) 25° C) 45° D) 55° E) 65°

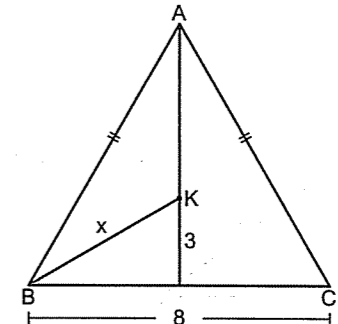
5.



K, ABC üçgeninde
diklik merkezi,
α = ?

- A) 35° B) 30° C) 25° D) 20° E) 15°

6.



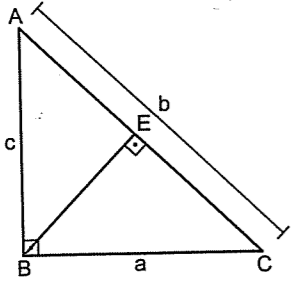
K, ABC üçgeninde
diklik merkezi,
x = ?

- A) 4 B) 5 C) 6 D) 7 E) 8

— ÜÇGENDE ALAN

6. Antrenman

● Dik Üçgenin Alanı



Dik üçgenin alanı $\text{Alan}(ABC) = \frac{a \cdot c}{2} = \frac{b \cdot |BE|}{2}$ yani, dik kenarların çarpımının yarısı şeklinde bulunur. Yeter ki dik kenarları bulun siz.

Bu arada B noktası ABC dik üçgeninde diklik merkezidir.

7. Alan(ABC) = ?
A) 20 B) 25 C) 30 D) 40 E) 80

8. Alan(ABC) = ?
A) 42 B) 48 C) 54 D) 60 E) 72

9. Alan(ABC) = 60
 $x = ?$
A) 16 B) 17 C) 18 D) 20 E) 24

10. Alan(ABC) = ?
A) 1 B) $\sqrt{3}$ C) 2 D) $2\sqrt{3}$ E) $3\sqrt{3}$

11. Alan(ABC) = ?
A) $8\sqrt{3}$ B) 8 C) $6\sqrt{3}$ D) $4\sqrt{3}$ E) 4

— ÜÇGENDE ALAN

7. Antrenman

1. Alan(ABC) = ?
A) 72 B) 60 C) 54 D) 48 E) 36

2. Alan(ABC) = 32
 $x = ?$
A) 12 B) 10 C) $8\sqrt{2}$ D) 8 E) $6\sqrt{2}$

3. Alan(ABC) = ?
A) 25 B) 24 C) 20 D) 18 E) 16

4. Alan(ABC) = ?
A) 64 B) 72 C) 84 D) 96 E) 100

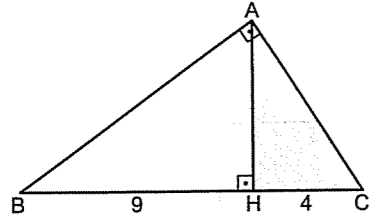
5. Alan(ABC) = ?
A) 50 B) 30 C) 25 D) 20 E) 15

6. Taralı alan = ?
A) 2 B) $2\sqrt{3}$ C) 4 D) $4\sqrt{3}$ E) 8

Bazen diklik miklik vermezler soruda. Üçgenin kenar uzunluklarına bakıp dikliği sizin görmeyizi isterler. 😊

Dik üçgende hipotenüse ait yükseklik çizilmişse için içinde Öklit olma ihtimali yüksektir. Zaten daha çok $h^2 = p \cdot k$ lazımdır. Göreceksiniz.

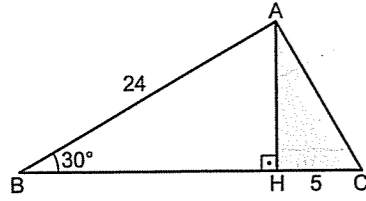
7.



Taralı alan = ?

- A) 16 B) 12 C) 8 D) $4\sqrt{3}$ E) 6

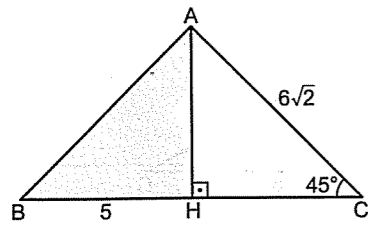
8.



Taralı alan = ?

- A) 60 B) 48 C) 36 D) 30 E) 20

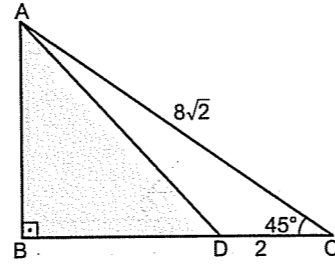
9.



Taralı Alan = ?

- A) 6 B) $4\sqrt{3}$ C) $6\sqrt{2}$ D) 12 E) 15

10.

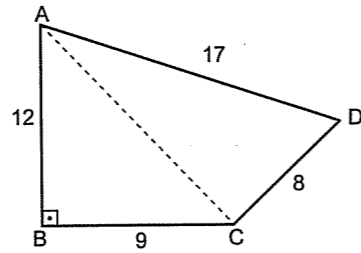


Taralı alan = ?

- A) 24 B) 20 C) 18 D) 16 E) 12

Şunda da yolu ben göstereyim. Geri kalanlarda yolunuzu bulursunuz artık. 😊

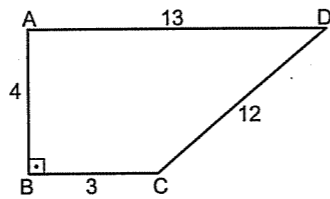
11.



Alan(ABCD) = ?

- A) 84 B) 96 C) 108 D) 114 E) 120

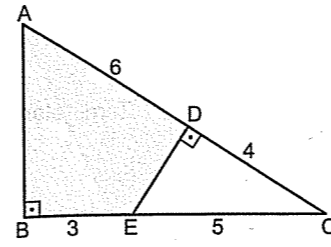
12.



Alan(ABCD) = ?

- A) 18 B) 24 C) 28 D) 32 E) 36

1.



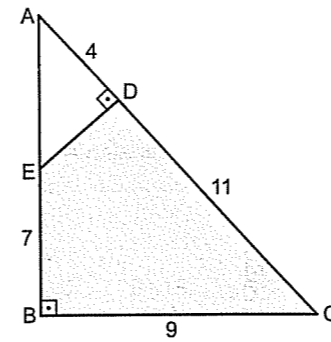
Taralı alan = ?



Bu tür sorularda büyük üçgenin alanından, küçük üçgenin alanını çıkarmak işe yarayabilir.

- A) 20 B) 18 C) 16 D) 12 E) 10

2.

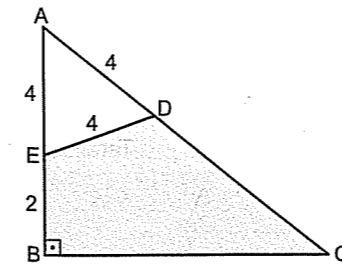


Taralı alan = ?

- A) 64 B) 52 C) 48 D) 36 E) 28

Şu soruda küçük üçgenin kenarları dikkatinizi çekiyor mu?

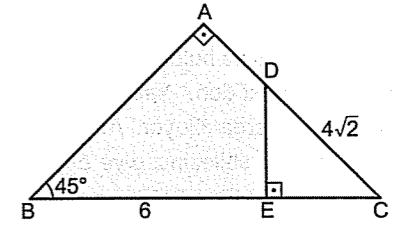
3.



Taralı alan = ?

- A) $9\sqrt{3}$ B) $10\sqrt{3}$ C) $12\sqrt{3}$ D) $14\sqrt{3}$ E) $16\sqrt{3}$

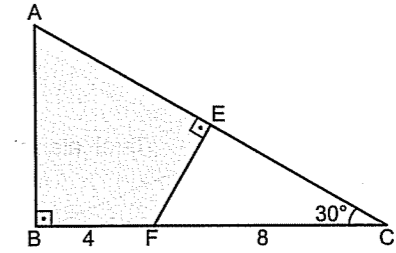
4.



Taralı alan = ?

- A) 18 B) 17 C) 16 D) 15 E) 12

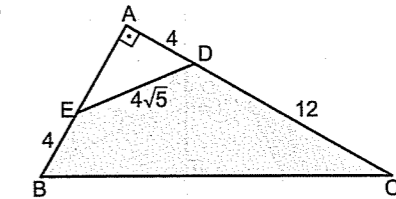
5.



Taralı alan = ?

- A) $8\sqrt{3}$ B) $10\sqrt{3}$ C) $12\sqrt{3}$ D) $14\sqrt{3}$ E) $16\sqrt{3}$

6.



Taralı alan = ?

- A) 56 B) 60 C) 72 D) 80 E) 84

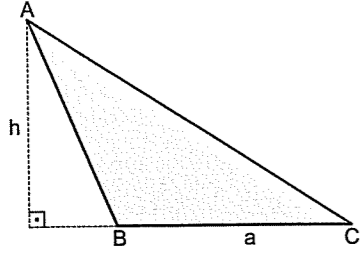
— ÜÇGENDE ALAN —

8. Antrenman

● Geniş açılı üçgenin alanı:

Aslında hepsi aynı mantıkla bulunuyor. Yani, "taban çarpı yükseklik bölü iki"den. Yalnız geniş açılı üçgende yükseklik dışarda oluyor. Ama gözünüz alışsın ve daha hızlı görebilesiniz diye böyle anlatıyorum.

Anlayın artık. 😊



Geniş açılı üçgenin alanı $\text{Alan}(ABC) = \frac{a \cdot h}{2}$ şeklinde bulunur.

7. Taralı alan = ?
A) 60 B) 48 C) 50 D) 30 E) 20

8. Taralı alan = 20
 $x = ?$
A) 10 B) 8 C) 6 D) 5 E) 4

9. Taralı alan = ?
A) 8 B) 7 C) 6 D) 5 E) 4

10. Taralı alan = ?
A) 18 B) 24 C) 36 D) 40 E) 48

11. Taralı alan = ?
A) 85 B) 90 C) 110 D) 120 E) 150

— ÜÇGENDE ALAN —

9. Antrenman

1. Taralı alan = 24
 $x = ?$
A) 5 B) 6 C) $3\sqrt{5}$ D) $4\sqrt{5}$ E) $5\sqrt{5}$

2. Taralı alan = 72
 $x = ?$
A) 10 B) 13 C) 15 D) 17 E) 20

Bazen yüksekliği bulmak için ince ayarlar gerekebilir.

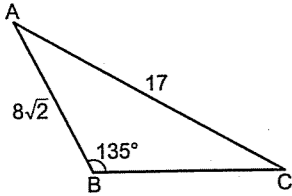
3. Alan(ABC) = ?
A) 12 B) $12\sqrt{3}$ C) 16 D) 18 E) $18\sqrt{3}$

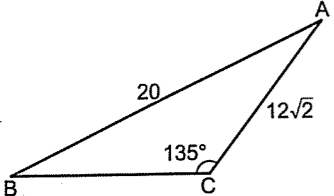
Yüksekliği bulabilmek için şekildeki gibi dışarıda dik üçgen oluşturun.

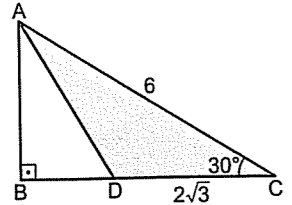
4. Alan(ABC) = ?
A) 40 B) 30 C) 20 D) 15 E) 10

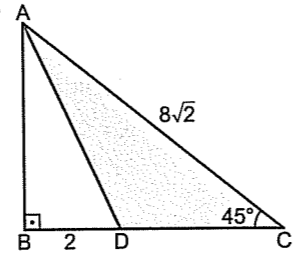
5. Alan(ABC) = ?
A) 15 B) $15\sqrt{3}$ C) $12\sqrt{3}$ D) 12 E) 9

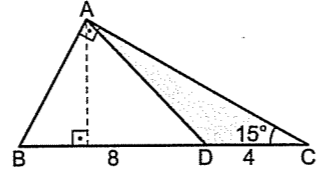
6. Alan(ABC) = ?
A) $2\sqrt{3}$ B) 3 C) $4\sqrt{3}$ D) 5 E) $6\sqrt{3}$

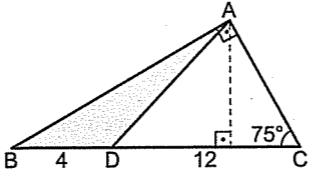
7.  Alan(ABC) = ?
A) 16 B) 18 C) 24 D) 26 E) 28

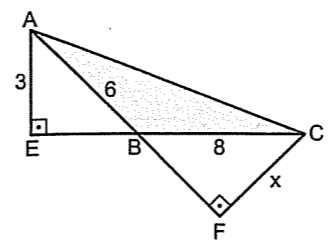
8.  Alan(ABC) = ?
A) 18 B) 20 C) 24 D) 28 E) 30

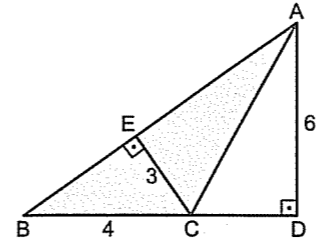
9.  Taralı alan = ?
A) $2\sqrt{3}$ B) $3\sqrt{3}$ C) $4\sqrt{3}$ D) $5\sqrt{3}$ E) $6\sqrt{3}$

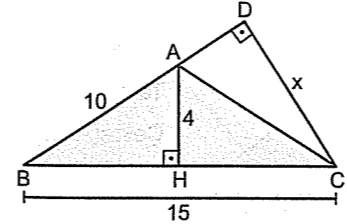
10.  Taralı alan = ?
A) 12 B) 16 C) 18 D) 20 E) 24

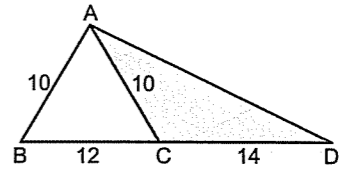
11. Şu soruda yüksekliği $15^\circ - 75^\circ - 90^\circ$ üçgeninde $h - 4h$ özelliğini kullanarak bulmak lâzım.
 Taralı alan = ?
A) 4 B) 6 C) 8 D) 10 E) 12

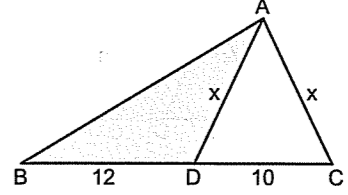
12.  Taralı alan = ?
A) 8 B) 10 C) 12 D) 16 E) 18

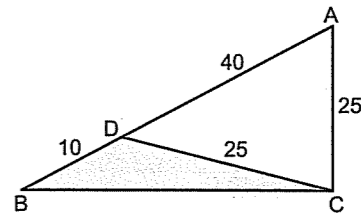
Hatırlayın! Geniş açılı üçgende yükseklik dışardaydı.
1.  $x = ?$
A) 3 B) 4 C) 5 D) 6 E) 7

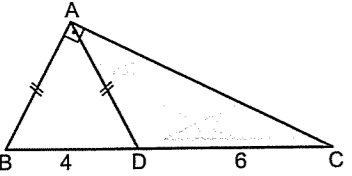
2.  $|AB| = ?$
A) 7 B) 8 C) 9 D) 10 E) 12

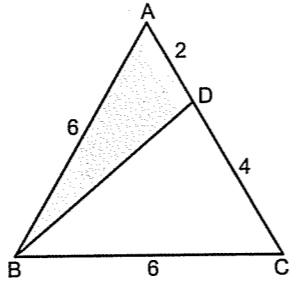
3.  $x = ?$
A) 6 B) 8 C) 10 D) 12 E) 14

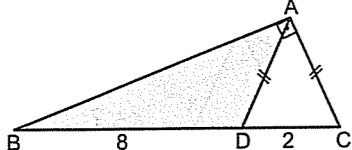
4.  Taralı alan = ?
A) 32 B) 36 C) 44 D) 48 E) 56

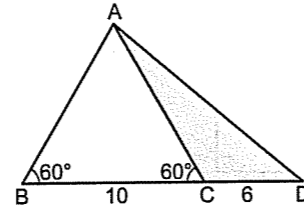
5.  Taralı alan = 72
 $x = ?$
A) 6 B) 8 C) 10 D) 13 E) 15

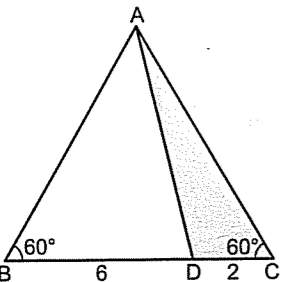
6.  Taralı alan = ?
A) 60 B) 65 C) 75 D) 80 E) 90

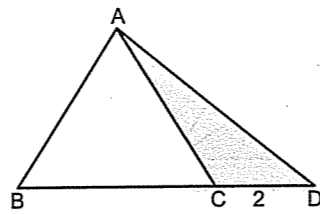
7.  Taralı alan = ?
A) 6 B) 8 C) 12 D) 18 E) 24

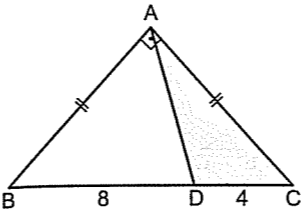
10.  Taralı alan = ?
A) 4 B) $3\sqrt{3}$ C) 6 D) $4\sqrt{3}$ E) 8

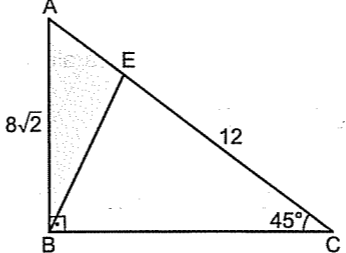
8.  Taralı alan = ?
A) 20 B) 18 C) 16 D) 12 E) 8

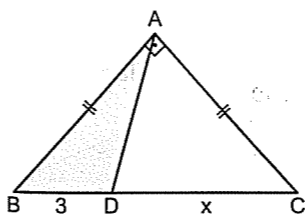
11.  Taralı alan = ?
A) $15\sqrt{3}$ B) $12\sqrt{3}$ C) 12 D) $9\sqrt{3}$ E) 9

9.  Taralı alan = ?
A) $2\sqrt{3}$ B) 4 C) 6 D) $4\sqrt{3}$ E) $6\sqrt{2}$

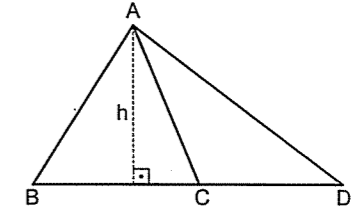
12.  ABC eşkenar üçgen
Taralı alan = $4\sqrt{3}$
Çevre(ABC) = ?
A) 12 B) 16 C) 18 D) 20 E) 24

1.  Taralı alan = ?
A) 20 B) 16 C) 12 D) 8 E) 4

2.  Taralı alan = ?
A) 8 B) 12 C) 16 D) 20 E) 24

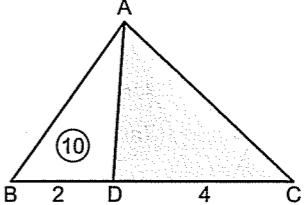
3.  Taralı alan = 9
x = ?
A) 5 B) 6 C) 8 D) 9 E) 12

● Yükseklikler eşit ise tabanlar oranı, alanlar oranına eşittir.



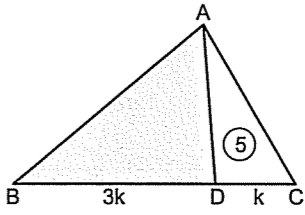
Yukarıdaki şekilde $\frac{\text{Alan}(\text{ABC})}{\text{Alan}(\text{ACD})} = \frac{|\text{BC}|}{|\text{CD}|}$ dir.

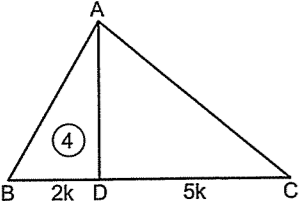
Ya da şöyle düşünebilirsiniz. Üstteki şekilde küçük üçgenlerin alanları oranı tabanları oranına eşit. Bu arada yuvarlak içine yazdığım sayılar o üçgenin alanını gösteriyor. Yoksa başka bişey değil. ☺

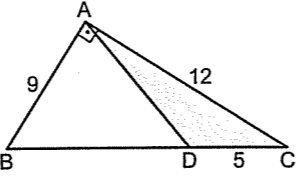
4.  Taralı alan = ?
A) 12 B) 15 C) 16 D) 20 E) 24

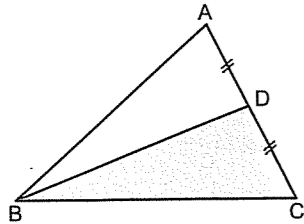
Pırt olarak $\frac{10}{2} = \frac{S}{4}$ yazın yeter.

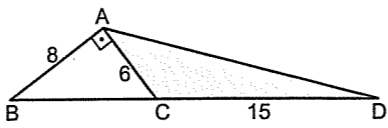
Bu arada S dediğimde taralı alan. ☺

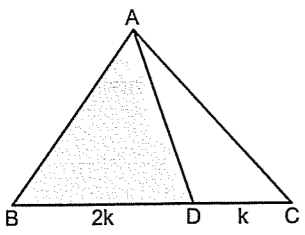
5.  Taralı alan = ?
A) $\frac{15}{2}$ B) 10 C) $\frac{25}{2}$ D) 15 E) 20

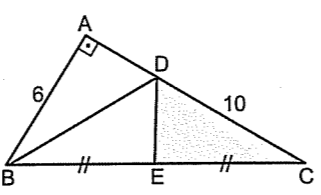
6.  Alan(ABC) = ?
A) 10 B) 14 C) 20 D) 24 E) 30

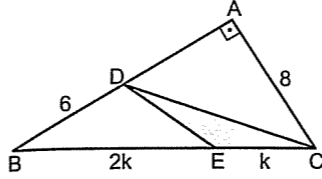
9.  Taralı alan = ?
A) 10 B) 12 C) 15 D) 18 E) 20

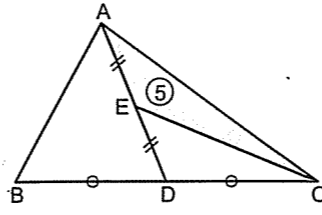
7.  Alan(ABC) = 20
Taralı alan = ?
A) 18 B) 15 C) 10 D) 9 E) 5

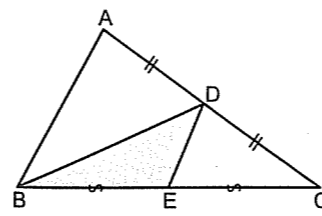
10.  Taralı alan = ?
A) 15 B) 20 C) 24 D) 30 E) 36

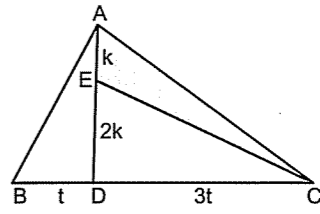
8.  Alan(ABC) = 36
Taralı alan = ?
A) 28 B) 24 C) 20 D) 18 E) 12

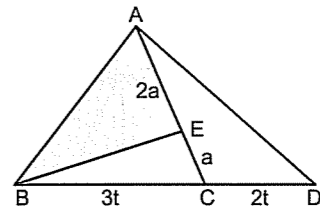
11.  Taralı alan = ?
A) 15 B) 20 C) 25 D) 30 E) 35

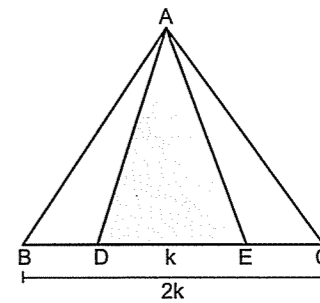
1.  Taralı alan = ?
A) 6 B) 8 C) 12 D) 16 E) 18

2.  Taralı alan = 5
Alan(ABC) = ?
A) 10 B) 15 C) 20 D) 25 E) 30

3.  Alan(ABC) = 12
Taralı alan = ?
A) 10 B) 8 C) 6 D) 4 E) 3

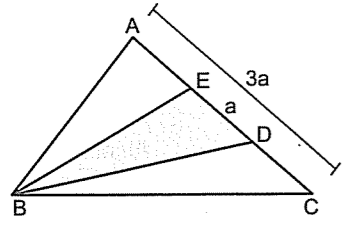
4.  Taralı alan = 4
Alan(ABC) = ?
A) 8 B) 12 C) 16 D) 20 E) 24

5.  $\frac{\text{Taralı alan}}{\text{Alan(ABD)}} = ?$
A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{2}{5}$ D) $\frac{1}{5}$ E) $\frac{3}{4}$

6.  Alan(ABC) = 30
Taralı alan = ?
A) 6 B) 10 C) 12 D) 15 E) 18

— ÜÇGENDE ALAN

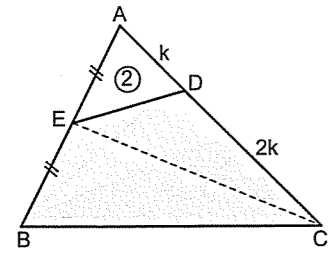
7.



Taralı alan = 4
Alan(ABC) = ?

- A) 6 B) 8 C) 10 D) 12 E) 16

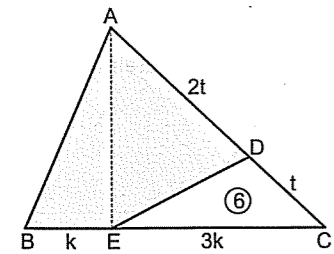
8.



Taralı alan = ?

- A) 10 B) 12 C) 14 D) 16 E) 18

9.

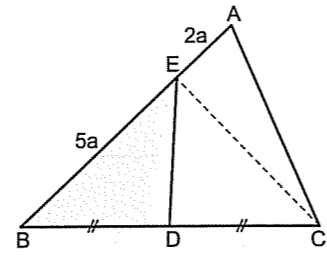


Taralı alan = ?

- A) 10 B) 12 C) 15 D) 16 E) 18

12. Antrenman

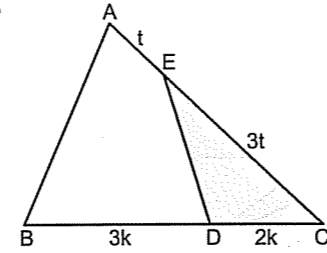
10.



Alan(ABC) = 14
Taralı alan = ?

- A) 5 B) 8 C) 10 D) 12 E) 15

11.

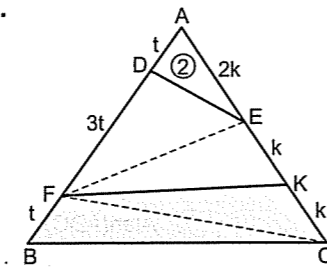


Alan(ABC) = 40
Taralı alan = ?

- A) 10 B) 12 C) 15 D) 18 E) 20

Şu soru aslında zor bi soru. Ama yolunu gösterdim. Yine de çözemezseniz boş verin. Sınavda çıkmaz zaten ☺

12.



Taralı alan = ?

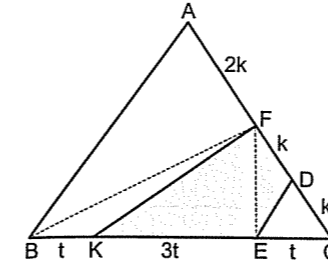
- A) 6 B) 8 C) 10 D) 12 E) 16

Dörtgenleri iki üçgen olacak şekilde parçalamak lâzım

— ÜÇGENDE ALAN

Şu üç sorunun sınavda gelme olasılığı düşük. Ama uğraşmakta fayda var. Nasılsa vaktiniz çok. ☺

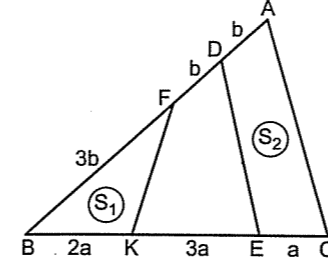
1.



Taralı alan = 7
Alan(ABC) = ?

- A) 14 B) 20 C) 21 D) 28 E) 35

2.

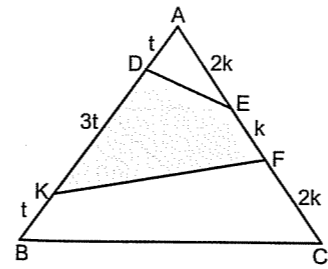


$\frac{S_1}{S_2} = ?$

$S_1 = 6S$ (İki kenarında katı olacak şekilde) olsun diyerek başlayın ve dörtgenleri üçgenlere ayırın.

- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{5}$ E) $\frac{3}{4}$

3.



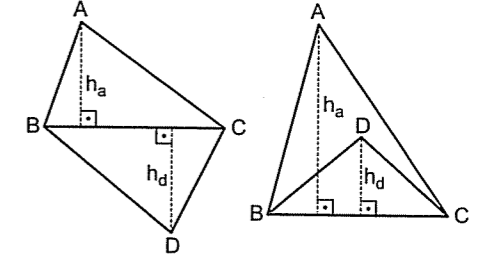
Taralı alan
Alan(ABC) = ?

Çözümüne "A(ADE) = 2S olsun." diyerek başlayın.

- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{2}{5}$ E) $\frac{3}{4}$

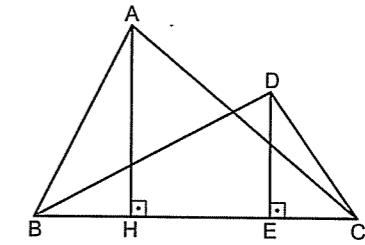
13. Antrenman

● İki üçgenin tabanlar eşit ise yüksekliklerin oranı alanların oranına eşittir.



Yukarıdaki şekilde $\frac{\text{Alan(ABC)}}{\text{Alan(BDC)}} = \frac{h_a}{h_d}$ dir.

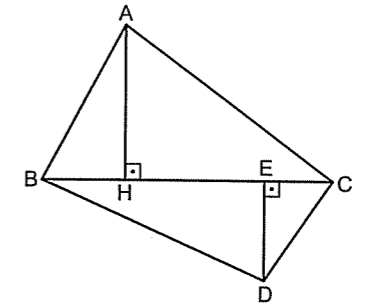
4.



|AH| = 4
|DE| = 3
 $\frac{\text{Alan(ABC)}}{\text{Alan(DBC)}} = ?$

- A) 1 B) $\frac{3}{2}$ C) $\frac{4}{3}$ D) $\frac{5}{4}$ E) $\frac{5}{3}$

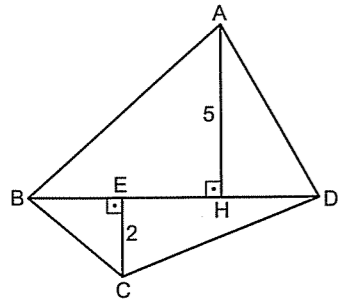
5.



$\frac{\text{Alan(ABC)}}{\text{Alan(DBC)}} = \frac{5}{3}$
 $\frac{|DE|}{|AH|} = ?$

- A) $\frac{5}{3}$ B) $\frac{3}{5}$ C) $\frac{2}{3}$ D) $\frac{3}{2}$ E) 1

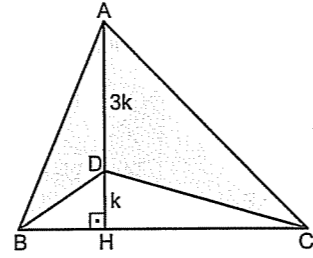
6.



Alan(BCD) = 10
Alan(ABD) = ?

- A) 25 B) 30 C) 35 D) 40 E) 45

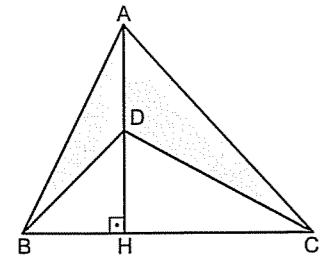
9.



$\frac{\text{Alan}(BDC)}{\text{Alan}(ABDC)} = ?$

- A) 3 B) 2 C) 1 D) $\frac{1}{2}$ E) $\frac{1}{3}$

7.

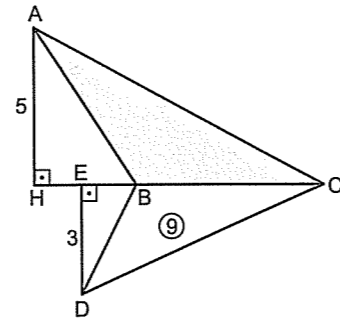


$\frac{|AH|}{|DH|} = \frac{5}{3}$

Taralı alan = 30
Alan(ABC) = ?

- A) 40 B) 45 C) 50 D) 60 E) 75

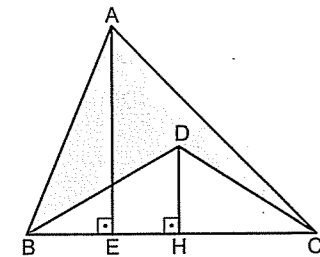
10.



Taralı alan = ?

- A) 15 B) 12 C) 10 D) 9 E) 8

8.

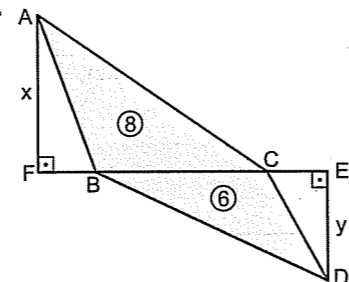


$\frac{\text{Taralı alan}}{\text{Alan}(ABC)} = \frac{3}{4}$

$\frac{|DH|}{|AE|} = ?$

- A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{2}{3}$ E) $\frac{3}{4}$

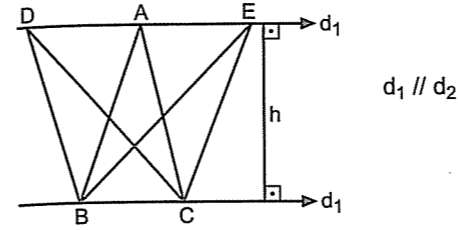
11.



$\frac{x}{y} = ?$

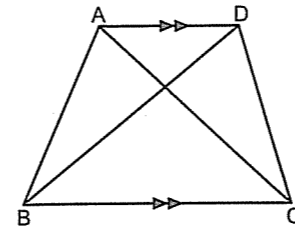
- A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) $\frac{1}{3}$ D) $\frac{1}{4}$ E) $\frac{1}{7}$

● Tabanları ve yükseklikleri eşit olan üçgenlerin alanları eşittir.



Yukarıdaki şekilde $A(ABC) = A(DBC) = A(EBC)$ dir. Yani, [BC] tabanıyla oynamadan üçgenin tepesini (A'yı) tabana paralel olan doğru (d_1) üzerinde sağa sola götürmekle alan değişmiyor.

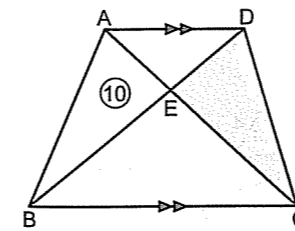
1.



Alan(ABC) = 20
Alan(DBC) = ?

- A) 5 B) 10 C) 15 D) 20 E) 40

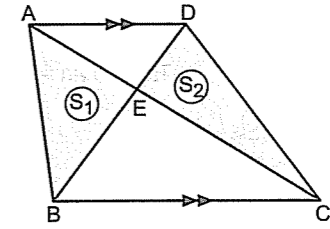
2.



Taralı alan = ?

- A) 5 B) 10 C) 15 D) 20 E) 25

3.

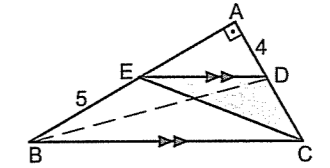


$\frac{S_1}{S_2} = ?$

- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

Şu soruda paralel doğruların üzerinde ([ED]'nin) olan kenara ait noktalara (E ve D'ye) dokunmadan diğer noktayı (C'yi) uzunluğu bilinen kenarın ucuna kaydırın. Genelde bu şekilde çözülüyor da. ☺

4.

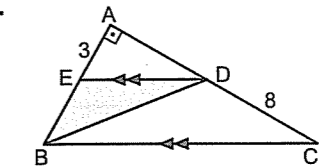


Taralı alan = ?

☺ C noktasını tutup B'ye kaydırduğumuzda Alan(DEC) = Alan(DEB) olur. Zaten DEB üçgeninin alanını bulmak ta çok kolay. ☺

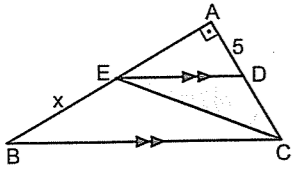
- A) 5 B) 8 C) 10 D) 12 E) 15

5.

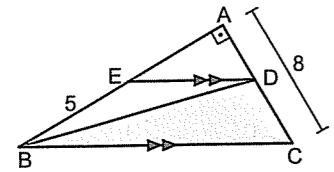


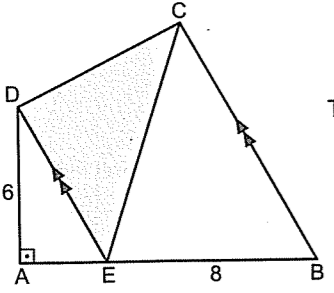
Taralı alan = ?

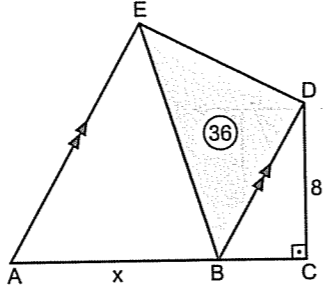
- A) 8 B) 12 C) 16 D) 18 E) 20

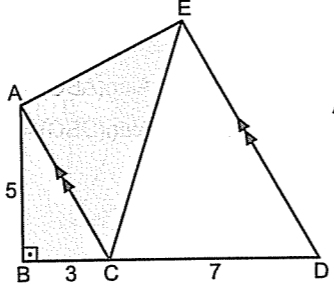
6.  Taralı alan = 15
x = ?
A) 3 B) 6 C) 9 D) 10 E) 12

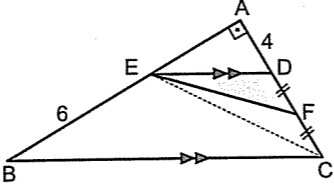
Unutmayın! Paralel doğru üzerindeki kenarla oynamıyorsunuz.

7.  Taralı alan = ?
A) 40 B) 30 C) 25 D) 20 E) 10

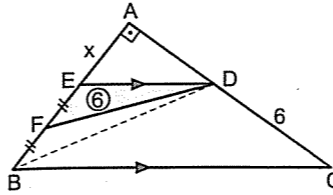
8.  Taralı alan = ?
A) 48 B) 36 C) 32 D) 24 E) 18

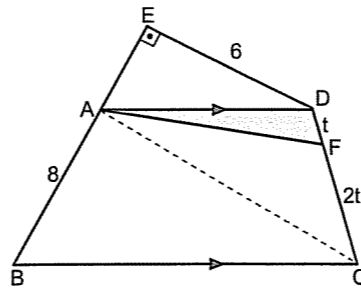
9.  x = ?
A) 9 B) 12 C) 16 D) 18 E) 24

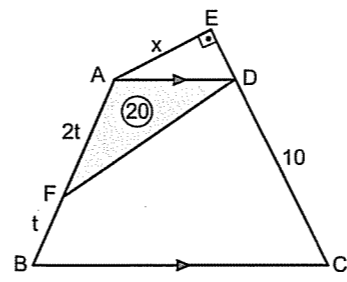
10.  Alan(ABCE) = ?
A) 12 B) 18 C) 20 D) 24 E) 25

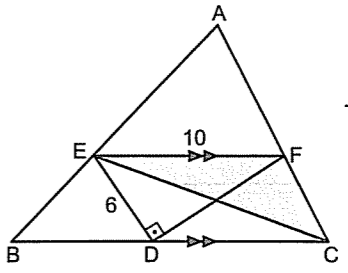
11.  Taralı alan = ?
A) 6 B) 9 C) 12 D) 18 E) 24

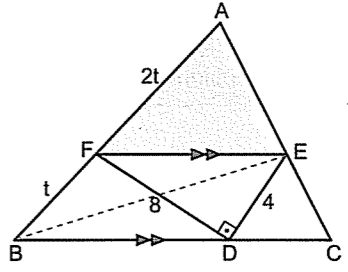
Bu antrenmandaki sorular biraz daha baba. Ama yapılmayacak cinsten de değil yani.

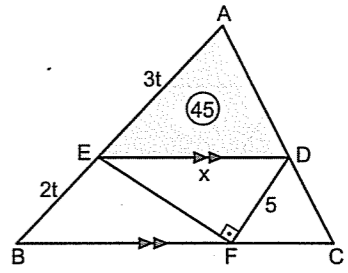
1.  x = ?
A) 2 B) 3 C) 4 D) 6 E) 8

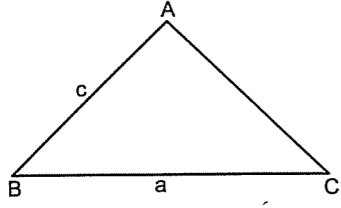
2.  Taralı alan = ?
A) 6 B) 8 C) 12 D) 16 E) 18

3.  x = ?
A) 4 B) 6 C) 8 D) 12 E) 16

4.  Taralı alan = ?
A) 12 B) 18 C) 24 D) 28 E) 30

5.  Taralı alan = ?
A) 32 B) 30 C) 24 D) 20 E) 18

6.  x = ?
A) 10 B) 13 C) 15 D) 17 E) 20



İki kenarı ve arasındaki açısı bilinen üçgenin alanı

$$\text{Alan}(ABC) = \frac{a \cdot c \cdot \sin \hat{B}}{2} \text{ şeklinde bulunur.}$$

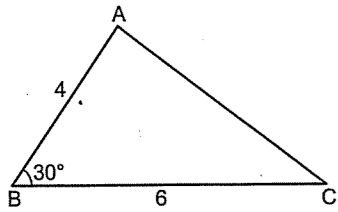
Bazı özel açılarının sinüs değerlerini vereyim. Lazım olacak.

$$\begin{aligned} \sin 30^\circ &= \sin 150^\circ = \frac{1}{2} \\ \sin 45^\circ &= \sin 135^\circ = \frac{\sqrt{2}}{2} \\ \sin 60^\circ &= \sin 120^\circ = \frac{\sqrt{3}}{2} \end{aligned}$$

$\sin 90^\circ = 1$ (sinüsün en büyük değeri 1'dir.)

Üstte dikkat ettiyseniz birbirini 180° tamamlayan açılarının sinüs değerleri birbirine eşit.

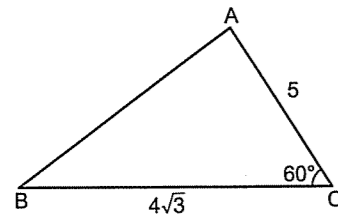
7.



Alan(ABC) = ?

- A) 4 B) 6 C) $4\sqrt{3}$ D) $6\sqrt{3}$ E) 12

8.

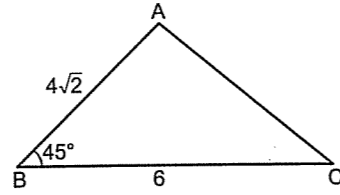


Alan(ABC) = ?

- A) $4\sqrt{3}$ B) 8 C) $6\sqrt{2}$ D) 9 E) 15

1-C 2-B 3-B 4-C 5-A

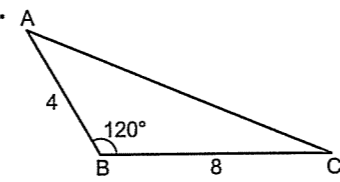
9.



Alan(ABC) = ?

- A) 6 B) $4\sqrt{3}$ C) $6\sqrt{2}$ D) 12 E) 18

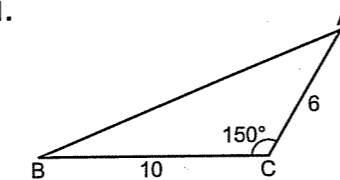
10.



Alan(ABC) = ?

- A) 8 B) $6\sqrt{3}$ C) $8\sqrt{2}$ D) $8\sqrt{3}$ E) 12

11.

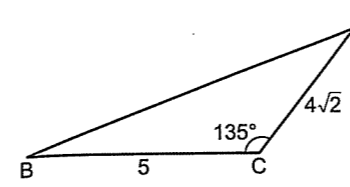


Alan(ABC) = ?

- A) 15 B) 12 C) 10 D) 8 E) 6

6-B 7-B 8-E 9-D 10-D 11-A

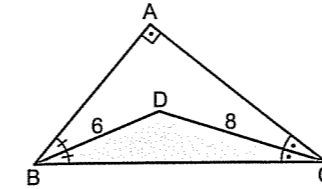
1.



Alan(ABC) = ?

- A) 20 B) 15 C) $10\sqrt{2}$ D) 10 E) $5\sqrt{2}$

2.



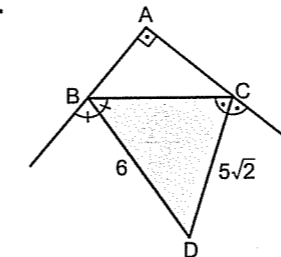
Taralı alan = ?



2,3,4 ve 5. sorularda ilk önce \hat{D} açısını bulmak lazım. 😊

- A) $12\sqrt{2}$ B) 12 C) $8\sqrt{2}$ D) $6\sqrt{2}$ E) 8

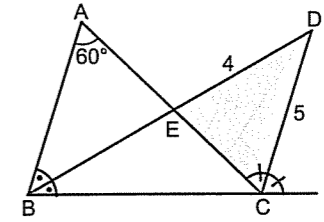
3.



Taralı alan = ?

- A) 30 B) 20 C) $15\sqrt{2}$ D) 15 E) $10\sqrt{2}$

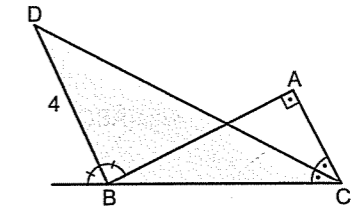
4.



Taralı alan = ?

- A) $10\sqrt{3}$ B) 10 C) $5\sqrt{3}$ D) $5\sqrt{2}$ E) 5

5.

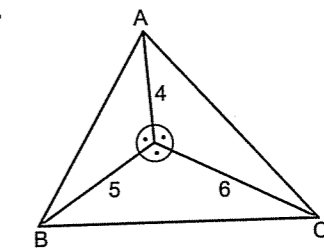


$|DC| = 8$

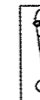
Taralı alan = ?

- A) $8\sqrt{2}$ B) 10 C) $6\sqrt{2}$ D) 8 E) $4\sqrt{3}$

6.



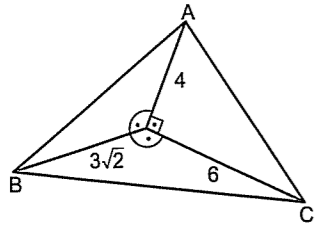
Alan(ABC) = ?



6, 7, 8 ve 9. sorularda içerideki üçgenlerin alanlarını ayrı ayrı bulmak lâzım.

- A) $37\sqrt{3}$ B) $30\sqrt{3}$ C) $\frac{37\sqrt{3}}{2}$
D) $\frac{32\sqrt{3}}{3}$ E) $24\sqrt{3}$

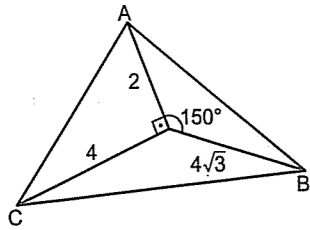
7.



Alan(ABC) = ?

- A) 24 B) 27 C) 30 D) 33 E) 36

8.

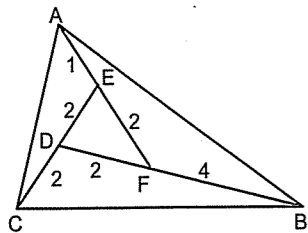


Alan(ABC) = ?

- A) $8+\sqrt{3}$ B) $8+2\sqrt{3}$ C) 16
D) $16+2\sqrt{3}$ E) $8+3\sqrt{3}$

Bu soruda dört küçük üçgende sinüslü formülü kullanmak lâzım.

9.

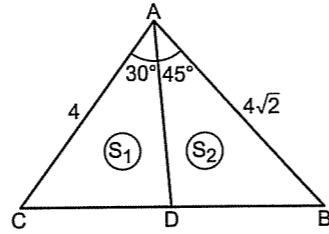


Alan(ABC) = ?

- A) $9\sqrt{3}$ B) $8\sqrt{3}$ C) $6\sqrt{3}$ D) 10 E) 8

10.

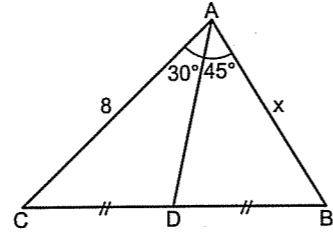
Şu üç soruda alanları sinüslü formülden yazın bakalım ne oluyor?



$\frac{S_1}{S_2} = ?$

- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) $\sqrt{2}$ E) $\sqrt{3}$

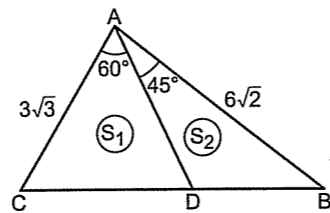
11.



x = ?

- A) $6\sqrt{2}$ B) 6 C) $4\sqrt{2}$ D) 5 E) 4

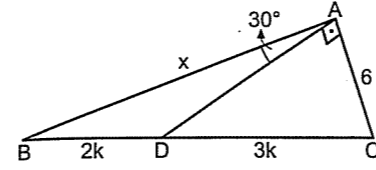
12.



$\frac{S_1}{S_2} = ?$

- A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) $\frac{3}{4}$ D) $\frac{4}{3}$ E) $\frac{3}{2}$

1.



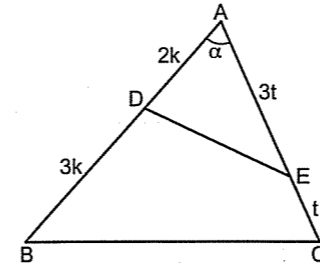
x = ?

- A) 7 B) 8 C) 9 D) 10 E) 12

Bir açısı ortak iki üçgenin alanları oranı sorulduğunda alanı bu açıya göre sinüslü formülden bulun.

Örneğin, şu dört soruda α açısını baz alıp üçgenlerin alanını sinüslü formülle hesaplayın. Zaten göreceksiniz ki α malfa kalmıyor. ☺

2.

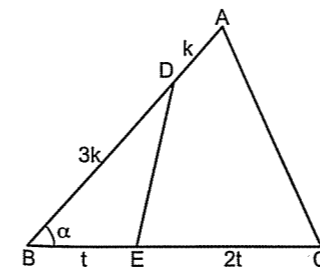


$\frac{\text{Alan}(ADE)}{\text{Alan}(ABC)} = ?$

- A) $\frac{3}{20}$ B) $\frac{3}{10}$ C) $\frac{3}{8}$ D) $\frac{3}{5}$ E) $\frac{2}{5}$

Ama α 'yı soruda vermiyorlar tabi ki. Kolaylık olsun diye ben verdim.

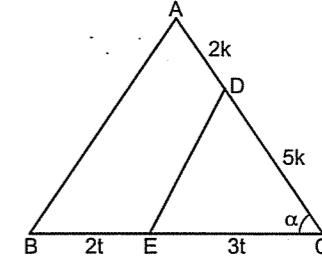
3.



$\frac{\text{Alan}(ABC)}{\text{Alan}(BDE)} = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

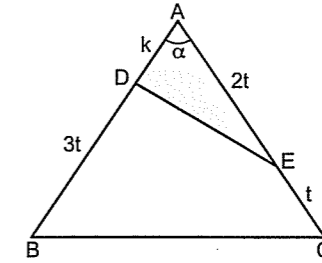
4.



$\frac{\text{Alan}(DEC)}{\text{Alan}(ABED)} = ?$

- A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{4}{3}$ D) $\frac{3}{5}$ E) $\frac{5}{3}$

5.

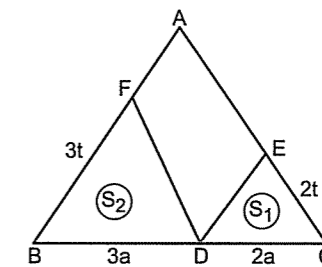


Alan(ABC) = 12
Taratı alan = ?

- A) 2 B) 3 C) 4 D) 5 E) 6

Bir açısı aynı olan farklı iki üçgende alanların oranını bulurken bu açıya göre sinüslü alan formülünü kullanmak baya bi işe yarıyor. Görün isterseniz.

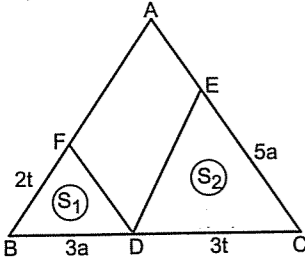
6.

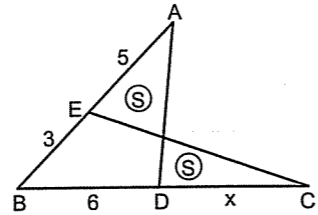


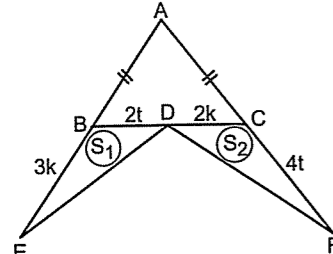
|AB| = |AC|

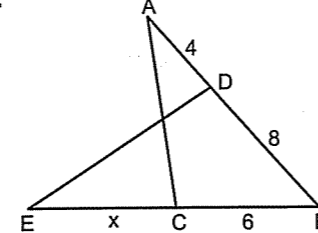
$\frac{S_1}{S_2} = ?$

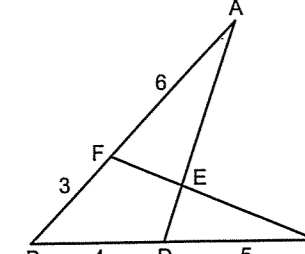
- A) $\frac{2}{3}$ B) $\frac{2}{9}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ E) $\frac{9}{5}$

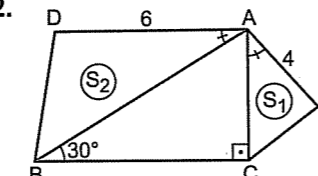
7.  $|AB| = |AC|$
 $\frac{S_1}{S_2} = ?$
 A) $\frac{2}{5}$ B) $\frac{1}{5}$ C) $\frac{3}{5}$ D) $\frac{3}{2}$ E) $\frac{2}{3}$

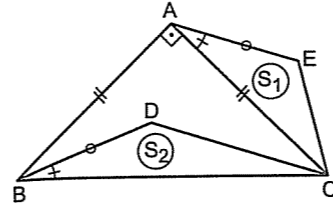
10.  $x = ?$
 A) 6 B) 8 C) 10 D) 12 E) 14

8.  $\frac{S_1}{S_2} = ?$
 A) 2 B) $\frac{3}{2}$ C) $\frac{2}{3}$ D) $\frac{4}{3}$ E) $\frac{3}{4}$

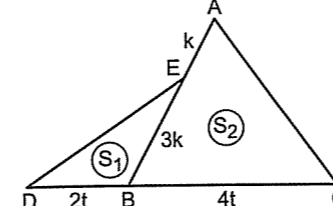
11.  $\frac{\text{Alan}(ABC)}{\text{Alan}(DBE)} = \frac{1}{2}$
 $x = ?$
 A) 8 B) 9 C) 10 D) 11 E) 12

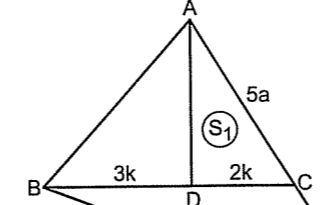
9.  $\frac{\text{Alan}(ABD)}{\text{Alan}(BFC)} = ?$
 A) $\frac{3}{2}$ B) $\frac{3}{4}$ C) $\frac{4}{3}$ D) $\frac{5}{3}$ E) $\frac{5}{4}$

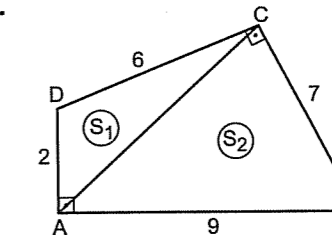
12.  $\frac{S_1}{S_2} = ?$
 A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3


1.  $\frac{S_1}{S_2} = ?$
 A) $\frac{1}{3}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{1}{2}$ D) $\frac{1}{\sqrt{2}}$ E) 1

Unutmayın! Birbirini 180°'ye tamamlayan iki açının sinüsleri eşittir. Şu beş soruda lazım da. 😊

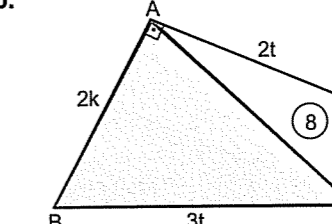
2.  $\frac{S_1}{S_2} = ?$
 A) $\frac{3}{2}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{3}{7}$ E) $\frac{3}{8}$

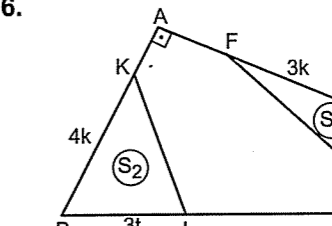
3.  $\frac{S_1}{S_2} = ?$
 A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{2}$ E) 1

4.  $\frac{S_1}{S_2} = ?$

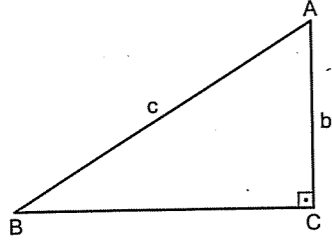
 Bir dörtgenin iç açıları toplamı 360° olduğundan, $\hat{A} + \hat{C} = 180^\circ$ ise $\hat{B} + \hat{D} = 180^\circ$ dir. Dolayısıyla $\sin \hat{B} = \sin \hat{D}$ olur.

- A) $\frac{4}{15}$ B) $\frac{3}{19}$ C) $\frac{4}{19}$ D) $\frac{4}{21}$ E) $\frac{5}{21}$

5.  Taralı alan = ?
 A) 18 B) 20 C) 24 D) 27 E) 30

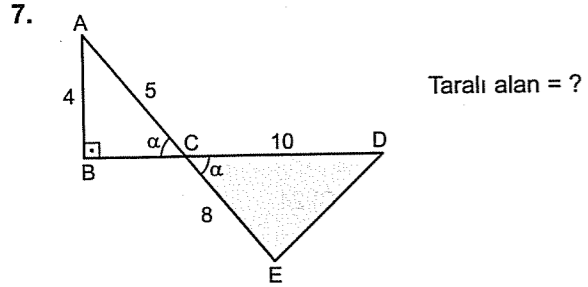
6.  $\frac{S_1}{S_2} = ?$
 A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{3}{4}$ D) $\frac{3}{2}$ E) $\frac{4}{3}$

● Tabii ki her açının sinüs değerini bilemeyebilirsiniz. Ama dik üçgende bir açının sinüs değerini hesaplarken biraz trigo biliyorsanız sıkıntı değil. Bunu da halledebilirsiniz.

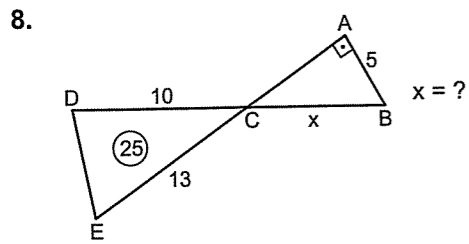


Dik üçgende $\sin \hat{B} = \frac{\text{Karşı dik kenar}}{\text{Hipotenüs}} = \frac{b}{c}$ dir.

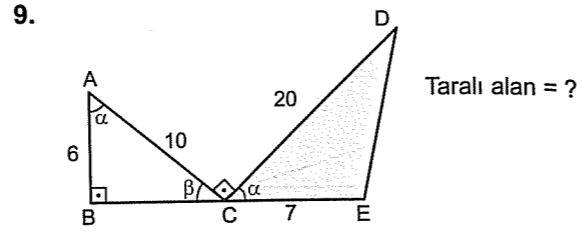
Yalnız çoğu zaman size lâzım olan açının sinüs değerini, alanı istenen üçgende değil de diğer bir üçgenden bulursunuz. Onun için ölçüsü aynı olan açıları harflendirin.



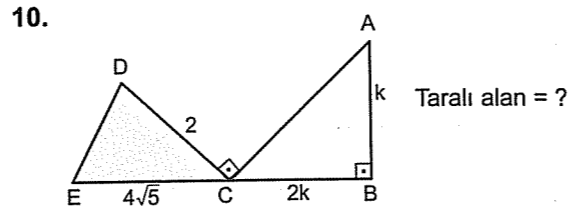
- A) 32 B) 28 C) 24 D) 20 E) 18



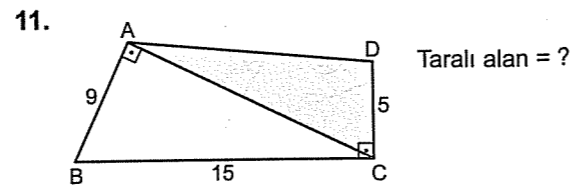
- A) 6 B) $5\sqrt{2}$ C) $5\sqrt{3}$ D) 10 E) 13



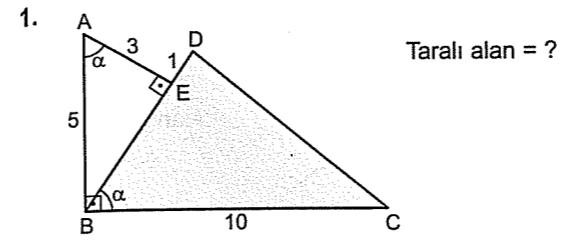
- A) 28 B) 35 C) 48 D) 56 E) 60



- A) 4 B) 6 C) 8 D) $4\sqrt{5}$ E) $5\sqrt{5}$

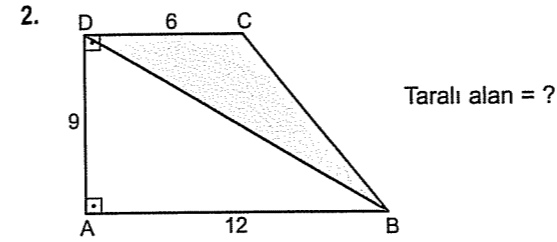


- A) 30 B) 24 C) 20 D) 18 E) 15

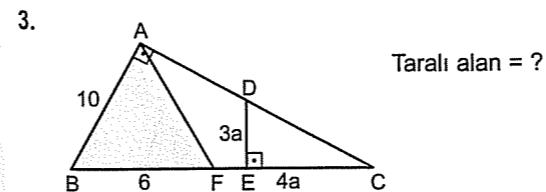


- A) 10 B) 15 C) 20 D) 25 E) 30

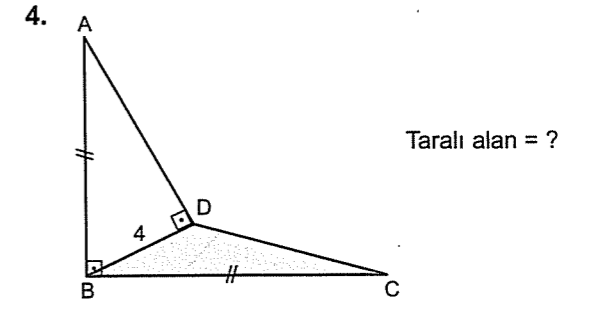
Aslında şu soruda sinüslü olan formülü kullanmak daha şık. Siz bilirsiniz. ☺



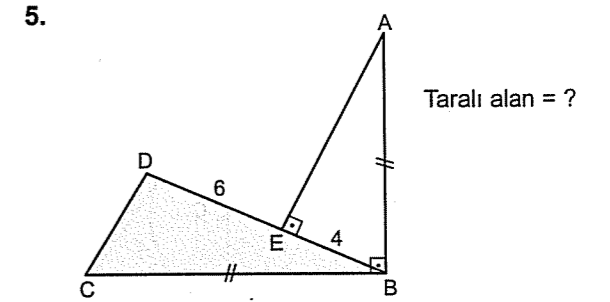
- A) 18 B) 24 C) 27 D) 30 E) 33



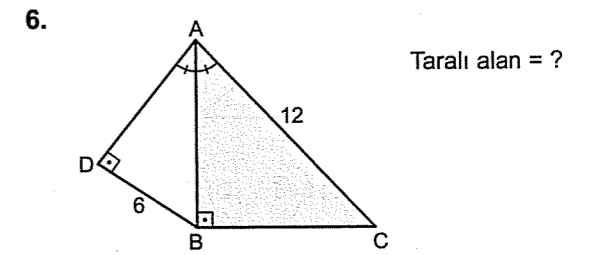
- A) 12 B) 15 C) 18 D) 20 E) 24



- A) 4 B) 8 C) 12 D) 16 E) 20

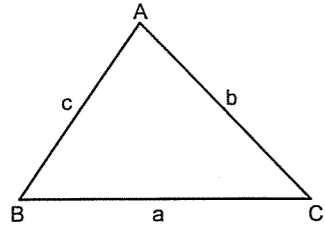


- A) 30 B) 25 C) 20 D) 15 E) 10



- A) 12 B) 16 C) 24 D) 30 E) 36

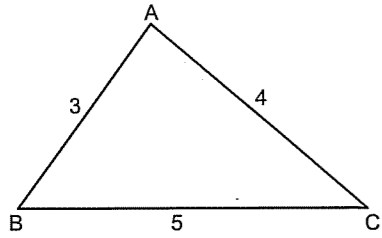
► Üç Kenarı Bilinen Üçgenin Alanı



$$\text{Çevrenin yarısı} = u = \frac{a+b+c}{2}$$

$$\text{Alan}(ABC) = \sqrt{u(u-a)(u-b)(u-c)}$$

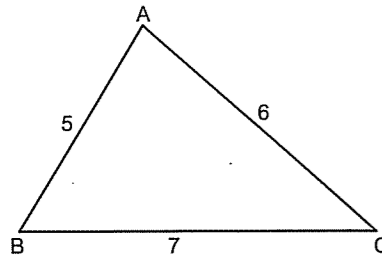
7.



Alan(ABC) = ?

- A) 4 B) 6 C) 8 D) 9 E) 10

8.

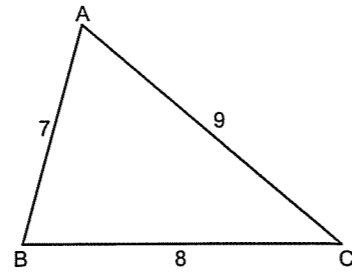


Alan(ABC) = ?

- A) $4\sqrt{6}$ B) $5\sqrt{6}$ C) $6\sqrt{6}$ D) $7\sqrt{6}$ E) $8\sqrt{6}$

Bence 5-6-7 üçgeninin alanını ezbere bilmek lâzım. Bununla baya bi karşılaşacaksınız çünkü.

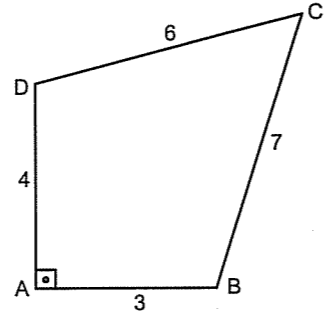
9.



Alan(ABC) = ?

- A) $6\sqrt{3}$ B) $6\sqrt{5}$ C) $6\sqrt{6}$ D) $8\sqrt{5}$ E) $12\sqrt{5}$

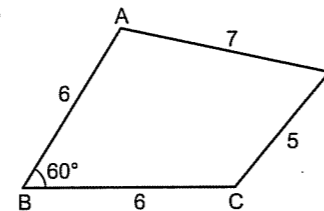
10.



Alan(ABCD) = ?

- A) $6+\sqrt{6}$ B) $6+\sqrt{5}$ C) $12+\sqrt{6}$
D) $6+6\sqrt{6}$ E) $12+6\sqrt{6}$

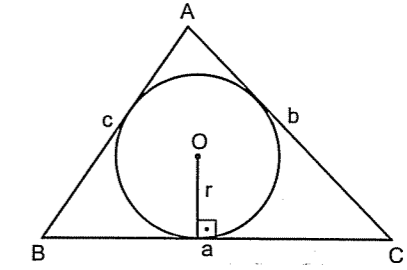
11.



Alan(ABCD) = ?

- A) $6+6\sqrt{6}$ B) $12+6\sqrt{6}$ C) $9\sqrt{3}+6\sqrt{6}$
D) $9\sqrt{3}+3\sqrt{6}$ E) $12+3\sqrt{6}$

İç Teğet Çemberin Yarıçapı Bilinen Üçgenin Alanı

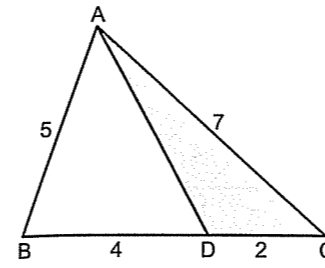


$$u = \frac{a+b+c}{2}$$

Yukarıdaki şekilde $\text{Alan}(ABC) = u \cdot r$ dir.

Bu u'lu r'li alan formülünü lâzım olursa diye anlatıyorum. Lâzım olacağını sanmıyorum. Ama her ihtimale karşı işte. ☺

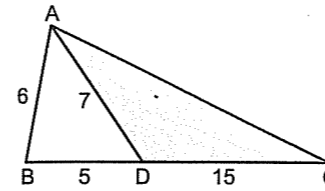
1.



Taralı alan = ?

- A) $\sqrt{6}$ B) $2\sqrt{6}$ C) $3\sqrt{6}$ D) $4\sqrt{6}$ E) $5\sqrt{6}$

2.

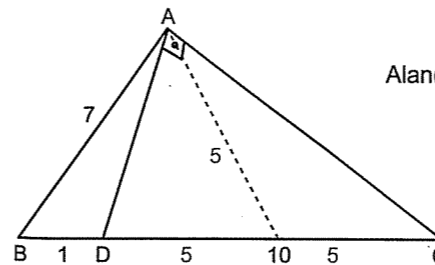


Taralı alan = ?

- A) $3\sqrt{6}$ B) $6\sqrt{6}$ C) $12\sqrt{6}$ D) $15\sqrt{6}$ E) $18\sqrt{6}$

Şu çok baba bi soru ☺
Ama yolunu göstereyim yine.

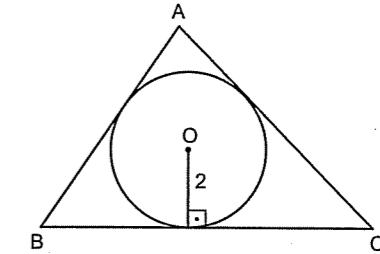
3.



Alan(ABC) = ?

- A) $5\sqrt{6}$ B) $6\sqrt{6}$ C) $7\sqrt{6}$ D) $9\sqrt{6}$ E) $11\sqrt{6}$

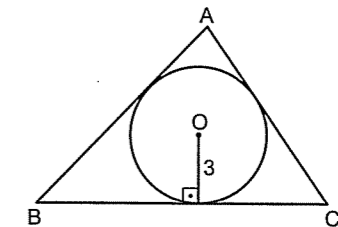
4.



Çevre(ABC) = 18
Alan(ABC) = ?

- A) 24 B) 18 C) 15 D) 12 E) 9

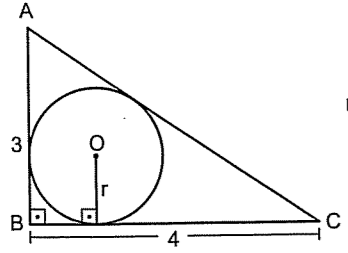
5.



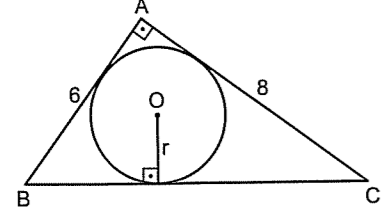
Alan(ABC) = 54
Çevre(ABC) = ?

- A) 54 B) 48 C) 42 D) 36 E) 30

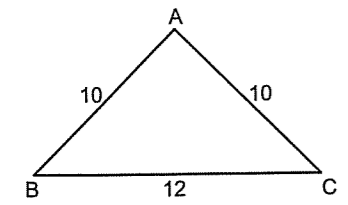
Şu sorularda önce alanı bildiğiniz yollardan bulun. Sonra da u.r'li formüle eşitleyin. Hepsi çıkıyor. ☺

6.  $r = ?$

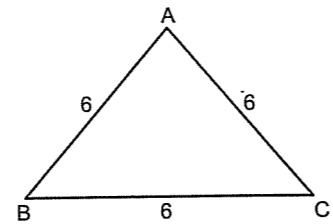
A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $\sqrt{5}$

7.  $r = ?$

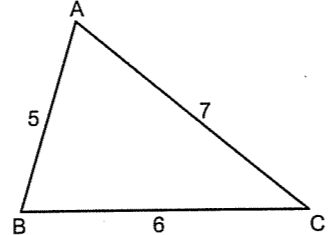
A) 1 B) $\sqrt{3}$ C) 2 D) $\sqrt{5}$ E) 3

8.  $r = ?$

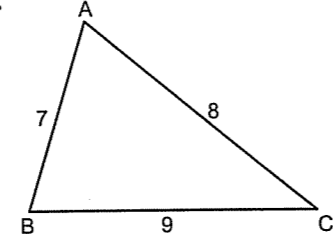
A) 1 B) 2 C) 3 D) 4 E) 5

9.  $r = ?$

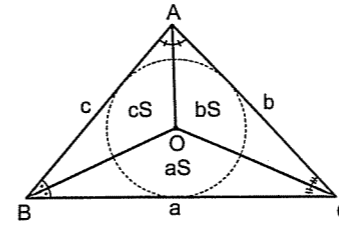
A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $2\sqrt{3}$

10.  $r = ?$

A) $\frac{\sqrt{6}}{2}$ B) $\frac{\sqrt{6}}{3}$ C) $\frac{2\sqrt{6}}{3}$ D) $\sqrt{6}$ E) $2\sqrt{6}$

11.  $r = ?$

A) 1 B) $\sqrt{3}$ C) 2 D) $\sqrt{5}$ E) 3

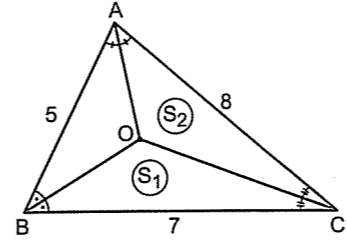


Üçgende açılardan hatırlayın. İç teğet çemberin merkezi iç açıortayların kesim noktasıydı. Yani O, iç teğet çemberinin merkezidir.

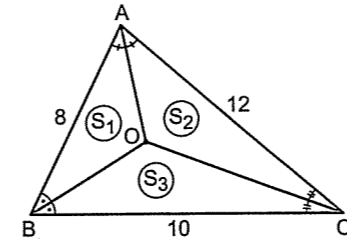
AOB, AOC ve BOC üçgenlerinin yükseklikleri eşit olduğundan, alanları tabanları ile orantılıdır.

$\text{Alan}(\text{AOB}) = cS$, $\text{Alan}(\text{AOC}) = bS$ ve

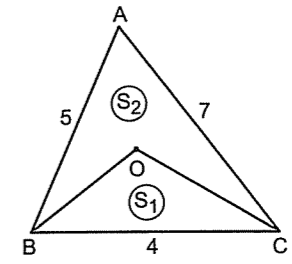
$\text{Alan}(\text{BOC}) = aS$ dir.

1.  $\frac{S_1}{S_2} = ?$

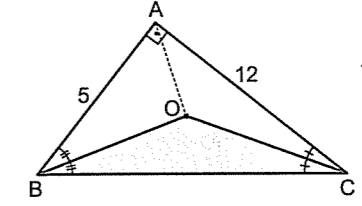
A) $\frac{5}{7}$ B) $\frac{5}{8}$ C) $\frac{8}{7}$ D) $\frac{7}{8}$ E) $\frac{7}{5}$

2.  $\frac{S_1 + S_2}{S_3} = ?$

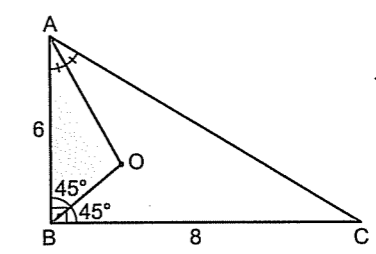
A) $\frac{6}{5}$ B) 2 C) $\frac{5}{4}$ D) $\frac{3}{2}$ E) $\frac{2}{3}$

3.  O, iç teğet çemberin merkezi $\frac{S_1}{S_2} = ?$

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

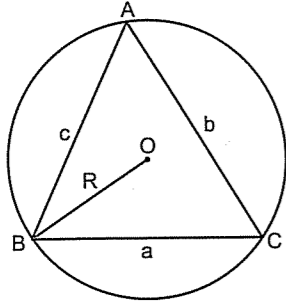
4.  Taralı alan = ?

A) $\frac{1}{6}$ B) $\frac{13}{2}$ C) $\frac{13}{3}$ D) 13 E) 26

5.  Taralı alan = ?

A) 3 B) $\frac{7}{2}$ C) 4 D) 6 E) 9

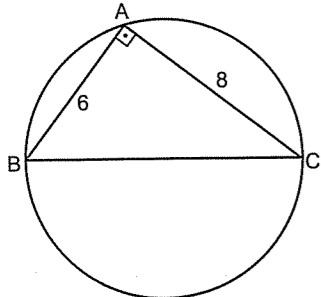
Çevrel Çemberin Yarıçapı Bilinen Üçgenin Alanı



Yukarıdaki şekilde $\text{Alan}(ABC) = \frac{a \cdot b \cdot c}{4R}$ dir.

Aklınızda olsun. Üçgende büyük R'yi ya da küçük r'yi sorarlarsa genelde alanı ilk önce normal yollar-
dan bulmak gerekir. Sonrası kolay zaten. R'li veya
r'li (hangi lâzımsa) formüle eşitleyerek devam eder-
siniz.

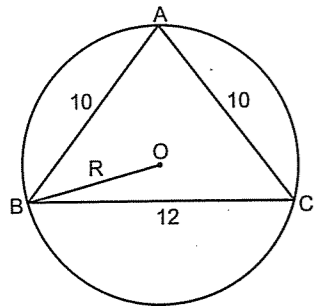
6.



Çevrel çemberin yarıçapı = R = ?

- A) 1 B) 2 C) 3 D) 4 E) 5

7.

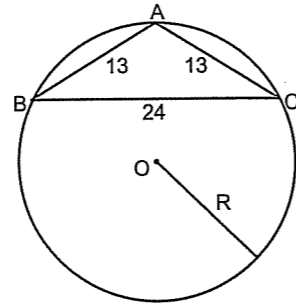


R = ?

- A) 7 B) 8 C) 10 D) $\frac{25}{2}$ E) $\frac{25}{4}$

1-D 2-B 3-A 4-D 5-D

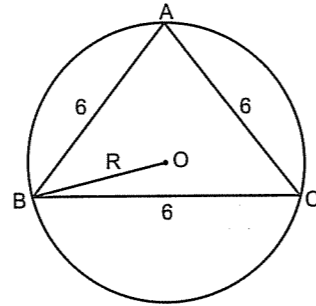
8.



R = ?

- A) $\frac{196}{10}$ B) $\frac{196}{5}$ C) $\frac{169}{10}$
D) $\frac{169}{5}$ E) 13

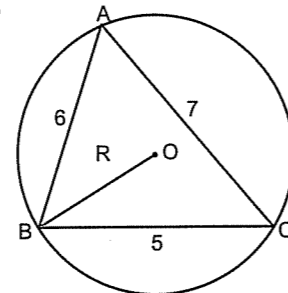
9.



R = ?

- A) $2\sqrt{3}$ B) 4 C) $3\sqrt{3}$ D) 6 E) $4\sqrt{3}$

10.



R = ?

- A) $\frac{35}{2\sqrt{6}}$ B) $\frac{35}{4\sqrt{6}}$ C) $\frac{25}{2\sqrt{6}}$
D) $\frac{25}{\sqrt{6}}$ E) $\frac{15}{4\sqrt{6}}$

6-E 7-E 8-C 9-A 10-B

7.

Bölüm

ÜÇGENDE AÇIORTAY

Ders alınmış başarısızlık başarı demektir.

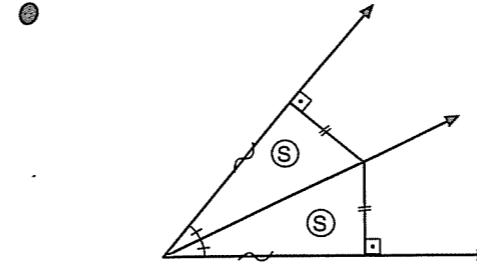
Malcom S. Forbes

Birşeyden hoşlanmıyorsan, onu değiştir;
değiştiremiyorsan da, ona bakış açını değiştir...

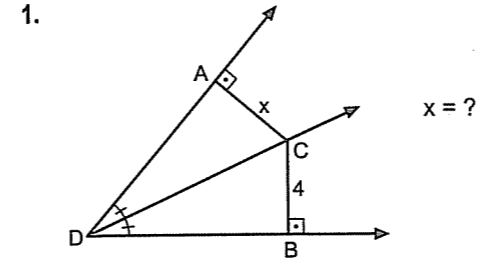
Mary Engelbreit

ÜÇGENDE AÇIORTAY

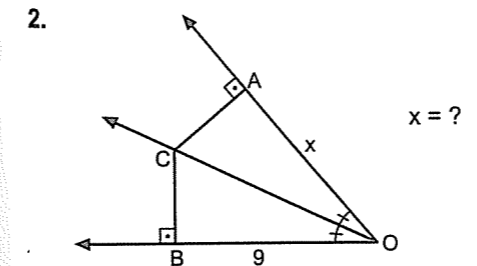
1. Antrenman



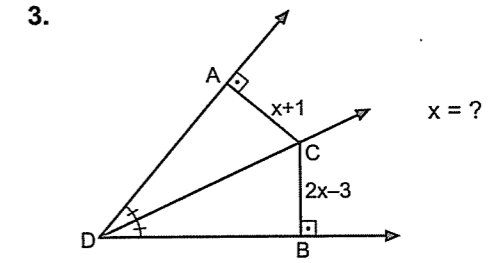
Açıortayın üzerinde alınan bir noktadan kollara inilen dikler eşit, kollarda ayırdığı parçalar da eşittir. Dolayısıyla da oluşan üçgenlerin de alanları birbirine eşittir.



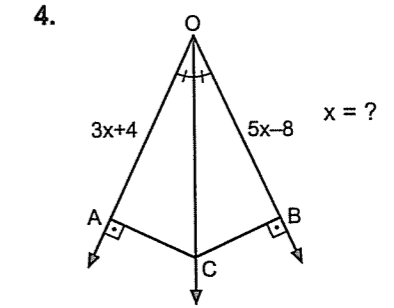
A) 2 B) 3 C) 4 D) 5 E) 6



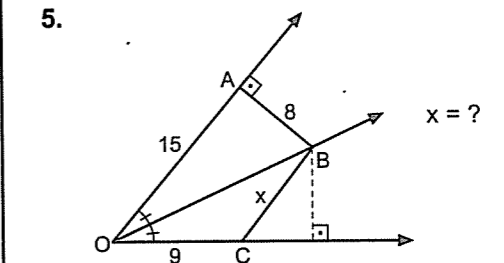
A) 3 B) 4 C) 6 D) 8 E) 9




A) 2 B) 3 C) 4 D) 5 E) 6

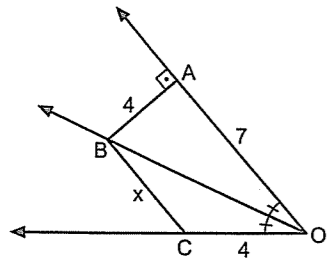


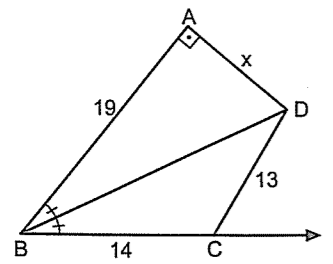
A) 4 B) 6 C) 8 D) 10 E) 12

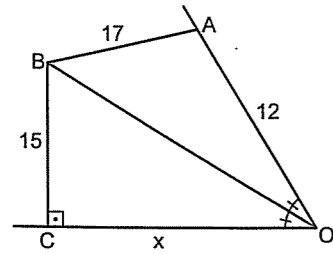


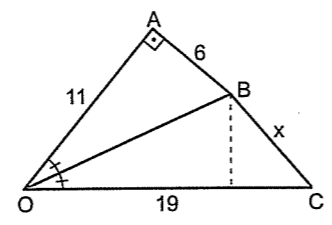
 Açıortayın kollarına dik inerken şunu yapın; açıortayın başlangıç noktasına kaleminizi koyun ve açıortay üzerinde ilerleyin. Üzerindeki bir noktadan kollardan birine dik inilmişse diğerine de diki siz inin.

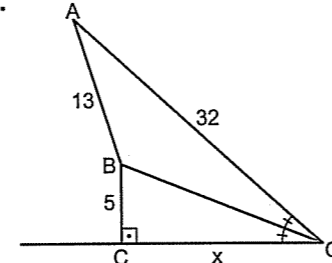
A) 5 B) 6 C) 9 D) 10 E) 13

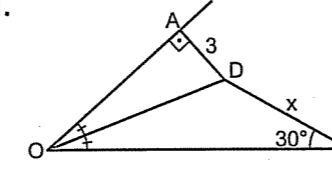
6.  $x = ?$
 A) 4 B) 5 C) $4\sqrt{2}$ D) $4\sqrt{3}$ E) $5\sqrt{2}$

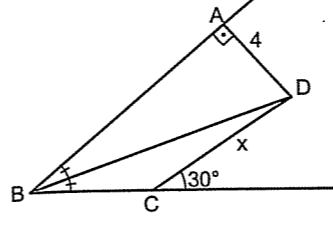
7.  $x = ?$
 A) 13 B) 12 C) 10 D) 8 E) 6

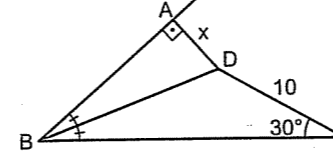
8.  $m(\widehat{BAO}) > 90^\circ$
 $x = ?$
 A) 13 B) 15 C) 17 D) 18 E) 20

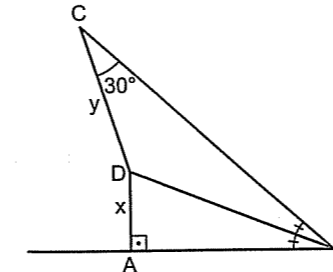
9.  $x = ?$
 A) 5 B) 7 C) 10 D) 13 E) 15

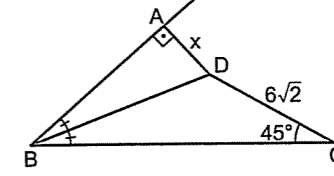
10.  $x = ?$
 A) 20 B) 15 C) 13 D) 10 E) 8

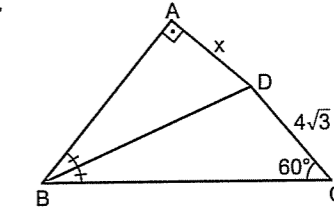
11.  $x = ?$
 A) 4 B) $3\sqrt{2}$ C) $3\sqrt{3}$ D) $4\sqrt{2}$ E) 6

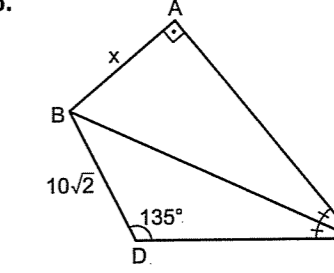
1.  $x = ?$
 A) 5 B) $4\sqrt{2}$ C) 6 D) $4\sqrt{3}$ E) 8

2.  $x = ?$
 A) 5 B) $5\sqrt{2}$ C) $5\sqrt{3}$ D) 8 E) 9

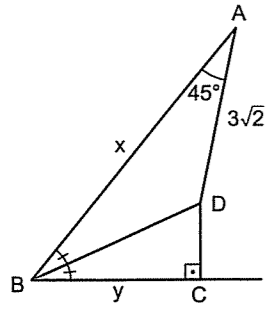
3.  $\frac{x}{y} = ?$
 A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

4.  $x = ?$
 A) 3 B) $3\sqrt{2}$ C) 4 D) $4\sqrt{2}$ E) 6

5.  $x = ?$
 A) 3 B) $2\sqrt{3}$ C) 4 D) $3\sqrt{3}$ E) 6

6.  $x = ?$
 A) 5 B) $5\sqrt{2}$ C) $5\sqrt{3}$ D) 10 E) 13

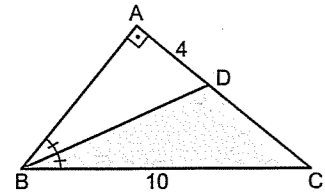
7.



$x - y = ?$

- A) 1 B) $\sqrt{2}$ C) 2 D) $\sqrt{3}$ E) 3

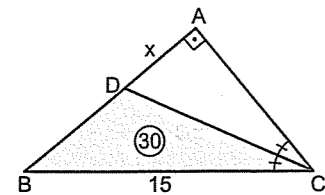
8.



Taralı alan = ?

- A) 40 B) 30 C) 25 D) 20 E) 10

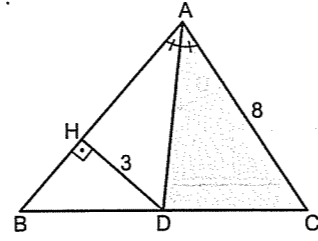
9.



$x = ?$

- A) 5 B) 4 C) 3 D) 2 E) 1

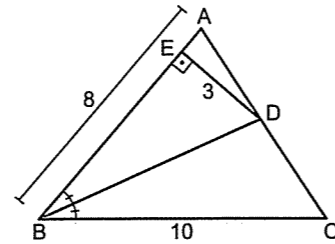
10.



Taralı alan = ?

- A) 12 B) 16 C) 20 D) 24 E) 32

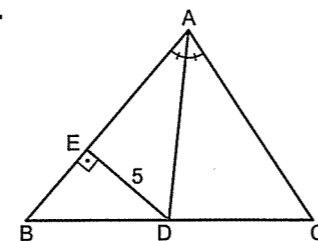
11.



Alan(ABC) = ?

- A) 21 B) 24 C) 27 D) 30 E) 33

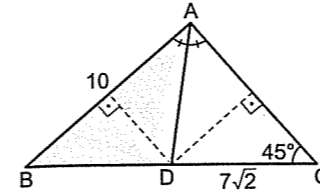
12.



$|AB| + |AC| = 16$
Alan(ABC) = ?

- A) 80 B) 60 C) 40 D) 30 E) 20

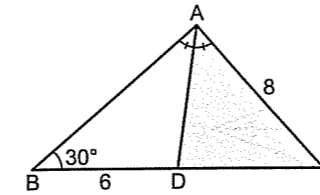
1.



Taralı alan = ?

- A) 70 B) 56 C) 42 D) 35 E) 28

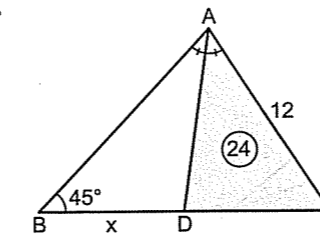
2.



Taralı alan = ?

- A) 48 B) 32 C) 24 D) 16 E) 12

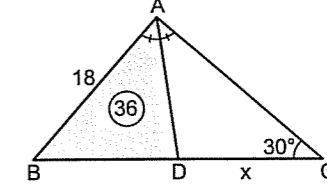
3.



$x = ?$

- A) 3 B) $3\sqrt{2}$ C) 4 D) $4\sqrt{2}$ E) $5\sqrt{2}$

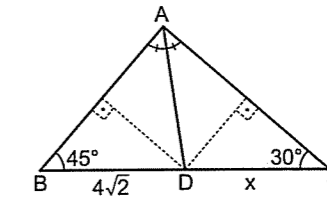
4.



$x = ?$

- A) 3 B) 4 C) 6 D) 8 E) 9

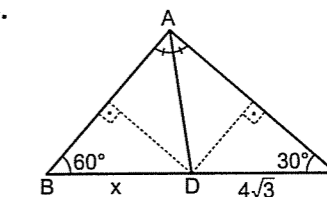
5.



$x = ?$

- A) 5 B) 6 C) $4\sqrt{3}$ D) 8 E) $6\sqrt{2}$

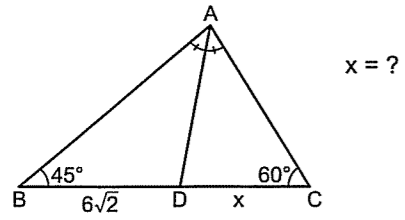
6.



$x = ?$

- A) 3 B) 4 C) $3\sqrt{2}$ D) $2\sqrt{5}$ E) 5

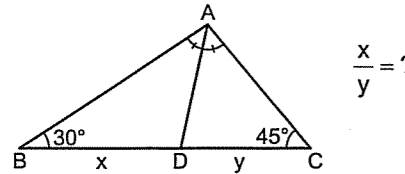
7.



$x = ?$

- A) $3\sqrt{3}$ B) $2\sqrt{7}$ C) $4\sqrt{2}$ D) 6 E) $4\sqrt{3}$

8.

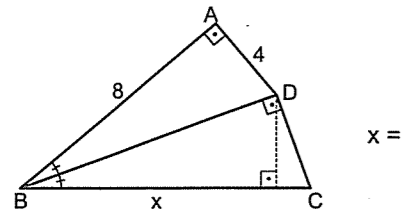


$\frac{x}{y} = ?$

- A) $\sqrt{2}$ B) $\sqrt{3}$ C) 2 D) $2\sqrt{2}$ E) 3

Bazen Öklit bağıntısına ihtiyaç duyarsınız.

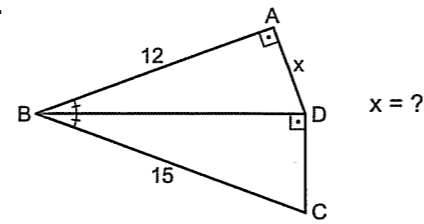
9.



$x = ?$

- A) 15 B) 13 C) 12 D) 10 E) 9

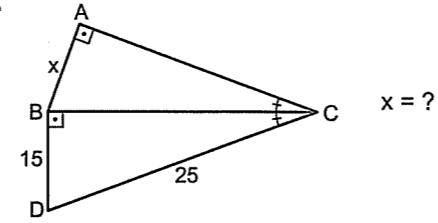
10.



$x = ?$

- A) 4 B) 5 C) 6 D) 7 E) 8

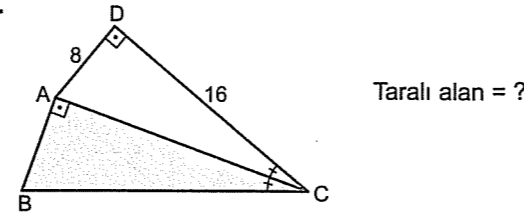
11.



$x = ?$

- A) 14 B) 13 C) 12 D) 11 E) 10

12.

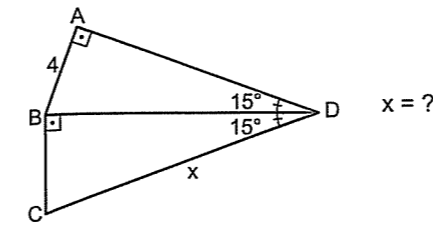


Taralı alan = ?

- A) 90 B) 80 C) 72 D) 64 E) 56

$15^\circ - 75^\circ - 90^\circ$ üçgeninde aklınızda kalan özellik hangisi? Hipotenüs yüksekliğin 4 katına eşitti. Öyle di mi?

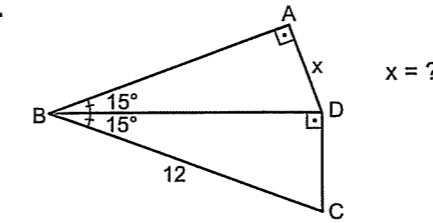
1.



$x = ?$

- A) 8 B) 12 C) 16 D) 20 E) 24

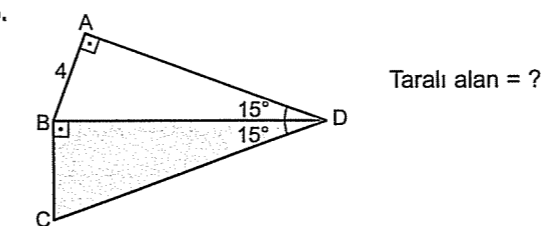
2.



$x = ?$

- A) 2 B) 3 C) 4 D) 6 E) 8

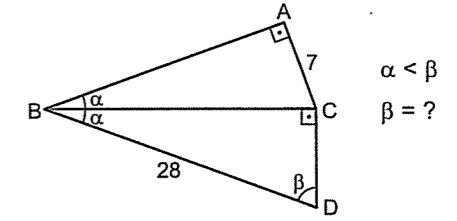
3.



Taralı alan = ?

- A) 16 B) 24 C) 28 D) 32 E) 36

4.

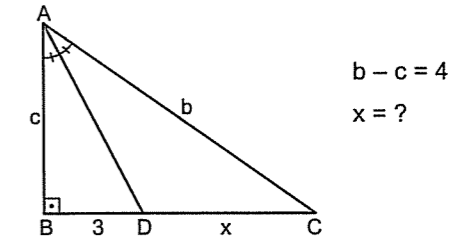


$\alpha < \beta$

$\beta = ?$

- A) 15 B) 30 C) 45 D) 60 E) 75

5.

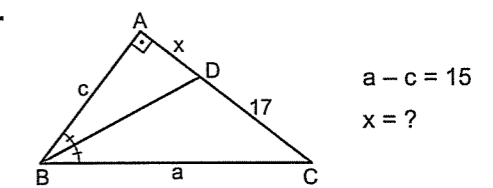


$b - c = 4$

$x = ?$

- A) 4 B) 5 C) 6 D) $3\sqrt{2}$ E) $4\sqrt{2}$

6.

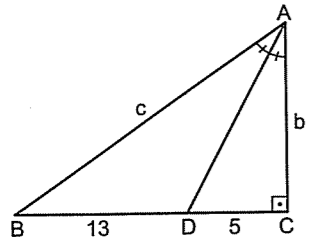


$a - c = 15$

$x = ?$

- A) 3 B) 4 C) 5 D) 7 E) 8

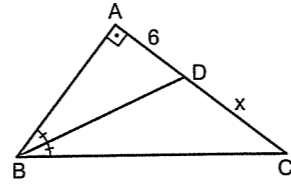
7.



$c - b = ?$

- A) 6 B) 8 C) 10 D) 12 E) 13

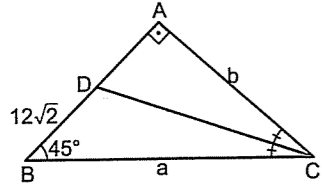
10.



$A(BDC) - A(ABD) = 24$
 $x = ?$

- A) 8 B) 9 C) 10 D) 12 E) $8\sqrt{2}$

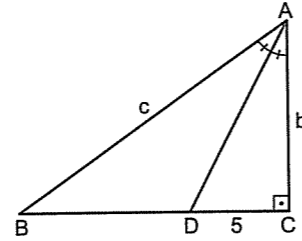
8.



$a - b = ?$

- A) 12 B) 10 C) $4\sqrt{6}$ D) $4\sqrt{2}$ E) 8

11.

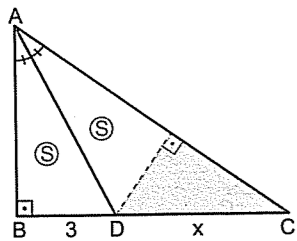


$A(ABD) - A(ADC) = 30$
 $c - b = ?$

- A) 8 B) 10 C) 12 D) 15 E) 18

Şu soruda verilen alan farkının taralı üçgenin alanı olduğunu görmek lâzım. (Soruda verilmiyor tabii ki. Yine sizi düşündüm. ☺)

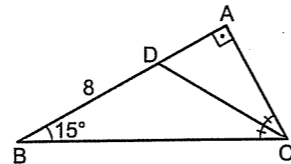
9.



$A(ADC) - A(ABD) = 6$
 $x = ?$

- A) 4 B) $3\sqrt{2}$ C) $2\sqrt{5}$ D) $2\sqrt{6}$ E) 5

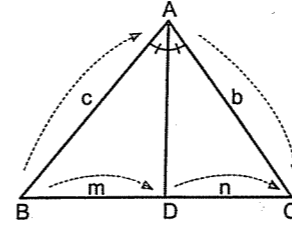
12.



$A(BDC) - A(ADC) = ?$

- A) 16 B) 12 C) 8 D) 6 E) 4

● İç Açıortay



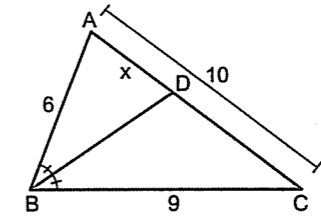
Kolların oranı parçaların oranına eşittir.

Yani $\frac{c}{b} = \frac{m}{n}$ dir.

Aslında şöyle de düşünebilirsiniz

$\frac{c}{m} = \frac{b}{n}$ Yani, c bölü altındaki parça eşittir b bölü altındaki parça. ☺

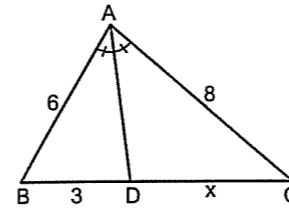
3.



$x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6

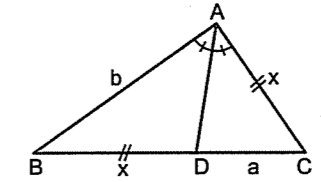
1.



$x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

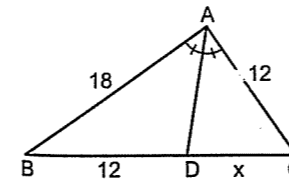
4.



$a \cdot b = 64$
 $x = ?$

- A) 2 B) 3 C) 4 D) 6 E) 8

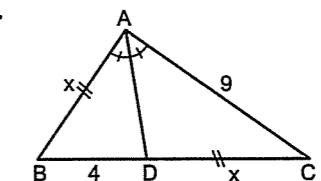
2.



$x = ?$

- A) 6 B) 8 C) 9 D) 10 E) 11

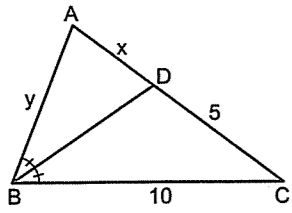
5.



$x = ?$

- A) 6 B) 5 C) 4 D) 3 E) 2

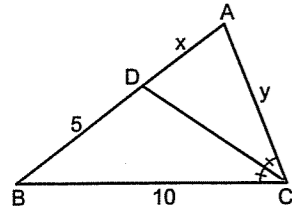
6.



$$\frac{x}{y} = ?$$

- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

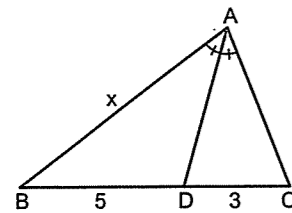
7.



$$\begin{aligned} x + y &= 12 \\ x &= ? \end{aligned}$$

- A) 5 B) 4 C) 3 D) 2 E) 1

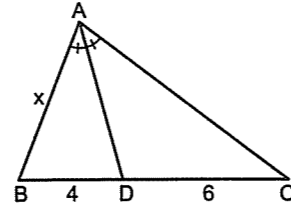
8.



$$\begin{aligned} \text{Çevre}(ABC) &= 32 \\ x &= ? \end{aligned}$$

- A) 20 B) 18 C) 15 D) 12 E) 10

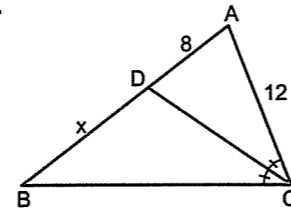
9.



$$\begin{aligned} \text{Çevre}(ABC) &= 30 \\ x &= ? \end{aligned}$$

- A) 5 B) 6 C) 7 D) 8 E) 10

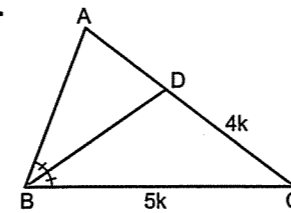
10.



$$\begin{aligned} \text{Çevre}(ABC) &= 50 \\ x &= ? \end{aligned}$$

- A) 9 B) 10 C) 12 D) 14 E) 16

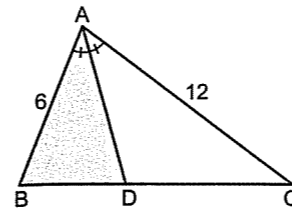
11.



$$\begin{aligned} \text{Çevre}(ABC) &= 54 \\ |AC| &= ? \end{aligned}$$

- A) 16 B) 20 C) 22 D) 24 E) 30

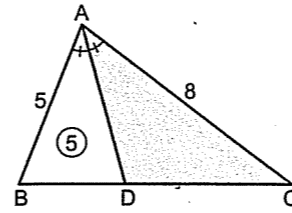
1.



$$\begin{aligned} \text{Alan}(ABC) &= 30 \\ \text{Taralı alan} &= ? \end{aligned}$$

- A) 6 B) 9 C) 10 D) 12 E) 15

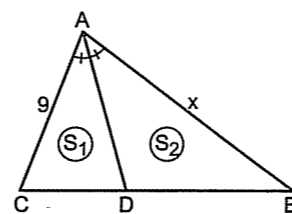
2.



$$\text{Taralı alan} = ?$$

- A) 5 B) 6 C) 8 D) 9 E) 10

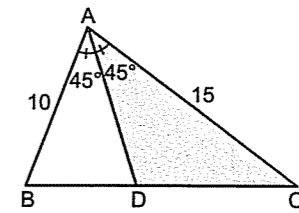
3.



$$\begin{aligned} \frac{S_1}{S_2} &= \frac{3}{5} \\ x &= ? \end{aligned}$$

- A) 10 B) 12 C) 13 D) 15 E) 18

4.

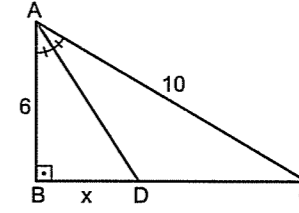


$$\text{Taralı alan} = ?$$


- A) 150 B) 90 C) 75 D) 60 E) 45

Dik üçgende açıortay sorularında herhangi bir uzunluk sorulmuşsa büyük bir olasılıkla açıortay teoremi dışında pisagor bağıntısına da ihtiyacınız olur.

5.

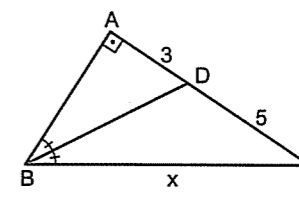


$$x = ?$$

 Benden söylemesi. 6 - 8 - 10 üçgeni üçgende açıortay sorularında çok sık kullanılır. Bunun için 5, 6 ve 7. sorularda bunu görün isterseniz.

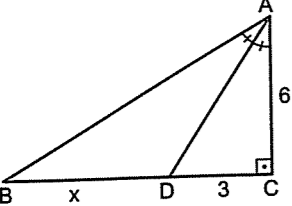
- A) 5 B) 4 C) 3 D) 2 E) 1

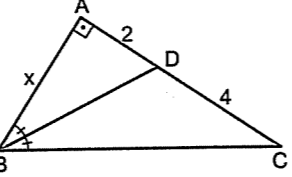
6.

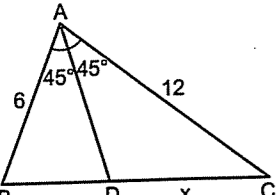


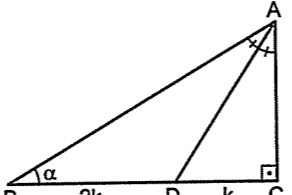
$$x = ?$$

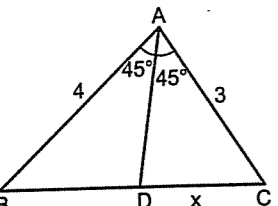
- A) 6 B) 8 C) 10 D) 12 E) 14

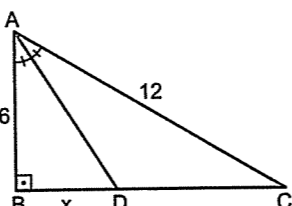
7.  $x = ?$
 A) 4 B) 5 C) 6 D) 8 E) 10

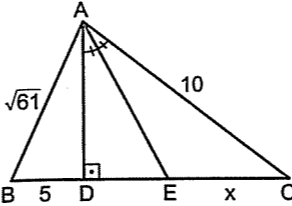
10.  $x = ?$
 A) $2\sqrt{3}$ B) 4 C) $2\sqrt{5}$ D) $3\sqrt{3}$ E) $4\sqrt{3}$

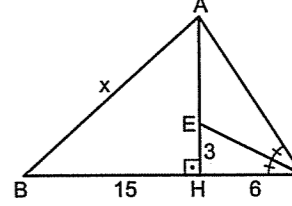
8.  $x = ?$
 A) $2\sqrt{5}$ B) $3\sqrt{5}$ C) $4\sqrt{5}$ D) $5\sqrt{5}$ E) $6\sqrt{5}$

11.  $\alpha = ?$
 A) 15° B) $22,5^\circ$ C) 30° D) 45° E) 60°

9.  $x = ?$
 A) $\frac{5}{7}$ B) $\frac{10}{7}$ C) $\frac{15}{8}$ D) $\frac{15}{7}$ E) $\frac{20}{7}$

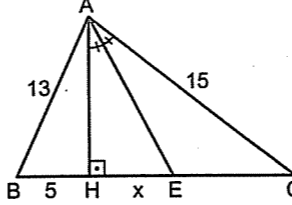
12.  $x = ?$
 A) 1 B) $\sqrt{3}$ C) 2 D) 3 E) $2\sqrt{3}$

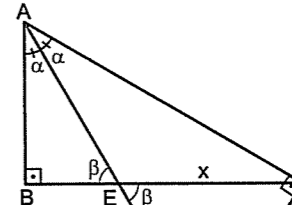
1.  $x = ?$
 A) 3 B) 4 C) 5 D) 6 E) 8

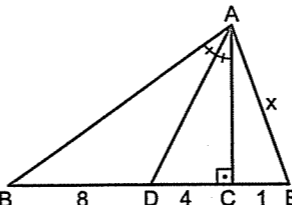
4.  $x = ?$
 A) $15\sqrt{2}$ B) 17 C) 20 D) 25 E) 27

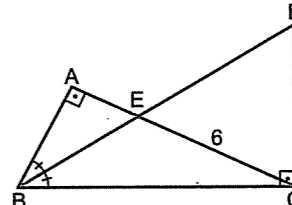
Üçgenlerin iç açılarını harflendirdiğiniz zaman ikizkenar bir üçgen görürsünüz. Bu tip soruların espirisi ikizkenar üçgeni görmektir.

Tabi ki görme probleminiz yoksa. 😊

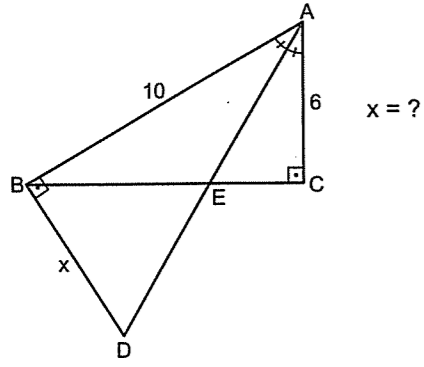
2.  $x = ?$
 A) 4 B) 5 C) 6 D) 7 E) 8

5.  $x = ?$
 A) 13 B) 12 C) 10 D) 8 E) 5

3.  $x = ?$
 A) 5 B) 6 C) 7 D) 8 E) 10

6.  $x = ?$
 A) 3 B) 4 C) 6 D) 9 E) 12

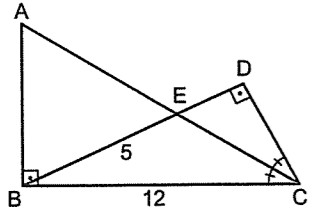
7.



$x = ?$

- A) 9 B) 8 C) 7 D) 6 E) 5

8.

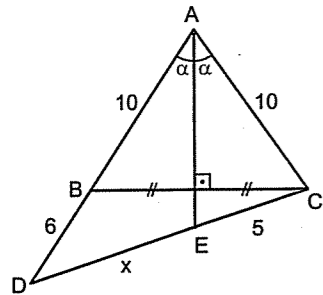


$|AC| = ?$

- A) 13 B) 15 C) 17 D) 20 E) 25

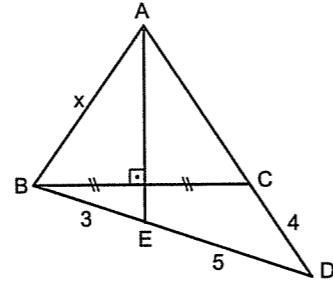
Önünüze gelecek bir soru tipi daha: Y.A.K kuralını hatırladınız mı? Buradaki [AE] Y.K. olduğundan sorunun püf noktası buradaki ikizkenar üçgeni görmektir. Gerisi kolay.☺

9.



- A) 6 B) 7 C) 8 D) 9 E) 10

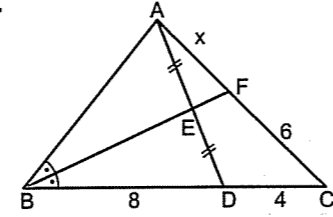
10.



$x = ?$

- A) 6 B) 8 C) 10 D) 12 E) 14

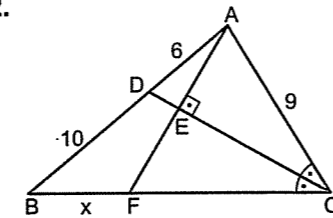
11.



$x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

12.

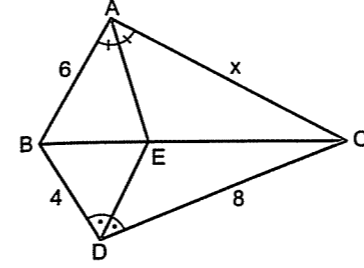


$x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 8

Bu antrenmandaki sorularda iki farklı üçgende açıortay teoremini uygulamak lâzım. (ki sorular çözülebilirsin.☺)

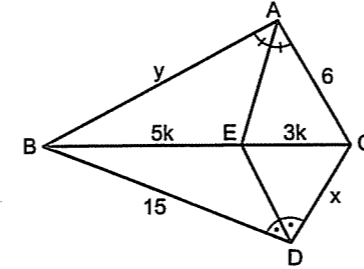
1.



$x = ?$

- A) 8 B) 9 C) 10 D) 11 E) 12

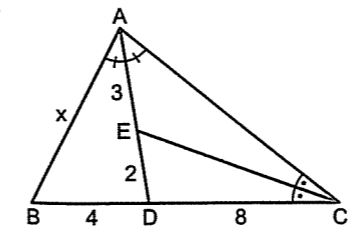
2.



$x + y = ?$

- A) 15 B) 18 C) 19 D) 21 E) 24

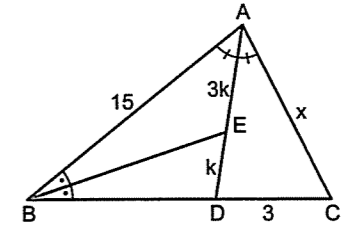
3.



$x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

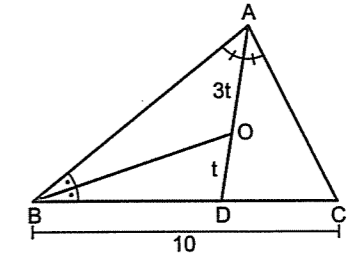
4.



$x = ?$

- A) 13 B) 12 C) 10 D) 9 E) 8

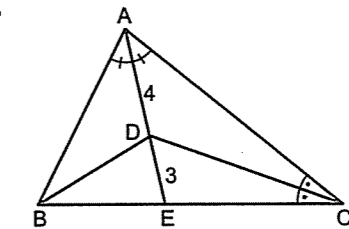
5.



Çevre(ABC) = ?

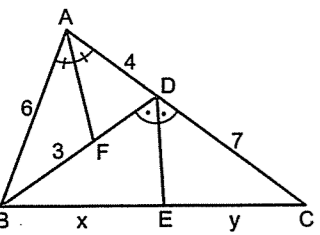
- A) 40 B) 35 C) 30 D) 25 E) 20

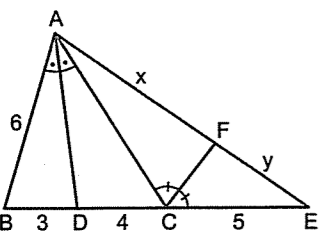
6.

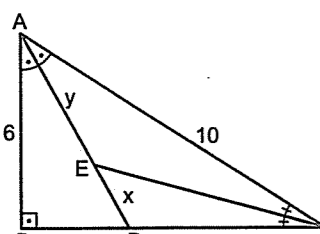


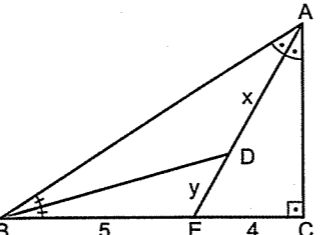
Çevre(ABC) = 35
 $|BC| = ?$

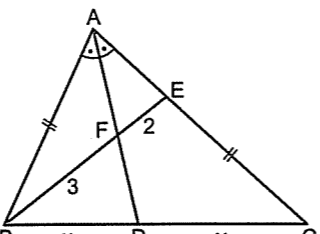
- A) 18 B) 15 C) 14 D) 13 E) 12

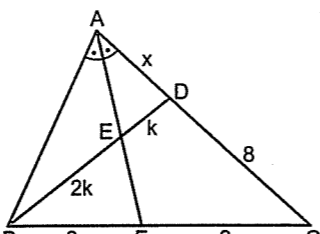
7.  $\frac{x}{y} = ?$
 A) $\frac{3}{4}$ B) $\frac{3}{7}$ C) $\frac{5}{7}$ D) $\frac{6}{7}$ E) $\frac{3}{2}$

8.  $\frac{x}{y} = ?$
 A) $\frac{6}{5}$ B) $\frac{7}{6}$ C) $\frac{8}{5}$ D) $\frac{5}{8}$ E) $\frac{4}{3}$

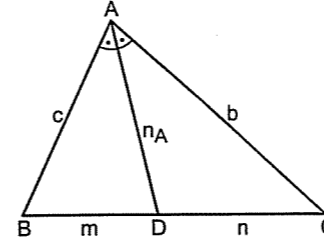
9.  $\frac{x}{y} = ?$
 A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{4}$ E) $\frac{3}{5}$

10.  $\frac{x}{y} = ?$
 A) 2 B) 3 C) $\frac{7}{2}$ D) 4 E) $\frac{9}{2}$

11.  $\frac{x}{y} = ?$
 A) $\frac{2}{3}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{5}{6}$ E) $\frac{5}{7}$

12.  $x = ?$
 A) 1 B) 2 C) 3 D) 4 E) 5

● Üçgende İç Açortay Uzunluğu

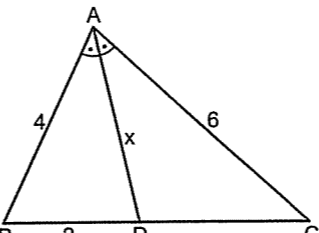


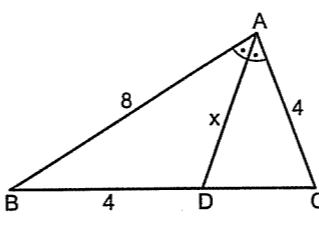
İç açortayın uzunluğu $n_A^2 = b \cdot c - m \cdot n$ şeklinde bulunur.

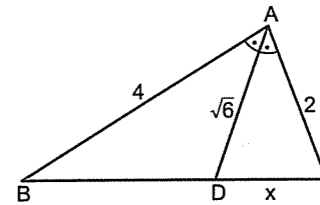
Yani, iç açortayın uzunluğunu bulurken kolların çarpımından (b.c den) kolların altındaki parçaların çarpımını (m.n yi) çıkarın ve karekökünü alın.

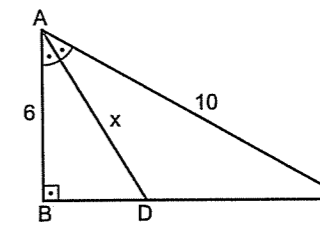
Olay bundan ibaret. Ama bu dört uzunluktan (b, c, m ve n den) bilinmeyen varsa önce onu bulun. Sonra devam edin.

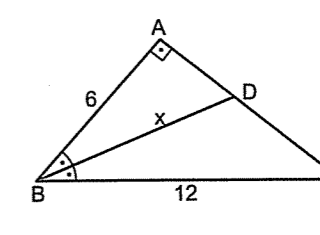
Zor mu ki?

1.  $x = ?$
 A) 3 B) 4 C) $3\sqrt{2}$ D) $2\sqrt{5}$ E) 5

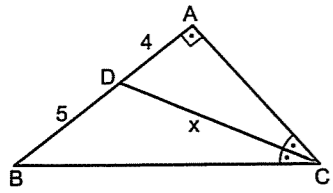
2.  $x = ?$
 A) $2\sqrt{5}$ B) $2\sqrt{6}$ C) $3\sqrt{2}$ D) 4 E) $2\sqrt{3}$

3.  $x = ?$
 A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $\sqrt{5}$

4.  $x = ?$
 A) $2\sqrt{10}$ B) $3\sqrt{5}$ C) $4\sqrt{3}$ D) $2\sqrt{13}$ E) $3\sqrt{6}$

5.  $x = ?$
 A) $2\sqrt{10}$ B) $3\sqrt{5}$ C) $4\sqrt{3}$ D) $2\sqrt{13}$ E) $3\sqrt{6}$

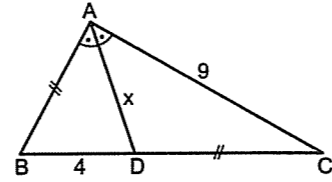
6.



$x = ?$

- A) 5 B) 8 C) $6\sqrt{2}$ D) $3\sqrt{10}$ E) $4\sqrt{10}$

9.

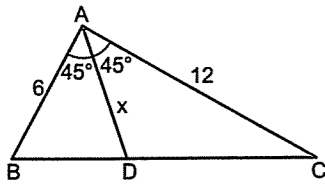


$x = ?$

Şu üç soruda x'i bulmadan önce eşit parçaları bulun.

- A) $2\sqrt{5}$ B) $\sqrt{21}$ C) $2\sqrt{6}$ D) $2\sqrt{7}$ E) $\sqrt{30}$

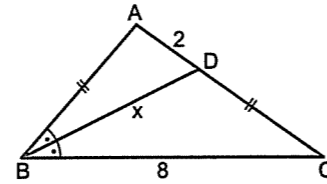
7.



$x = ?$

- A) $4\sqrt{2}$ B) $2\sqrt{7}$ C) 5 D) $2\sqrt{6}$ E) $3\sqrt{2}$

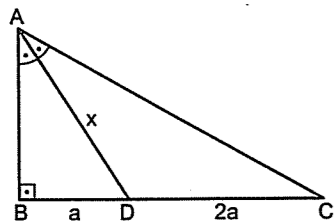
10.



$x = ?$

- A) $3\sqrt{2}$ B) $2\sqrt{5}$ C) $2\sqrt{6}$ D) 5 E) $2\sqrt{7}$

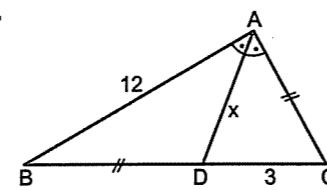
8.



x'in a cinsinden değeri nedir?

- A) 2a B) $2\sqrt{2}a$ C) $2\sqrt{3}a$ D) 3a E) 4a

11.

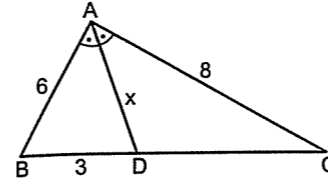


$x = ?$

- A) $2\sqrt{6}$ B) $2\sqrt{7}$ C) $4\sqrt{2}$ D) $4\sqrt{3}$ E) $3\sqrt{6}$

Çok sık karşılaşacağınız bir soru. Geometri çalışmaya devam ederseniz tabii ki. ☺

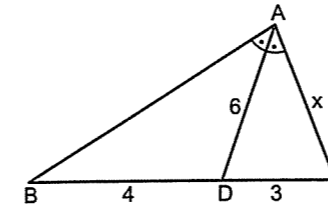
1.



$x = ?$

- A) 6 B) $4\sqrt{2}$ C) $2\sqrt{7}$ D) 5 E) $3\sqrt{2}$

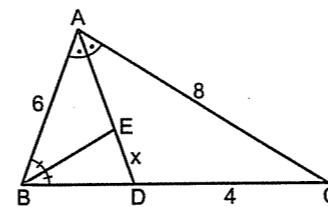
2.



$x = ?$

- A) 4 B) 5 C) 6 D) 7 E) 8

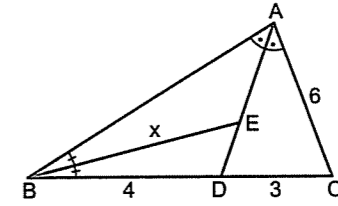
3.



$x = ?$

- A) 1 B) $\sqrt{2}$ C) 2 D) $2\sqrt{2}$ E) 3

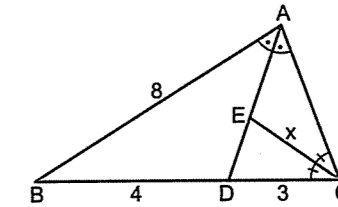
4.



$x = ?$

- A) 4 B) $3\sqrt{2}$ C) $2\sqrt{6}$ D) 5 E) $2\sqrt{7}$

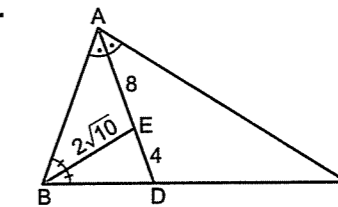
5.



$x = ?$

- A) 2 B) $2\sqrt{2}$ C) $\sqrt{10}$ D) $2\sqrt{3}$ E) 4

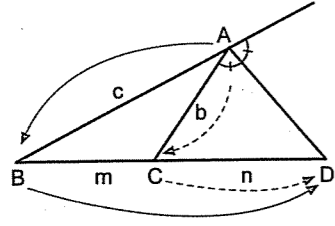
6.



Çevre(ABC) = ?

- A) 14 B) 21 C) 35 D) 42 E) 56

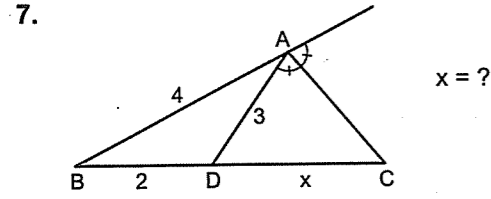
● Dış Açortay



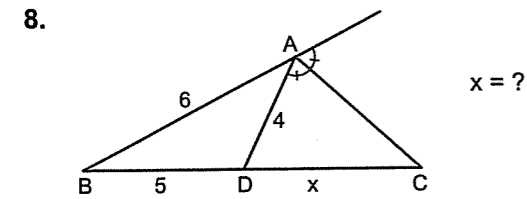
Dış açortayda kenarları oranlarken şunu yapın. Kolların oranı eşittir kollar ile açortay arasındaki uzaklıkların oranı.

Yani $\frac{c}{b} = \frac{m+n}{n}$ veya $\frac{c}{m+n} = \frac{b}{n}$ de diyebilirsiniz.

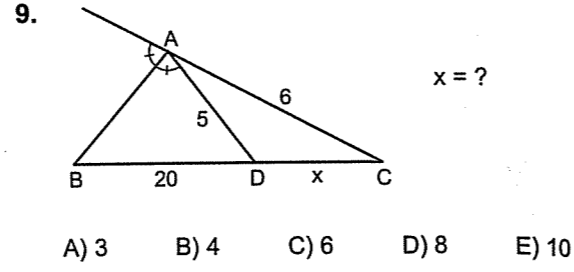
Sıkıntı çıkmaz. ☺



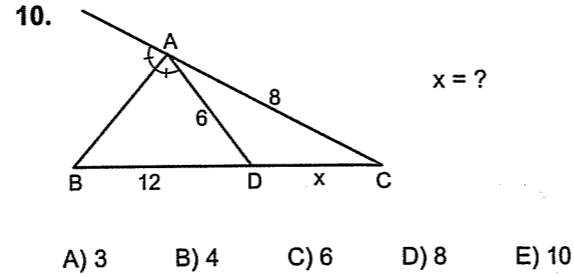
- A) 3 B) 4 C) 5 D) 6 E) 7



- A) 6 B) 7 C) 8 D) 9 E) 10

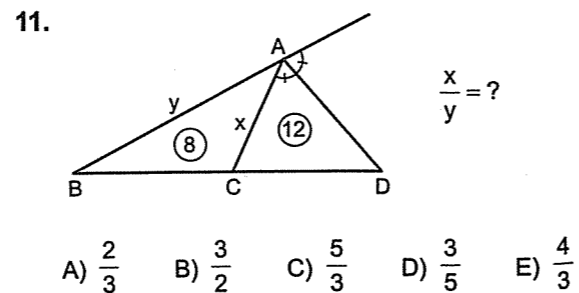


- A) 3 B) 4 C) 6 D) 8 E) 10

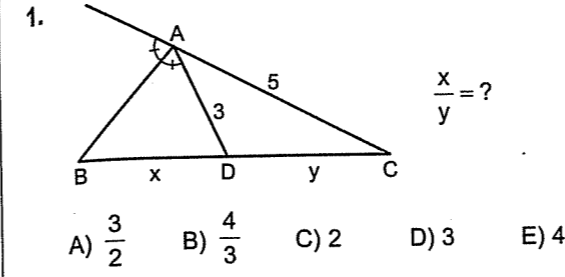


- A) 3 B) 4 C) 6 D) 8 E) 10

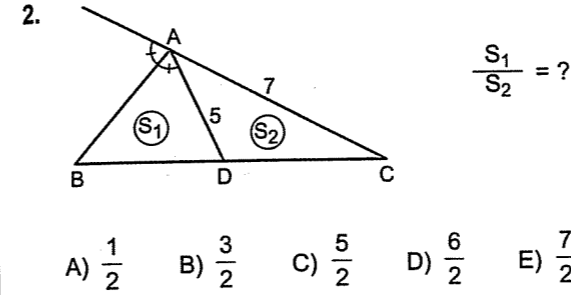
Yükseklikleri aynı olan iki üçgende Alanlar oranı = Tabanlar oranı idi.



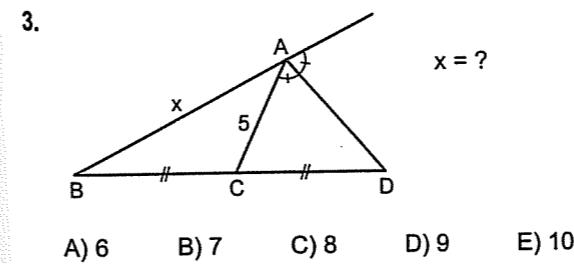
- A) $\frac{2}{3}$ B) $\frac{3}{2}$ C) $\frac{5}{3}$ D) $\frac{3}{5}$ E) $\frac{4}{3}$



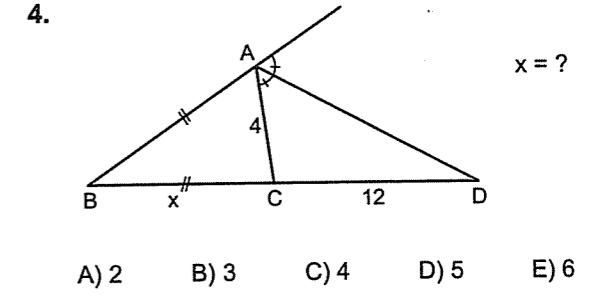
- A) $\frac{3}{2}$ B) $\frac{4}{3}$ C) 2 D) 3 E) 4



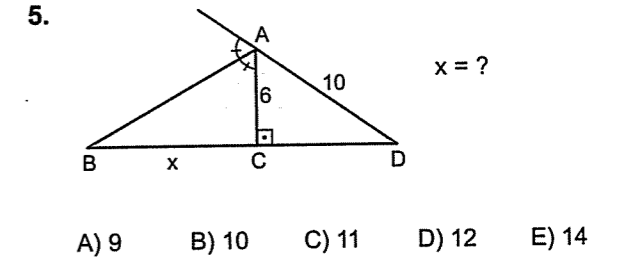
- A) $\frac{1}{2}$ B) $\frac{3}{2}$ C) $\frac{5}{2}$ D) $\frac{6}{2}$ E) $\frac{7}{2}$



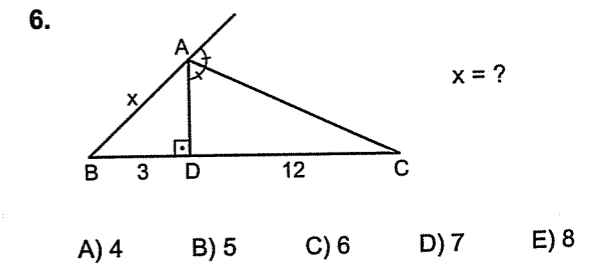
- A) 6 B) 7 C) 8 D) 9 E) 10



- A) 2 B) 3 C) 4 D) 5 E) 6

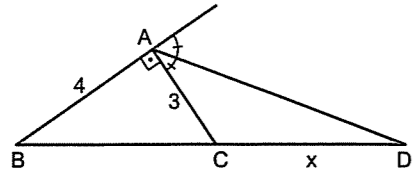


- A) 9 B) 10 C) 11 D) 12 E) 14



- A) 4 B) 5 C) 6 D) 7 E) 8

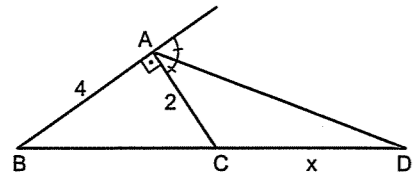
7.



$x = ?$

- A) 11 B) 13 C) 15 D) 16 E) 17

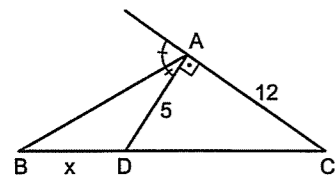
8.



$x = ?$

- A) $\sqrt{5}$ B) $2\sqrt{5}$ C) $3\sqrt{5}$ D) $4\sqrt{5}$ E) $5\sqrt{5}$

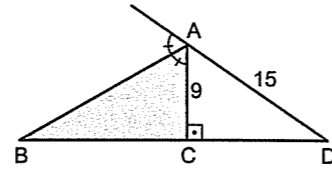
9.



$x = ?$

- A) $\frac{48}{7}$ B) $\frac{52}{7}$ C) $\frac{58}{7}$ D) $\frac{65}{7}$ E) $\frac{72}{7}$

10.

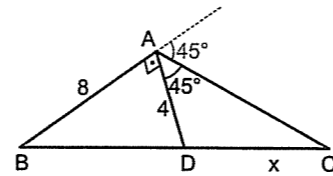


Taralı alan = ?

- A) 81 B) 75 C) 69 D) 62 E) 57

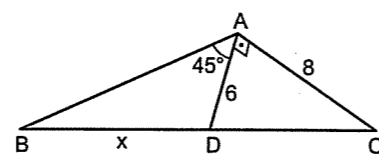
Bazı sorularda dış açıortayı gizlerler. Ama olsun problem değil. Siz de |AB|'yi uzatarak dış açıortayı görürsünüz artık.

11.



- A) $3\sqrt{3}$ B) $4\sqrt{3}$ C) $4\sqrt{5}$ D) $5\sqrt{5}$ E) $6\sqrt{5}$

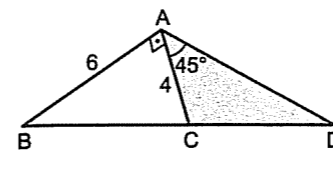
12.



$x = ?$

- A) 24 B) 26 C) 28 D) 30 E) 24

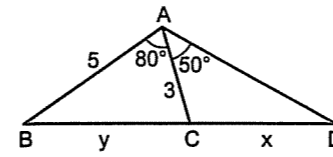
1.



Taralı alan = ?

- A) 18 B) 19 C) 20 D) 22 E) 24

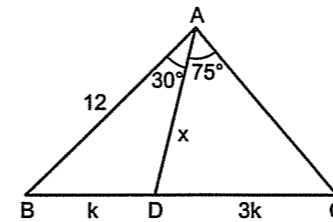
2.



$\frac{x}{y} = ?$

- A) $\frac{1}{2}$ B) $\frac{3}{2}$ C) 2 D) $\frac{5}{2}$ E) $\frac{7}{2}$

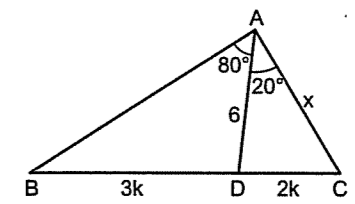
3.



$x = ?$

- A) 9 B) 8 C) 7 D) 6 E) 5

4.

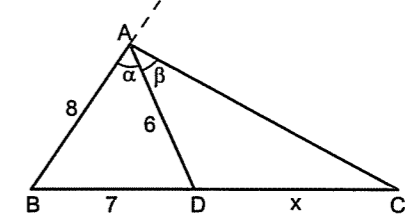


$x = ?$

- A) 7 B) 8 C) 9 D) 10 E) 12

Şu soruda dış açıortay olayını abarttım biraz. Ama çözersiniz ki. 😊

5.



$\alpha + 2\beta = 180^\circ$
 $x = ?$

- A) 17 B) 19 C) 21 D) 23 E) 25

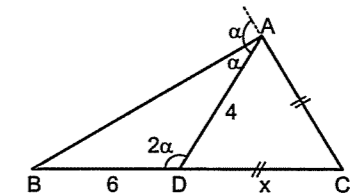
Bakalım şu sorudaki dış açıortayı görebilecek misiniz?

Yine şu kadarını söyleyeyim:



İkizkenar üçgende eşit açılardan dış açıları da eşittir.

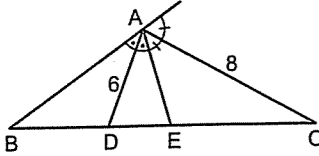
6.

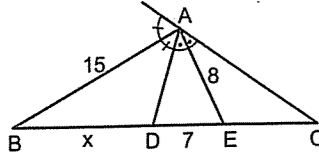


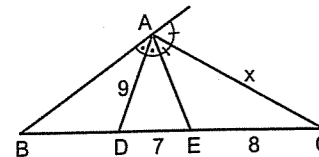
$x = ?$

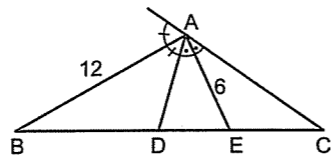
- A) 10 B) 12 C) 14 D) 16 E) 18

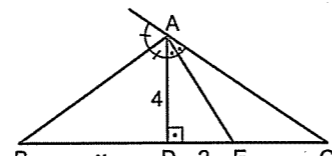
Üçgende bir açının iç ve dış açıortayları arasındaki açı 90° dir.
Eşit açıları harflendirerek 90° 'yi görün. Gerisi basit zaten. Pisagor, öklit veya açıortay teoremi uygulaması. Hangisi lâzımsa kullanırsınız artık.

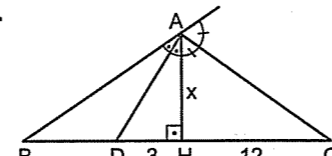
7.  $|DC| = ?$
A) 14 B) 13 C) 12 D) 11 E) 10

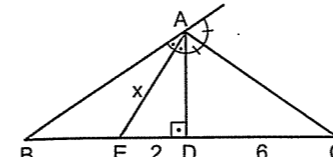
8.  $x = ?$
A) 8 B) 9 C) 10 D) 11 E) 12

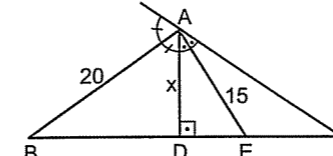
9.  $x = ?$
A) 9 B) 10 C) 11 D) 12 E) 14

10.  Alan(ABE) = ?
A) 36 B) 33 C) 30 D) 28 E) 26

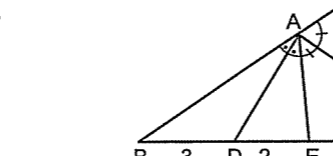
11.  $x = ?$
A) 8 B) 7 C) 6 D) 5 E) 4

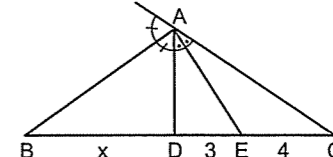
12.  $x = ?$
A) 3 B) 4 C) 5 D) 6 E) 7

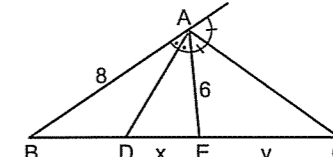
1.  $x = ?$
A) 4 B) 5 C) 6 D) 7 E) 8

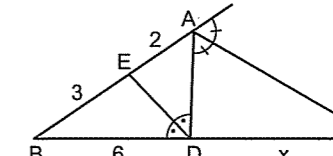
2.  $x = ?$
A) 12 B) 14 C) 16 D) 17 E) 18

İşte size zor olmayan klasik bir soru tipi daha. Önce iç açıortay, sonra da dış açıortayı kullanın.

3.  $x = ?$
A) 12 B) 11 C) 10 D) 9 E) 8

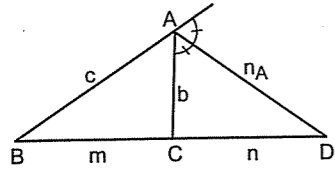
4.  $x = ?$
A) 15 B) 17 C) 19 D) 21 E) 23

5.  $\frac{x}{y} = ?$
A) $\frac{1}{3}$ B) $\frac{1}{4}$ C) $\frac{1}{5}$ D) $\frac{1}{6}$ E) $\frac{1}{7}$

6.  $x = ?$
A) 22 B) 24 C) 26 D) 28 E) 30

● Üçgende Dış Açortay Uzunluğu

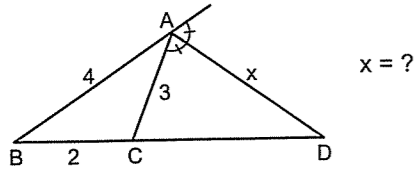
Çok lâzım olmuyor. Ama meraklıları için anlatayım.



Dış açortayın uzunluğunu yani n_A 'yı bulurken dış açortayda oranladığımız $\frac{c}{b} = \frac{m+n}{n}$ eşitliğinde kesirlerin payı ile paydasını çarpıp birbirinden çıkararak bulacağınız sayının karekökünü alırsanız dış açortayın uzunluğunu bulursunuz.

Veya $n_A^2 = n \cdot (n + m) - b \cdot c$ den bulursunuz.

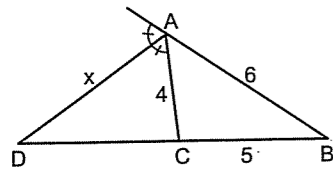
7.



x = ?

- A) 5 B) 6 C) 7 D) 8 E) 9

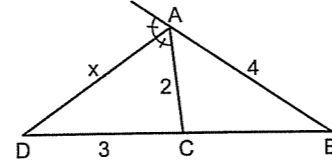
8.



x = ?

- A) $3\sqrt{6}$ B) $3\sqrt{7}$ C) $3\sqrt{8}$ D) $3\sqrt{14}$ E) $3\sqrt{10}$

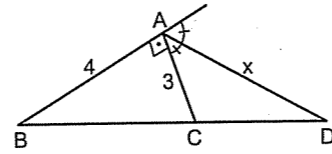
9.



x = ?

- A) $\sqrt{6}$ B) $\sqrt{7}$ C) $\sqrt{8}$ D) $\sqrt{9}$ E) $\sqrt{10}$

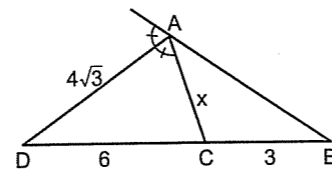
10.



x = ?

- A) 10 B) 11 C) $12\sqrt{2}$ D) $13\sqrt{2}$ E) $14\sqrt{2}$

11.



x = ?

- A) 6 B) 5 C) 4 D) 3 E) 2

8.

Bölüm

ÜÇGENDE

KENARORTAY

Dünyada birçok kabiliyetli kişiler, küçük bir cesaret sahibi olmadıkları için kaybolurlar.

Sydney Smith

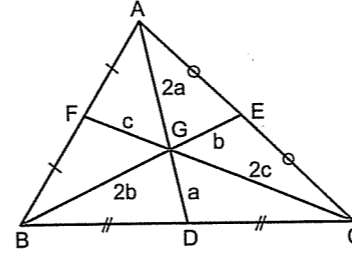
Mağlubiyete uğrayınca ümitsizliğe kapılma, her başarısızlıkta bir zafer arzusu yatar.

Germain Martin

ÜÇGENDE KENARORTAY

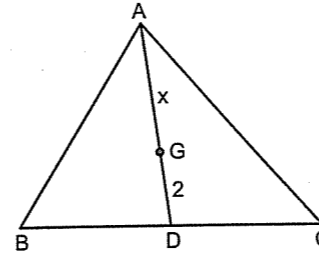
ÜÇGENDE KENARORTAY

Kenarortay, kenarları ortalamayan doğru demek. Çok fazla bir özelliği yok ve çok kolay kesinlikle. Bilmeniz gereken ilk şey şu.



Bir üçgende kenarortayların kesim noktasına üçgenin **ağırlık merkezi** denir. Zaten soruda ağırlık merkezi muhabbeti geçmişse bu soru kenarortayla ilgilidir. Yoksa niye bu muhabbete girsinler ki. Ağırlık merkezinin özelliği kenarortay uzunluğunu kenara 1 birim köşeye 2 birim şeklinde böler.

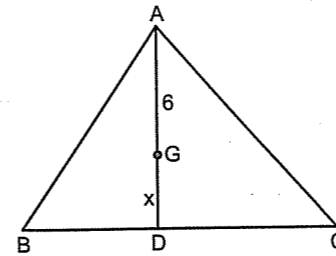
1.



G, ağırlık merkezi
 $x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6

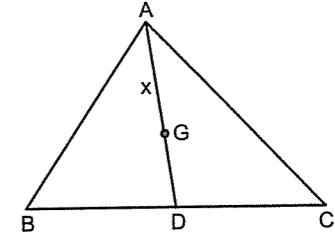
2.



G, ağırlık merkezi
 $x = ?$

- A) 5 B) 4 C) 3 D) 2 E) 1

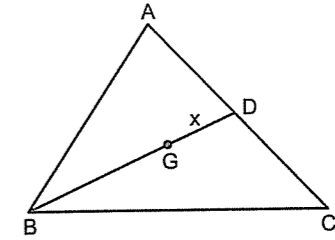
3.



G, ağırlık merkezi
 $|AD| = 12$
 $x = ?$

- A) 8 B) 6 C) 4 D) 3 E) 2

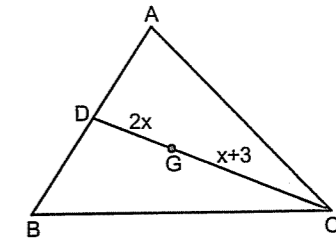
4.



G, ağırlık merkezi
 $|BD| = 15$
 $x = ?$

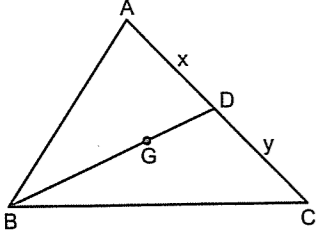
- A) 3 B) 5 C) 7 D) 8 E) 9

5.

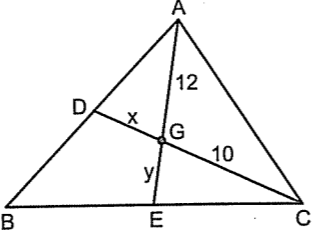


G, ağırlık merkezi
 $x = ?$

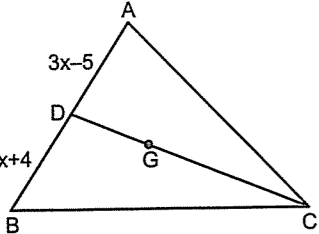
- A) 1 B) 2 C) 3 D) 4 E) 5

6.  G, ağırlık merkezi $\frac{x}{y} = ?$

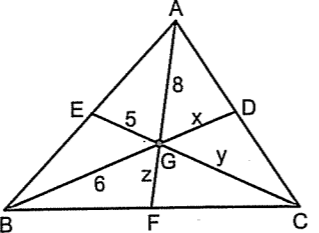
A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

9.  G, ağırlık merkezi $x + y = ?$

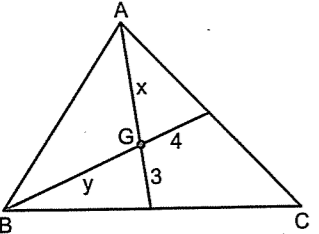
A) 8 B) 9 C) 10 D) 11 E) 12

7.  G, ağırlık merkezi $x = ?$

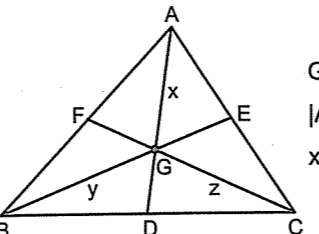
A) 9 B) 8 C) 6 D) 5 E) 4

10.  G, ağırlık merkezi $x + y + z = ?$

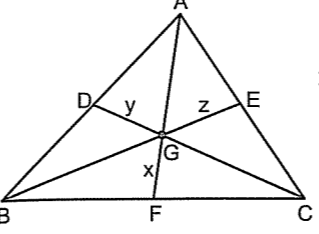
A) 18 B) 17 C) 15 D) 13 E) 12

8.  G, ağırlık merkezi $x + y = ?$

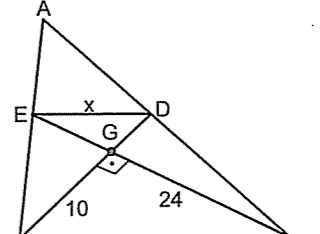
A) 12 B) 13 C) 14 D) 16 E) 18

11.  G, ağırlık merkezi $|AD| + |FC| + |BE| = 36$
 $x + y + z = ?$

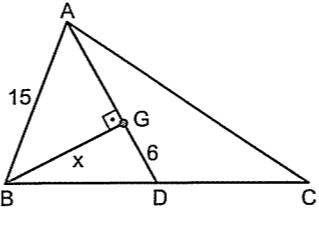
A) 9 B) 12 C) 15 D) 18 E) 24

1.  G, ağırlık merkezi $x + y + z = 8$
 $|AF| + |BE| + |DC| = ?$

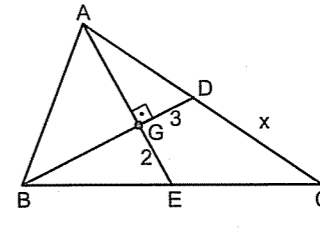
A) 12 B) 16 C) 18 D) 24 E) 28

4.  G, ağırlık merkezi $x = ?$

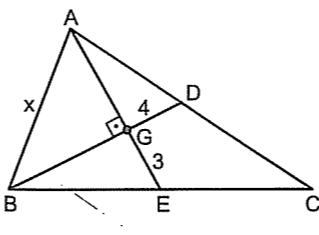
A) 5 B) 10 C) 13 D) 17 E) 20

2.  G, ağırlık merkezi $x = ?$

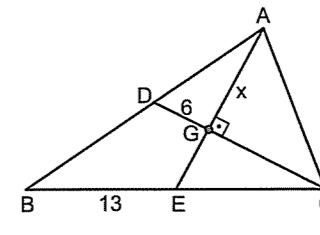
A) 5 B) 8 C) 9 D) 12 E) 16

5.  G, ağırlık merkezi $x = ?$

A) 3 B) 5 C) 7 D) 8 E) 10

3.  G, ağırlık merkezi $x = ?$

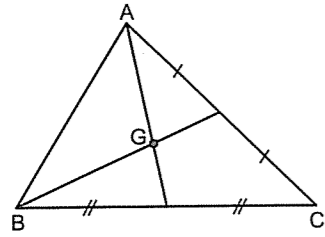
A) 5 B) 10 C) 13 D) 17 E) 20

6.  G, ağırlık merkezi $x = ?$

A) 5 B) 8 C) 10 D) 13 E) 15

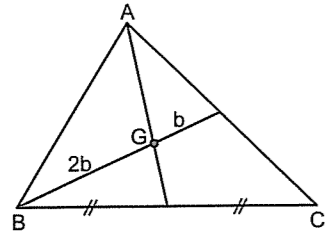
Bazen sorularda ağırlık merkezi şu noktadır diye verilmez. Pekî o zaman ne yapacaksınız? Aklınızda olsun. Eğer soruda aşağıdaki üç üçgenden biri varsa G noktası kesinlikle ağırlık merkezidir.

İlki şu:



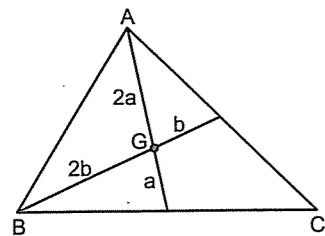
İki kenarortay verilmişse kesim noktası ağırlık merkezidir.

İkinci şu:



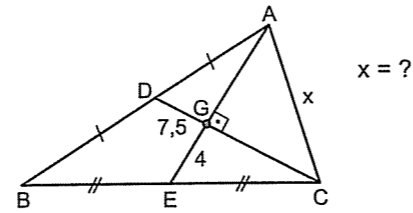
Bir kenarortay köşeden çıkan başka bir doğru parçasını kenara 1, köşeye 2 birim olacak şekilde bölmüşse kesim noktası ağırlık merkezidir.

Üçüncü şu:



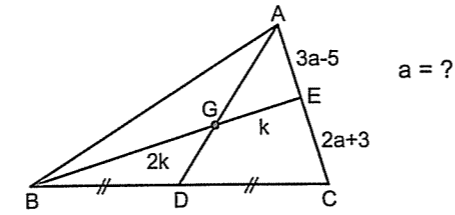
Köşeden çıkan iki doğru parçası birbirlerini kenara 1 köşeye 2 birim olacak şekilde bölmüşse kesim noktası ağırlık merkezidir.

7.



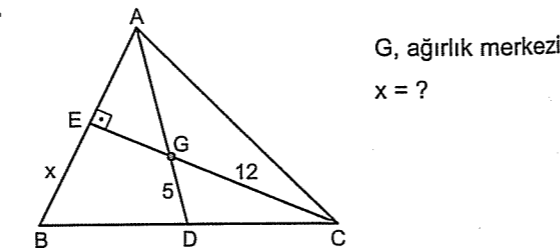
- A) 5 B) 10 C) 13 D) 15 E) 17

8.



- A) 12 B) 10 C) 9 D) 8 E) 6

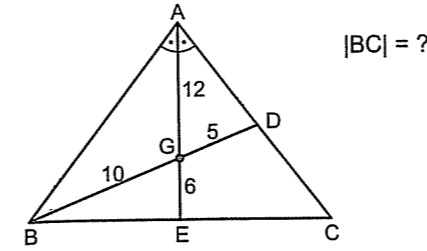
9.



- A) 8 B) 9 C) 10 D) 12 E) 13

Unutmayın. Kenarortaylardan biri aynı zamanda açıortay ise üçgen ikizkenardır. Meselâ;

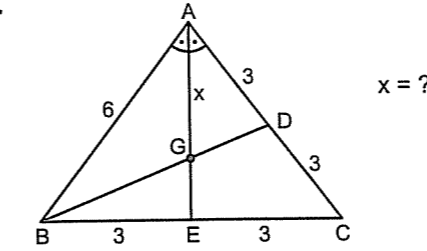
1.



- A) 24 B) 18 C) 16 D) 12 E) 10

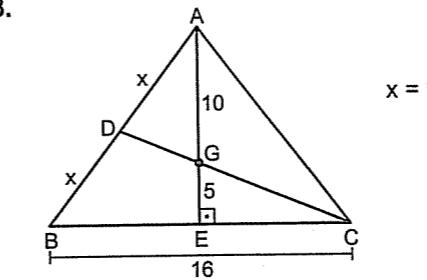
Burada gizlenmiş Y.A.K. kuralı var. İsterseniz kenarortaylardan oluşan eşitlikleri şekilde göstermek işe yarayabilir.

2.



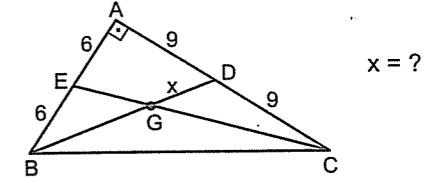
- A) 3 B) $2\sqrt{3}$ C) $3\sqrt{2}$ D) $2\sqrt{6}$ E) $3\sqrt{3}$

3.



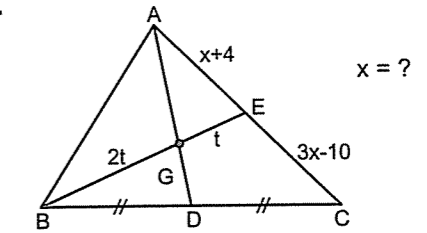
- A) $\frac{25}{2}$ B) 10 C) 9 D) $\frac{17}{2}$ E) $\frac{15}{2}$

4.



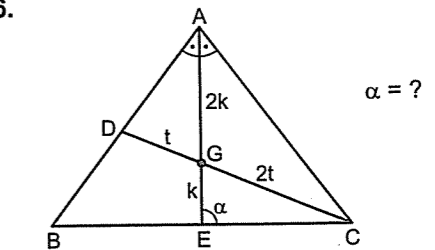
- A) 3 B) 4 C) 5 D) 6 E) 7

5.

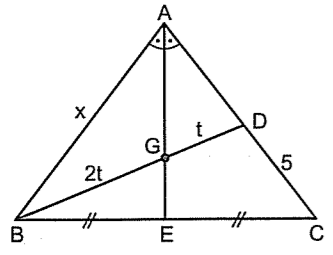


- A) 3 B) 4 C) 5 D) 6 E) 7

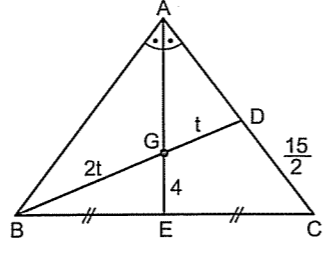
6.



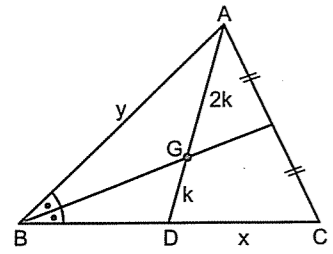
- A) 120° B) 90° C) 75° D) 60° E) 45°

7.  $x = ?$

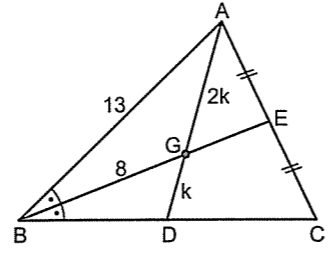
A) 5 B) 7 C) 9 D) 10 E) 13

10.  $|BC| = ?$

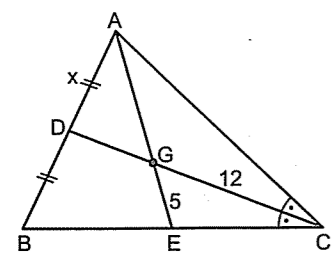
A) 18 B) 15 C) 13 D) 12 E) 10

8.  $\frac{x}{y} = ?$

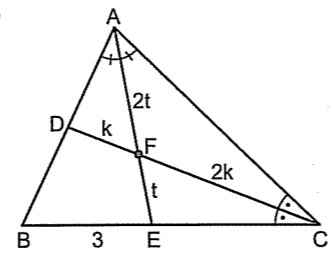
A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{4}$ E) $\frac{2}{5}$

11.  $|AC| = ?$

A) 10 B) 12 C) 13 D) 15 E) 17

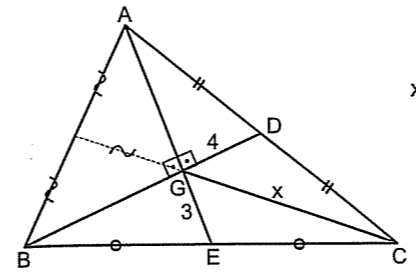
9.  $x = ?$


A) 15 B) 13 C) 10 D) 9 E) 8

12.  $\text{Alan}(ABC) = ?$

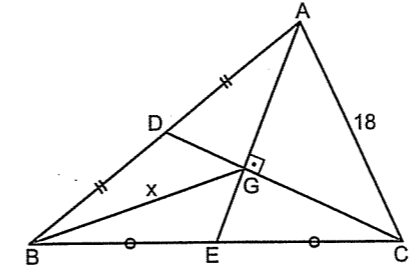
A) $4\sqrt{3}$ B) $5\sqrt{3}$ C) $6\sqrt{3}$ D) $8\sqrt{3}$ E) $9\sqrt{3}$

Soruda kenarortayları niye eksik çizerler ki? Sanki siz uzatıp tamamlayamazsınız onu. ☺
Bir de şu muhteşem üçlünün de burnunu sokmadığı yer yok. ☺

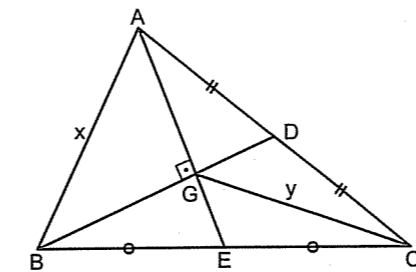
1.  $x = ?$

 Eğer kenarortay yarım kalmışsa uzatın. Bir de kenarortay sorularında muhteşem üçlü çok kullanılır. Muhteşem üçlüyü hatırlarsınız. (Gerçi unutulacak gibi değil zaten. Her yerde var.) Bir dik üçgende hipotenüse ait kenarortay ayırdığı parçalardan birine eşittir.

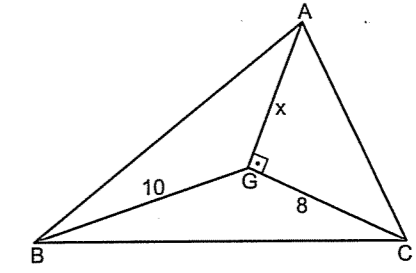
- A) 5 B) 8 C) 10 D) 13 E) 15

2.  $x = ?$

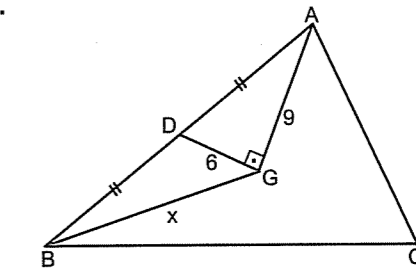
A) 9 B) 12 C) 15 D) 17 E) 18

3.  $\frac{x}{y} = ?$

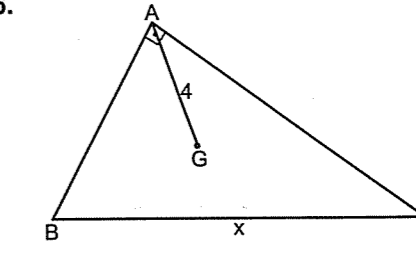
A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

4.  G ağırlık merkezi $x = ?$

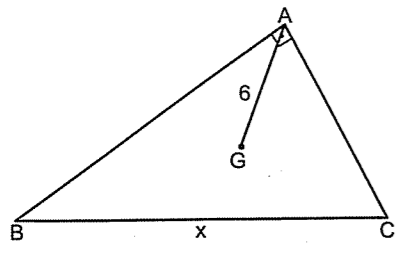
A) 6 B) 8 C) 10 D) 12 E) 15

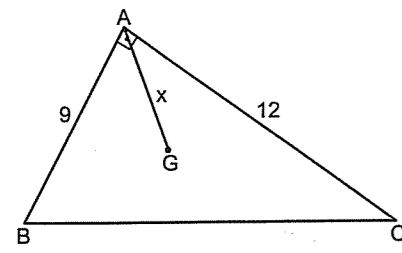
5.  G, ağırlık merkezi $x = ?$

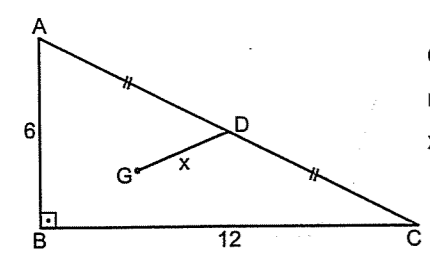
A) 17 B) 15 C) 13 D) 10 E) 8

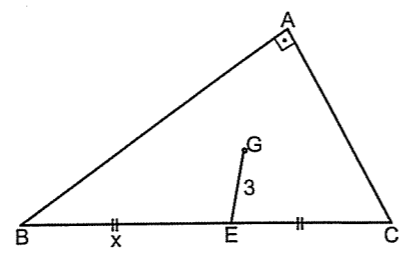
6.  G, ağırlık merkezi $x = ?$

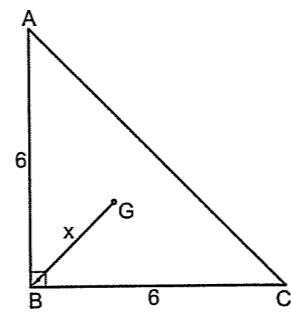
A) 6 B) 8 C) 10 D) 12 E) 16

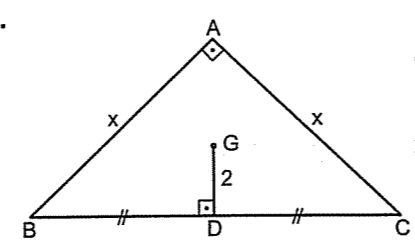
7.  G, ağırlık merkezi $x = ?$
A) 20 B) 18 C) 16 D) 14 E) 12

8.  G, ağırlık merkezi $x = ?$
A) 7 B) $\frac{13}{2}$ C) 6 D) $\frac{11}{2}$ E) 5

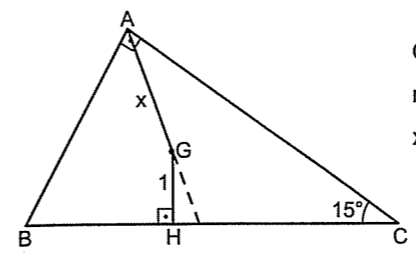
9.  G, ağırlık merkezi $x = ?$
A) $\sqrt{3}$ B) $\sqrt{5}$ C) 3 D) $2\sqrt{3}$ E) 4

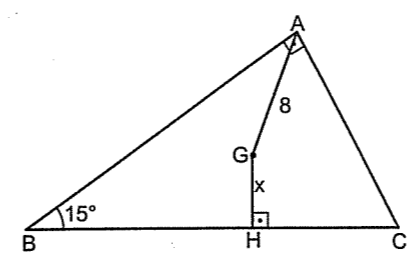
10.  G, ağırlık merkezi $x = ?$
A) 9 B) 8 C) 7 D) 6 E) 5

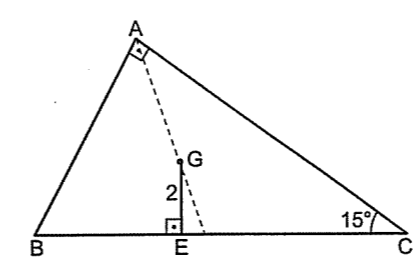
11.  G, ağırlık merkezi $x = ?$
A) $4\sqrt{2}$ B) $3\sqrt{3}$ C) $2\sqrt{6}$ D) $3\sqrt{2}$ E) $2\sqrt{2}$

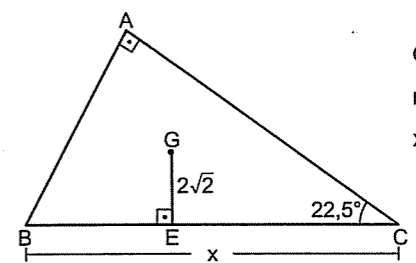
12.  G, ağırlık merkezi $x = ?$
A) $4\sqrt{2}$ B) $4\sqrt{3}$ C) $6\sqrt{2}$ D) $6\sqrt{3}$ E) $8\sqrt{2}$

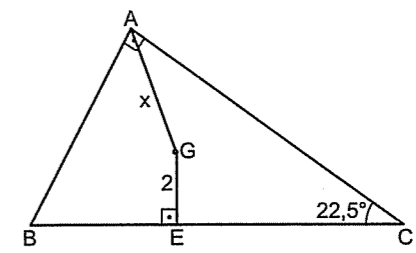
Bu sayfadaki antrenmanların hepsi aynı cins..☺
Eksik kenarortayı tamamlayıp açıları kullanmak gerekiyor. Diğer türlü çıkmıyor da..☺

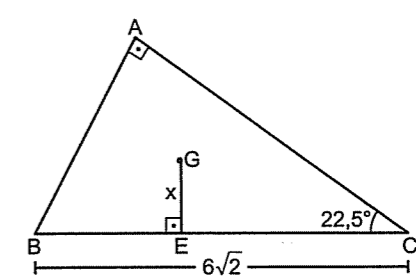
1.  G, ağırlık merkezi $x = ?$
A) 2 B) 3 C) 4 D) 5 E) 6

2.  G, ağırlık merkezi $x = ?$
A) 1 B) $\sqrt{3}$ C) 2 D) $2\sqrt{3}$ E) 3

3.  G, ağırlık merkezi $|BC| = ?$
A) 12 B) 14 C) 15 D) 18 E) 24

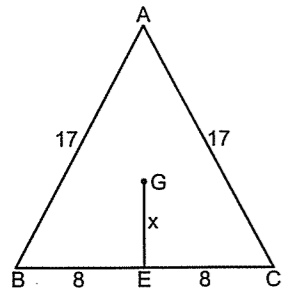
4.  G, ağırlık merkezi $x = ?$
A) 24 B) 20 C) 18 D) 16 E) 12

5.  G, ağırlık merkezi $x = ?$
A) 3 B) $3\sqrt{2}$ C) $2\sqrt{6}$ D) $4\sqrt{2}$ E) 6

6.  G, ağırlık merkezi $x = ?$
A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) $2\sqrt{2}$

İkizkenar üçgeni görünce aklınıza neler geliyor?

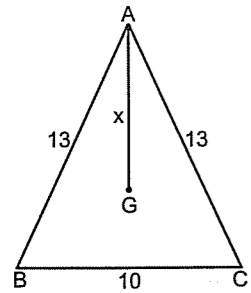
7.



G, ağırlık merkezi
 $x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

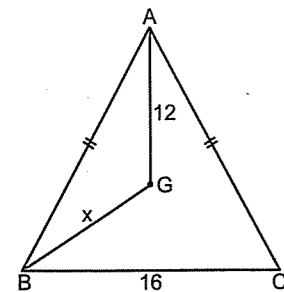
8.



G, ağırlık merkezi
 $x = ?$

- A) 10 B) 8 C) 6 D) 5 E) 4

9.

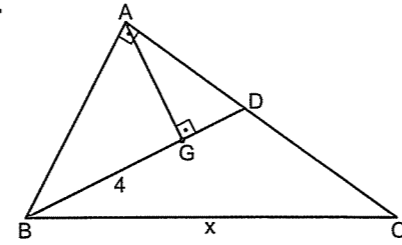


G, ağırlık merkezi
 $x = ?$

- A) 13 B) 12 C) 10 D) 9 E) 8

Unutmadınız di mi? Dik üçgende hipotenüse dik inilmişse bu işte bi öklit olayı vardı..☺

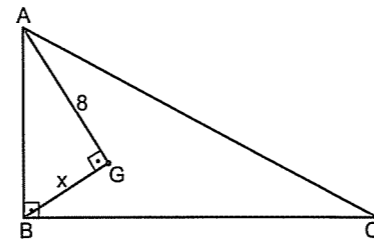
10.



G, ağırlık merkezi
 $x = ?$

- A) $4\sqrt{2}$ B) $4\sqrt{3}$ C) $5\sqrt{2}$ D) 8 E) $6\sqrt{2}$

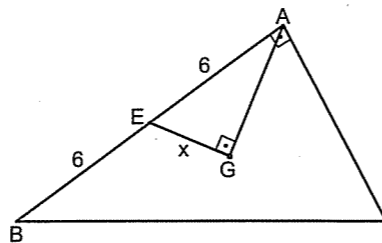
11.



G, ağırlık merkezi
 $x = ?$

- A) $3\sqrt{2}$ B) $4\sqrt{2}$ C) 6 D) $4\sqrt{3}$ E) 8

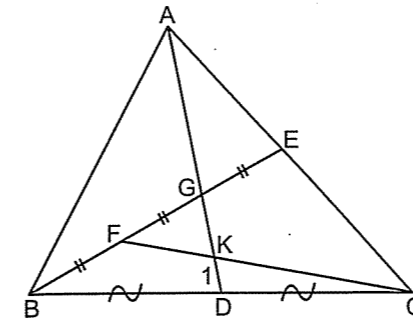
12.



G, ağırlık merkezi
 $x = ?$

- A) $2\sqrt{3}$ B) 4 C) $3\sqrt{2}$ D) $3\sqrt{3}$ E) $4\sqrt{2}$

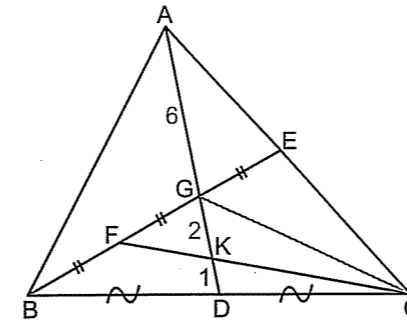
Örnek Soru:



$|AD| = ?$

Çözüm:

İlk şunu görmek lâzım. ABC üçgeninde \hat{A} dan gelen kenarortay \hat{B} dan gelen doğru parçası kenara 1 birim köşeye 2 birim şeklinde böldüğünden G ağırlık merkezidir.



Sonra da $|GC|$ yi çizip BGC üçgeninde K nın ağırlık merkezi olduğunu. Çünkü $|GD|$ ve $|FC|$ kenarortaydır. Bunu görmüş olmanız lâzım.

Dolayısıyla

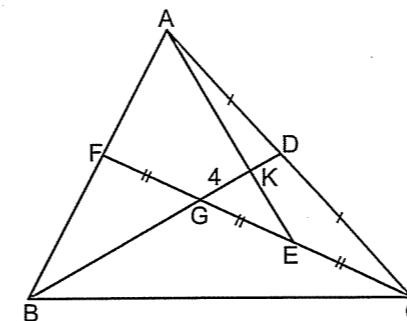
$|KD| = 1$ ise $|GK| = 2$ olur.

G de ABC üçgeninin ağırlık merkezi olduğundan

$|GD| = 3$ ise $|AG| = 6$ dir.

Bizden istenen $|AD| = 9$ bulunur.

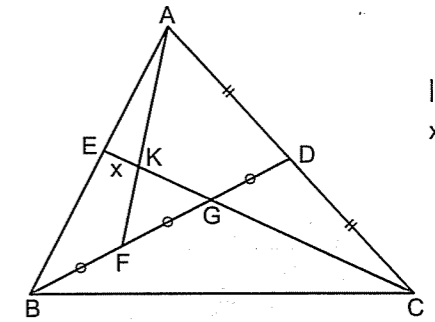
1.



$|BD| = ?$

- A) 18 B) 16 C) 14 D) 12 E) 10

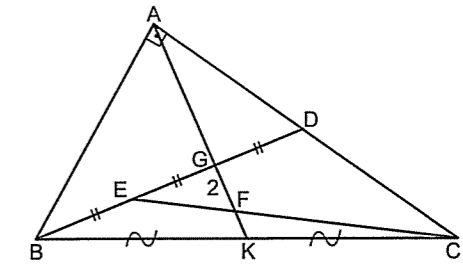
2.



$|EC| = 18$
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

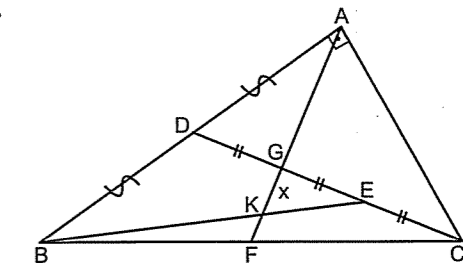
3.



$|BC| = ?$

- A) 24 B) 18 C) 16 D) 14 E) 12

4.



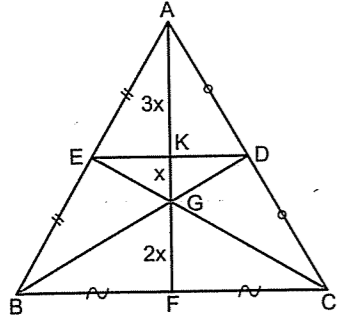
$|BC| = 36$
 $x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6

— ÜÇGENDE KENARORTAY

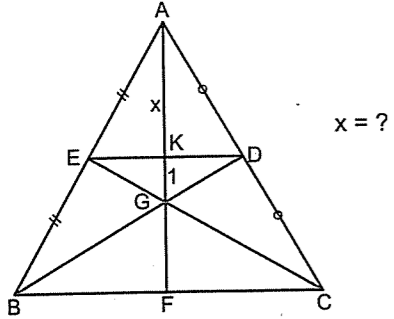
6. Antrenman

- Ankara'nın telefon kodu kaçtı? Kaç kişi bilmiyor bunu? Çok ayıp ama. ☹



Üç kenarortayı çizip uç noktalarının da birleştirdiğinizde köşeden başlayarak kenarortay 3 - 1 - 2 şeklinde bölünür. Bu özellik Ankara'nın telefon kodundan aklınızda kalsın.

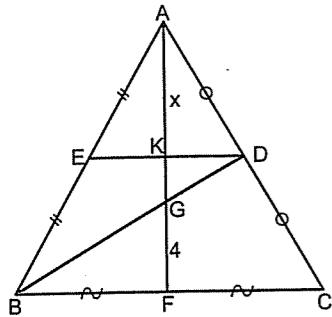
5.



$x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6

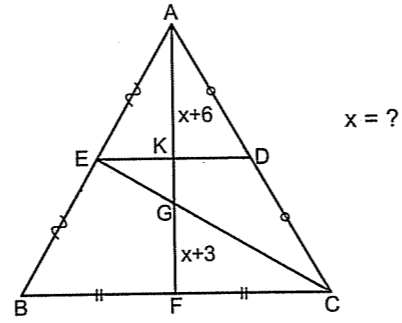
6.



$x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 8

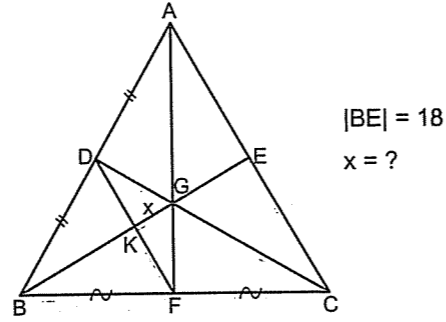
7.



$x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

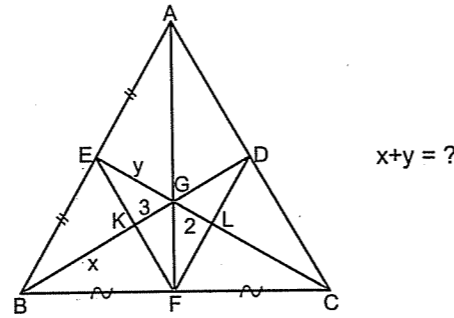
8.



$|BE| = 18$
 $x = ?$

- A) 6 B) 5 C) 4 D) 3 E) 2

9.



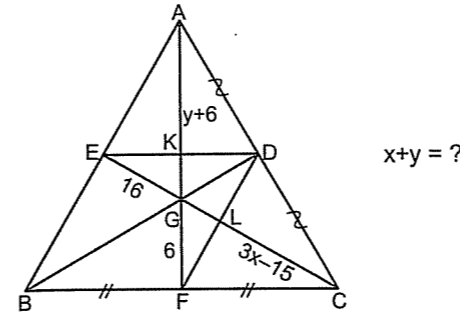
$x+y = ?$

- A) 9 B) 10 C) 11 D) 12 E) 13

— ÜÇGENDE KENARORTAY

7. Antrenman

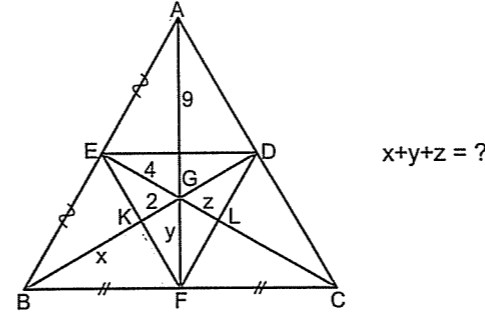
1.



$x+y = ?$

- A) 11 B) 13 C) 16 D) 19 E) 21

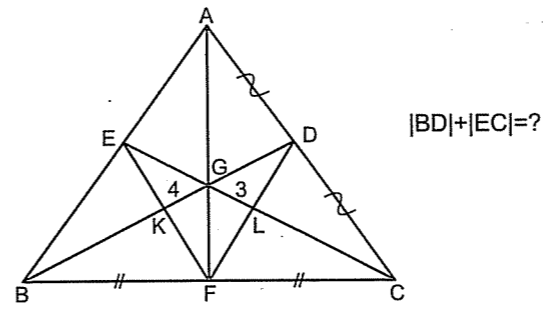
2.



$x+y+z = ?$

- A) 12 B) 13 C) 14 D) 15 E) 16

3.

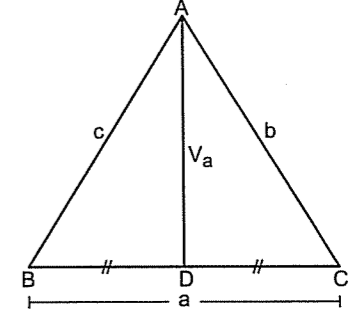


$|BD|+|EC|=?$

- A) 50 B) 42 C) 36 D) 32 E) 28

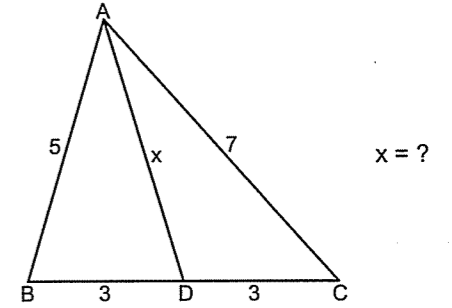
● Kenarortay Uzunluğu

Sınavlarda çok gelmiyor. Ama meraklı tipler için vereyim.



Bir üçgende a kenarına ait kenarortayın uzunluğunu lâzım olursa $2V_a^2 = b^2 + c^2 - \frac{a^2}{2}$ eşitliğinden bulabilirsiniz. Bence de çok gıcık. ☺

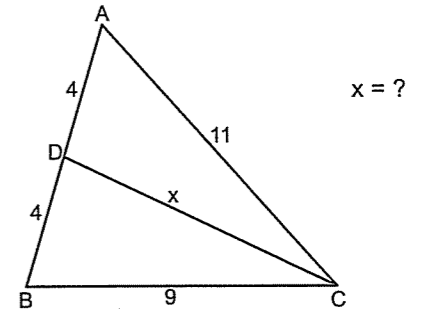
4.



$x = ?$

- A) $2\sqrt{6}$ B) 5 C) $2\sqrt{7}$ D) $4\sqrt{2}$ E) 7

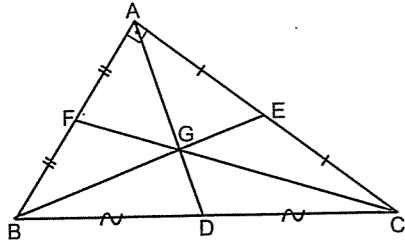
5.



$x = ?$

- A) 8 B) $\sqrt{68}$ C) $6\sqrt{2}$ D) 9 E) $\sqrt{85}$

● Yine meraklıları için,

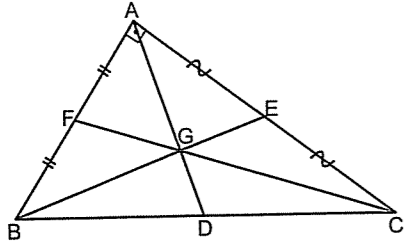


$|AD| = V_a$
 $|BE| = V_b$
 $|FC| = V_c$

Bir dik üçgende hipotenüse ait kenarortayla ilgili $5V_a^2 = V_b^2 + V_c^2$ bağıntısı vardır.

Bakın canlar! Kenarortayla ilgili bir sürü acayip sorular yazılabilir. Ama sizin iyi bilmeniz gereken ilk anlattığım şeyler. Bilginiz olsun. ÖSYM deki amcalar fomüllü soruları genelde sormuyorlar.

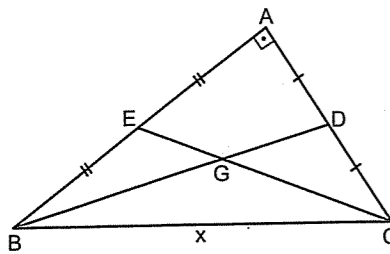
6.



$|BE| = 6$
 $|FC| = 8$
 $|AD| = ?$

- A) $2\sqrt{5}$ B) $2\sqrt{6}$ C) 5 D) $3\sqrt{3}$ E) $4\sqrt{5}$

7.

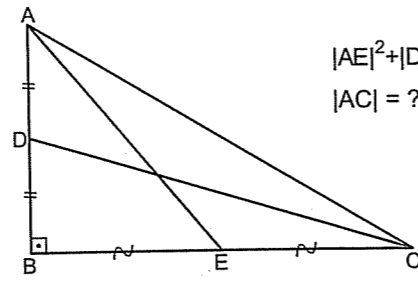


$|EC| = 5\sqrt{2}$
 $|BD| = 5\sqrt{3}$
 $x = ?$

- A) 10 B) 13 C) 15 D) 17 E) 20

1-C 2-C 3-B 4-C 5-E

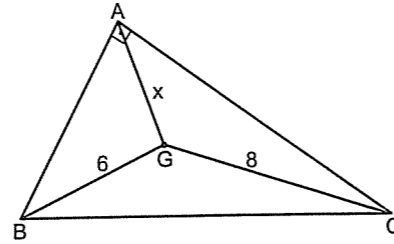
8.



$|AE|^2 + |DC|^2 = 225$
 $|AC| = ?$

- A) 10 B) 12 C) $5\sqrt{5}$ D) $6\sqrt{5}$ E) 15

9.

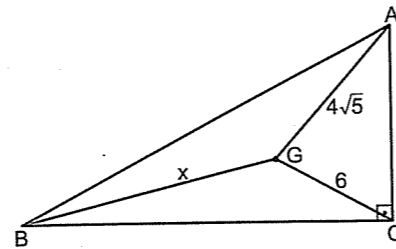


G, ağırlık merkezi
 $x = ?$

İsterseniz uzatıp çözün, isterseniz kenarortayların 2 birimlik parçaları içinde aynı formül geçerlidir.

- A) 4 B) $2\sqrt{5}$ C) 5 D) $3\sqrt{5}$ E) $3\sqrt{6}$

10.



G, ağırlık merkezi
 $x = ?$

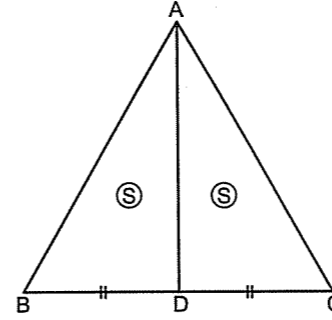
- A) 8 B) $4\sqrt{5}$ C) $4\sqrt{6}$ D) 10 E) $6\sqrt{3}$

6-A 7-A 8-D 9-B 10-D

● Kenarortay - Alan Muhabbeti

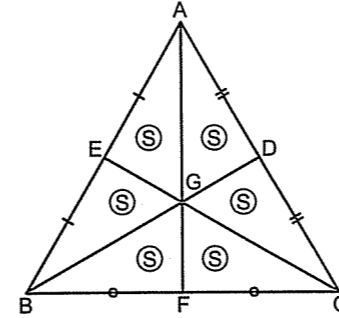
Aslında söyleyeceğim şeyleri siz de rahatlıkla çıkarabilirsiniz. Ne de olsa artık geo. üstadı olmak üzeresiniz.

İlk olarak



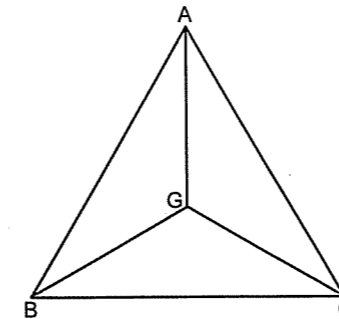
Bir kenarortayın üçgenin alanını iki eşit parçaya böldüğünü bilmek lâzım.

İkinci olarak



Üç kenarortayın üçgenin alanını 6 eşit parçaya böldüğünü bilmek lâzım.

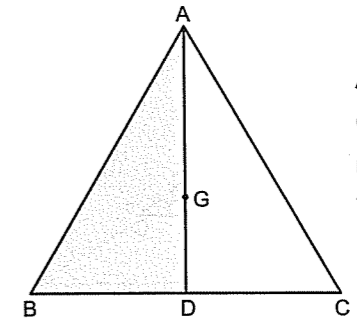
Üçüncü olarak



G, ağırlık merkezi

Kenarortayların 2 birimlik uzunlukları çizildiğinde üçgenin alanı 3 eşit parçaya bölündüğünü bilmek lâzım.

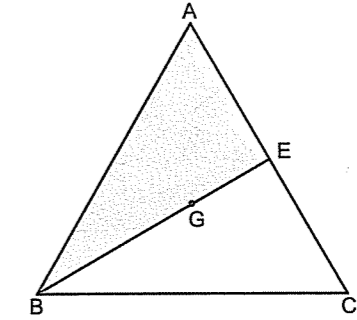
1.



Alan(ABC) = 12
 G, ağırlık merkezi
 Taralı alan = ?

- A) 10 B) 9 C) 8 D) 6 E) 4

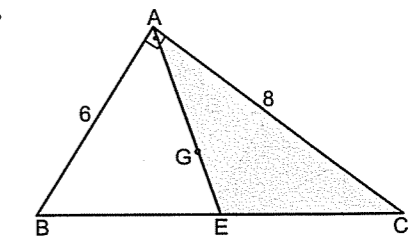
2.



G, ağırlık merkezi
 Taralı alan = 8
 Alan(ABC) = ?

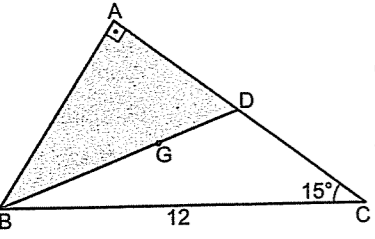
- A) 8 B) 12 C) 16 D) 18 E) 24

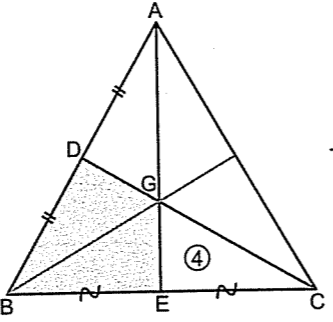
3.

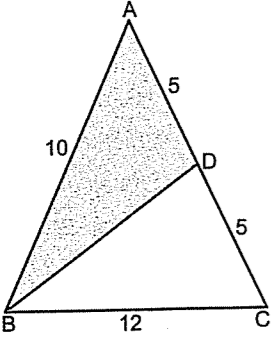


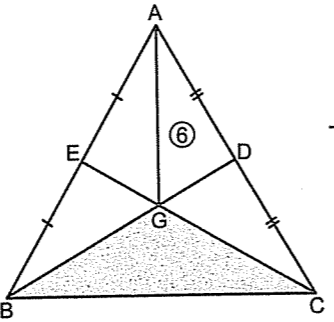
G, ağırlık merkezi
 Taralı alan = ?

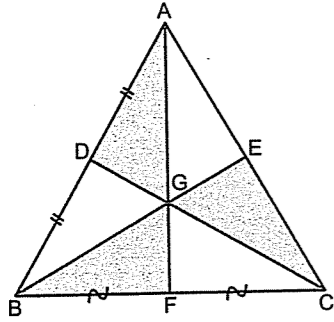
- A) 24 B) 20 C) 18 D) 16 E) 12

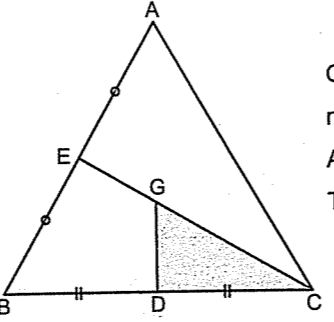
4.  G, ağırlık merkezi
Taralı alan = ?
A) 16 B) 12 C) 9 D) 8 E) 6

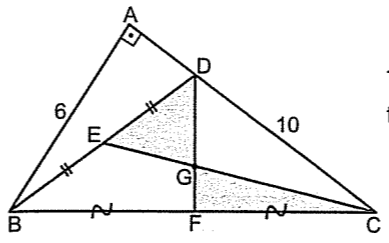
7.  Taralı alan = ?
A) 6 B) 8 C) 9 D) 10 E) 12
Üçüncü kenarortayı çizerek üçgeni istediğiniz şekle getirin.

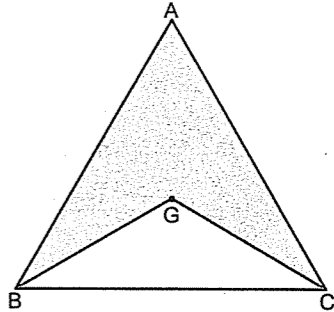
5.  Taralı alan = ?
A) 24 B) 20 C) 18 D) 16 E) 12

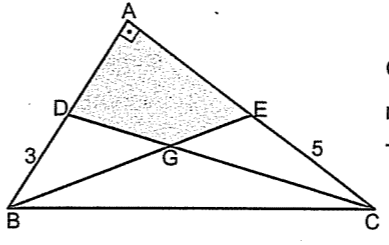
8.  Taralı alan = ?
A) 6 B) 8 C) 12 D) 16 E) 18

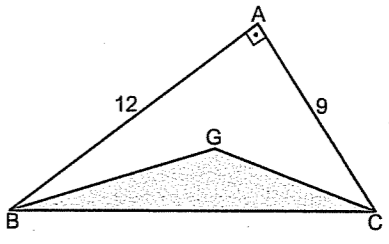
6.  Alan(ABC) = 24
Taralı alanlar toplamı = ?
A) 18 B) 16 C) 12 D) 8 E) 6
1-D 2-C 3-E 4-C

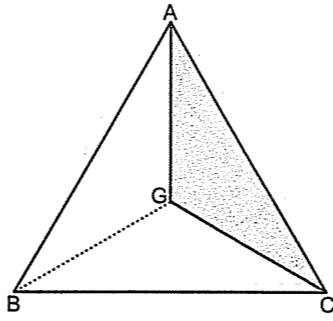
9.  G, ağırlık merkezi
Alan(ABC) = 36
Taralı alan = ?
A) 24 B) 18 C) 16 D) 12 E) 6
6-C 7-B 8-C 9-E

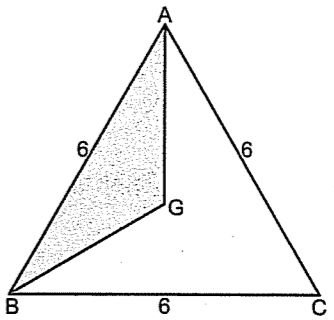
Şu soruda önce DBC üçgeninin alanını bulmak lâzım.
1.  Taralı alanlar toplamı = ?
A) 5 B) $\frac{15}{2}$ C) 10 D) $\frac{25}{2}$ E) 15

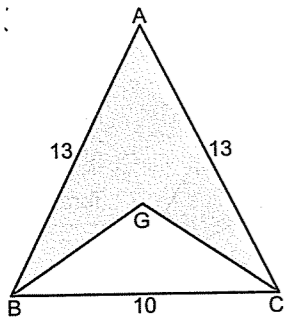
4.  G, ağırlık merkezi
Alan(ABC) = 30
Taralı alan = ?
A) 20 B) 15 C) 12 D) 10 E) 6

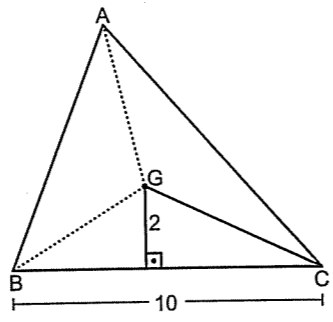
2.  G, ağırlık merkezi
Taralı alan = ?
A) 5 B) 6 C) 10 D) 12 E) 15

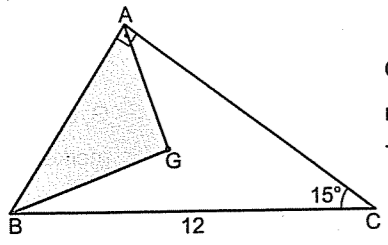
Bazı sorularda taralı alanı bulmak için önce büyük üçgenin alanını bulmak lâzım.
5.  G, ağırlık merkezi
Taralı alan = ?
A) 24 B) 20 C) 18 D) 16 E) 12

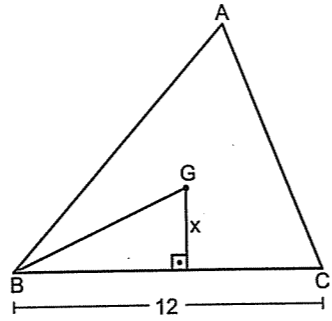
3.  G, ağırlık merkezi
Alan(ABC) = 18
Taralı alan = ?
A) 16 B) 12 C) 10 D) 9 E) 6

6.  G, ağırlık merkezi
Taralı alan = ?
A) 18 B) 12 C) $9\sqrt{3}$ D) $6\sqrt{3}$ E) $3\sqrt{3}$

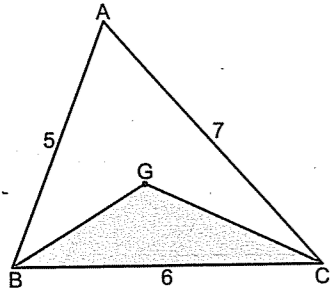
7.  G, ağırlık merkezi
Taralı alan = ?
A) 50 B) 40 C) 30 D) 25 E) 20

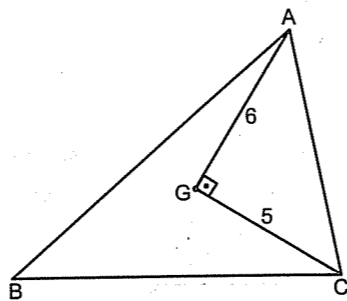
10.  G, ağırlık merkezi
Alan(ABC) = ?
A) 40 B) 30 C) 25 D) 20 E) 15

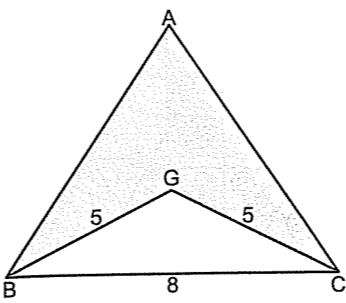
8.  G, ağırlık merkezi
Taralı alan = ?
A) 24 B) 12 C) 9 D) 6 E) 4

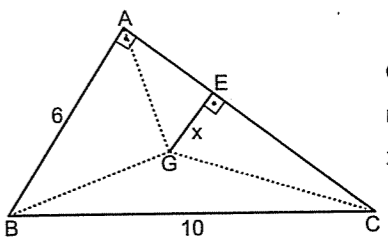
11.  G, ağırlık merkezi
Alan(ABC) = 54
x = ?
A) 3 B) 4 C) 5 D) 6 E) 7

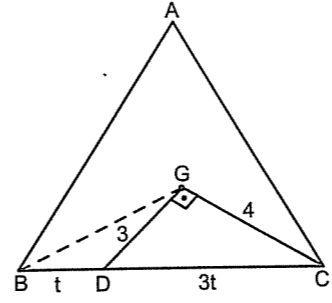
5-6-7 üçgeninin alanı kaçtı? Hatırlayın bi zahmet ☺

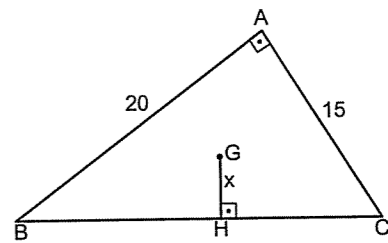
9.  Taralı alan = ?
A) $6\sqrt{6}$ B) $5\sqrt{6}$ C) $4\sqrt{6}$ D) $3\sqrt{6}$ E) $2\sqrt{6}$

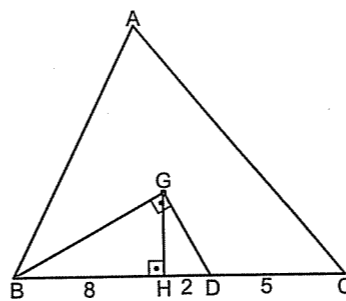
12.  G, ağırlık merkezi
Alan(ABC) = ?
A) 15 B) 30 C) 35 D) 45 E) 50

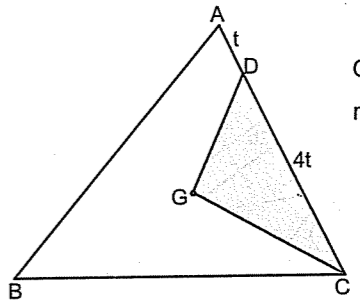
1.  G, ağırlık merkezi
Taralı alan = ?
A) 12 B) 16 C) 24 D) 28 E) 30

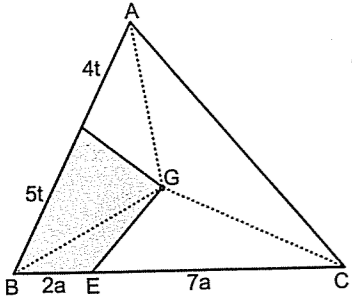
4.  G, ağırlık merkezi
x = ?
A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) 3

2.  G, ağırlık merkezi
Alan(ABC) = ?
A) 36 B) 32 C) 24 D) 18 E) 12

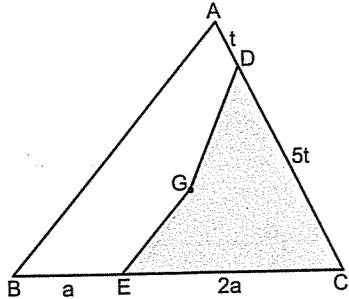
5.  G, ağırlık merkezi
x = ?
A) 3 B) 4 C) $2\sqrt{5}$ D) 5 E) $3\sqrt{3}$

3.  G, ağırlık merkezi
Alan(ABC) = ?
A) 30 B) 45 C) 60 D) 80 E) 90

6.  G, ağırlık merkezi
 $\frac{\text{Taralı alan}}{\text{Alan(ABC)}}$
A) $\frac{2}{15}$ B) $\frac{4}{13}$ C) $\frac{4}{17}$ D) $\frac{4}{15}$ E) $\frac{7}{15}$

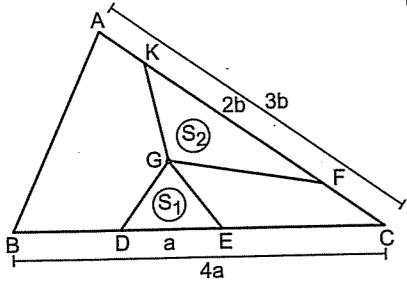
7.  G, ağırlık merkezi
Taralı alan = 7
Alan(ABC) = ?

A) 30 B) 28 C) 27 D) 24 E) 21

8.  G, ağırlık merkezi
Alan(ABC) = 30
Taralı alan = ?

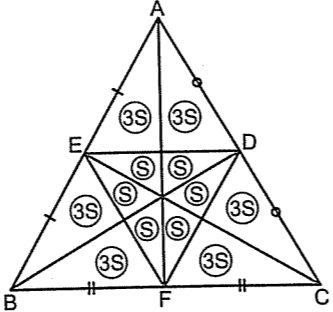
A) 25 B) 20 C) 18 D) 15 E) 10

Şu soruda ABC üçgeninin alanını 3 ve 4 ün (4a ve 3b nin katı) katı olan 12 nin üç katı yani 36 seçmek işinizi kolaylaştırır. Niye ki?

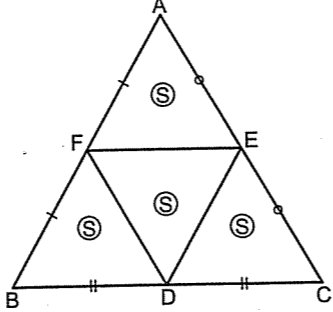
9.  G, ağırlık merkezi
 $\frac{S_1}{S_2} = ?$

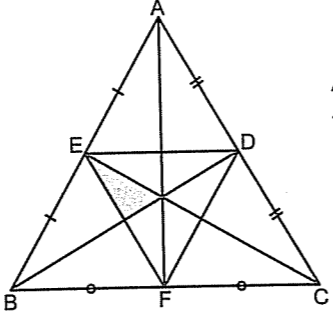
A) $\frac{3}{4}$ B) $\frac{3}{5}$ C) $\frac{4}{5}$ D) $\frac{3}{7}$ E) $\frac{3}{8}$

1-C 2-C 3-E 4-D 5-B

 Kenarortayları çizip uç noktalarını da birleştirdiğinizde yukarıdaki şekil oluşur. Daha önce 312 den bahsetmiştim. 312 ye göre alanları parçaladığınızda, küçük üçgenlerden birinin alanı S ise

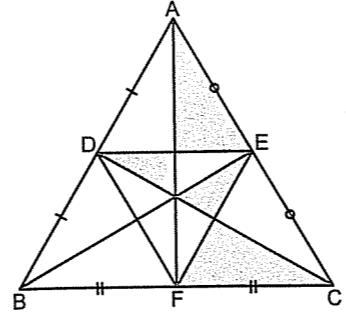
Alan(ABC) = 24S olur.

 Bir üçgende kenarlarının orta noktaları birleştirdiğinizde oluşan üçgenlerin alanları eşit olur.

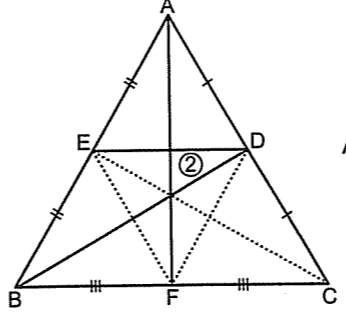
10.  Alan(ABC) = 24
Taralı alan = ?

A) 1 B) 2 C) 3 D) 4 E) 5

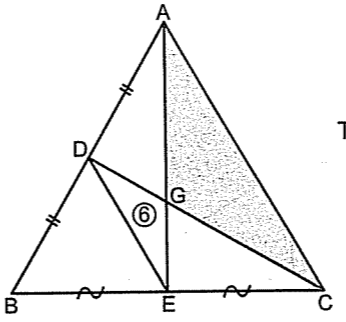
6-D 7-C 8-D 9-E 10-A

1.  Alan(ABC) = 24
Taralı alanlar toplamı = ?

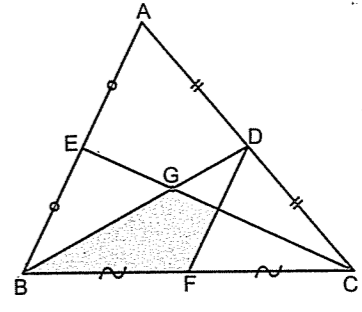
A) 6 B) 8 C) 10 D) 12 E) 16

2.  Alan(ABC) = ?

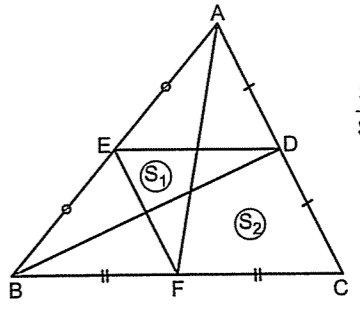
A) 12 B) 16 C) 24 D) 36 E) 48

3.  Taralı alan = ?

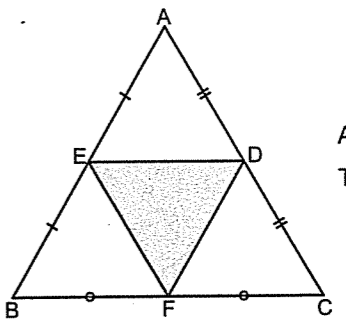
A) 12 B) 18 C) 24 D) 28 E) 30

4.  Taralı alan = 10
Alan(ABC) = ?

A) 48 B) 36 C) 24 D) 20 E) 18

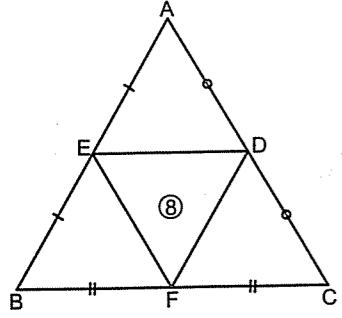
5.  $\frac{S_1}{S_2} = ?$

A) $\frac{1}{5}$ B) $\frac{1}{4}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$ E) 1

6.  Alan(ABC) = 24
Taralı alan = ?

A) 18 B) 12 C) 10 D) 8 E) 6

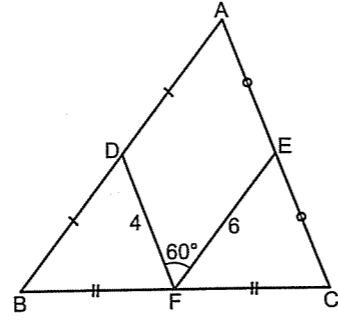
7.



Alan(ABC) = ?

- A) 12 B) 16 C) 24 D) 32 E) 36

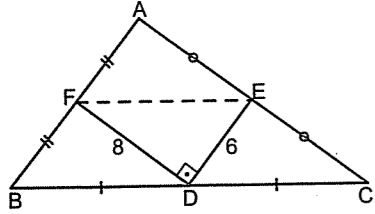
10.



Alan(ABC) = ?

- A) 24 B) $24\sqrt{2}$ C) $24\sqrt{3}$ D) 36 E) $36\sqrt{3}$

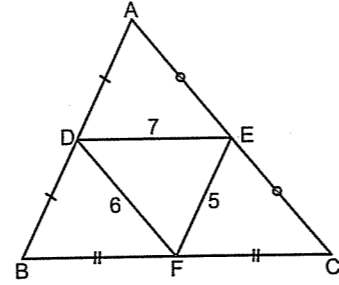
8.



Alan(ABC) = ?

- A) 100 B) 96 C) 84 D) 72 E) 64

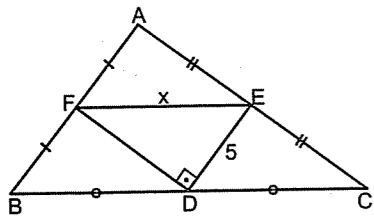
11.



Alan(ABC) = ?

- A) $8\sqrt{6}$ B) $12\sqrt{6}$ C) $18\sqrt{6}$ D) $24\sqrt{6}$ E) $36\sqrt{6}$

9.

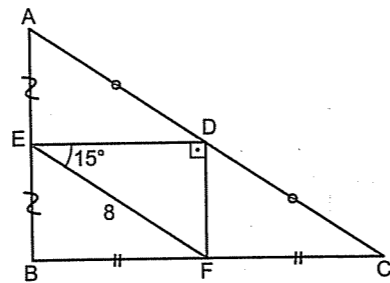


Alan(ABC) = 120

x = ?

- A) $5\sqrt{2}$ B) $5\sqrt{3}$ C) 10 D) 13 E) 15

12.



Alan(ABC) = ?

- A) 16 B) 20 C) 24 D) 32 E) 36

9. Bölüm

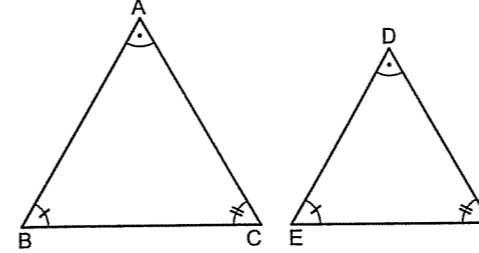
ÜÇGENDE BENZERLİK

Hata yapmayan bir insan genellikle hiçbir şey yapmıyordur.
William Conor Magee

— ÜÇGENDE BENZERLİK —

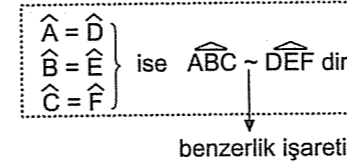
● ÜÇGENDE BENZERLİK

Benzerlik muhabbeti biraz uzun sürecektir. Benzerlikten soru gelmeyen sınav hatırlamıyorum. En başta şunu söyleyeyim. Geometride iki şeklin benzer olup olmadığına öyle uzaktan bakarak "Aaa.. Bunlar birbirine ne kadar da çok benziyor" diyerek karar veremezsiniz. Sadece açılara ve uzunluklara bakarak karar verebilirsiniz. Ona göre. ☺

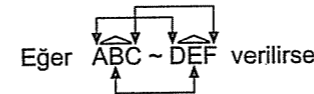


Benzerlik fotokopi makinasında bir şekli büyütüp küçültmek gibidir. Bir üçgeni büyütüp küçültüğünüzde açıları aynı kalır. Sadece kenarları belli bir oranda büyür ya da küçülür.

Üstteki üçgenlerde;

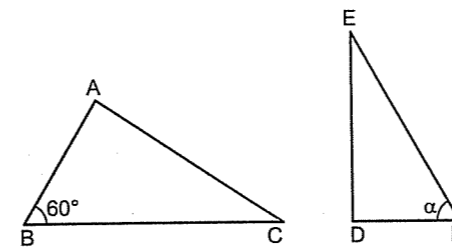


İki üçgenin benzerliğini ifade ederken harflerin sırası acayip önemli. Eğer harflerin sırasını doğru yazarsanız her soruyu çözebilirsiniz. Aksi durumda ise avucunuzu yalama olasılığınız yüksek.



Eğer $\widehat{A} = \widehat{D}$, $\widehat{B} = \widehat{E}$ ve $\widehat{C} = \widehat{F}$ dir.

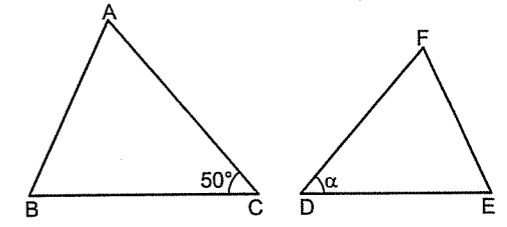
1.



$\widehat{ABC} \sim \widehat{DFE}$ ise $\alpha = ?$

- A) 60° B) 80° C) 90° D) 100° E) 110°

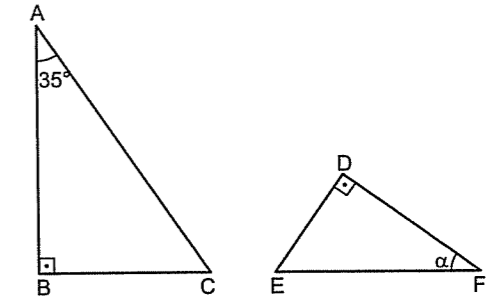
2.



$\widehat{ABC} \sim \widehat{FED}$ ise $\alpha = ?$

- A) 40° B) 50° C) 60° D) 65° E) 70°

3.



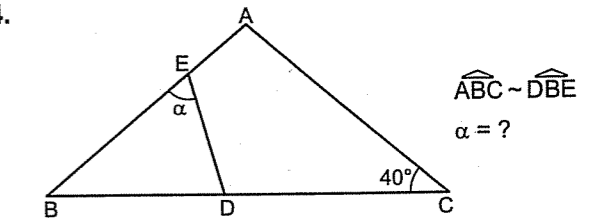
$\widehat{ABC} \sim \widehat{FDE}$ ise $\alpha = ?$

- A) 25° B) 30° C) 35° D) 40° E) 55°

Mesela üstteki üçgenlerde ilk yazdığım harflerin (A ve F) açıları eşit, ikincilerin (B ve D nin) de açıları eşit, üçüncülerin de eşit.

Şuna dikkat edin yeter. Aynı sıradaki harflerin açıları eşit olsun.

4.



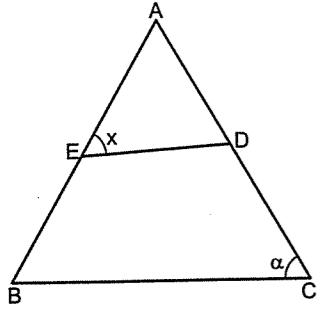
$\widehat{ABC} \sim \widehat{DBE}$
 $\alpha = ?$

- A) 70° B) 60° C) 50° D) 40° E) 20°

Matematiğin hiçbir dalı yoktur ki, ne kadar soyut olursa olsun, bir gün gerçek dünyada uygulama alanı bulmasın.

LOBACHEVSKI

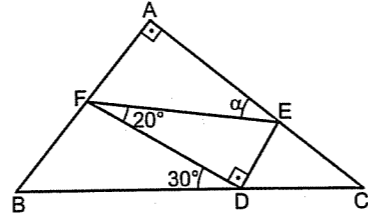
5.



$\widehat{ABC} \sim \widehat{ADE}$
x in α cinsinden
değeri = ?

- A) $\frac{\alpha}{3}$ B) $\frac{\alpha}{2}$ C) α D) 2α E) 3α

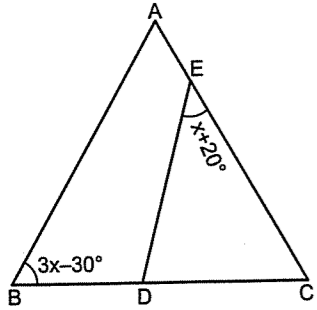
8.



$\widehat{ABC} \sim \widehat{DEF}$
 $\alpha = ?$

- A) 5° B) 10° C) 15° D) 20° E) 25°

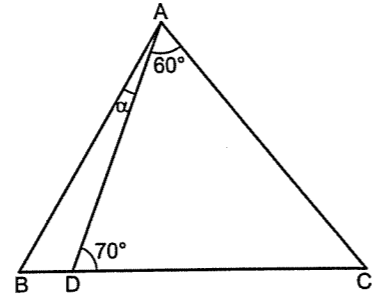
6.



$\widehat{ABC} \sim \widehat{DEC}$
x = ?

- A) 15° B) 20° C) 25° D) 35° E) 45°

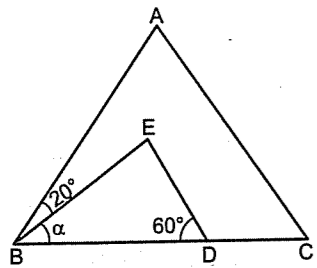
9.



$\widehat{ABC} \sim \widehat{DAC}$
 $\alpha = ?$

- A) 50° B) 40° C) 30° D) 20° E) 10°

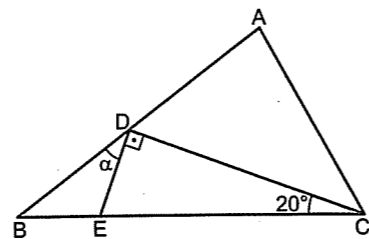
7.



$\widehat{ABC} \sim \widehat{EDB}$
 $\alpha = ?$

- A) 80° B) 60° C) 40° D) 30° E) 20°

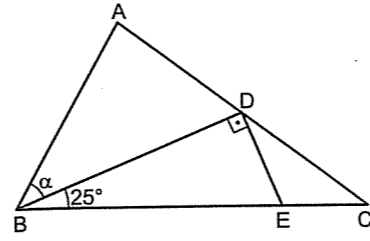
10.



$\widehat{ABC} \sim \widehat{DCE}$
 $\alpha = ?$

- A) 50° B) 40° C) 30° D) 20° E) 10°

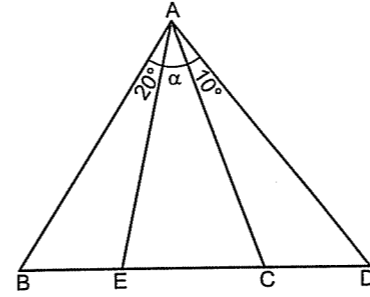
1.



$\widehat{ABC} \sim \widehat{DEB}$
 $\alpha = ?$

- A) 65° B) 50° C) 40° D) 30° E) 25°

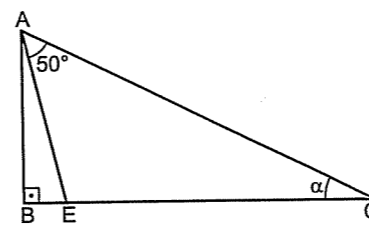
2.



$\widehat{AED} \sim \widehat{BCA}$
 $\alpha = ?$

- A) 50° B) 40° C) 30° D) 20° E) 10°

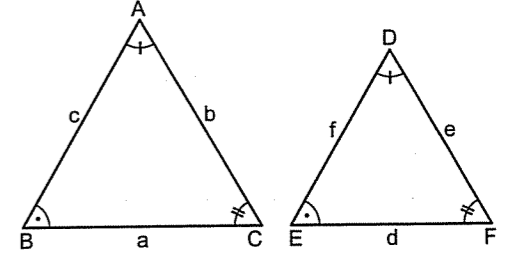
3.



$\widehat{ABE} \sim \widehat{CBA}$
 $\alpha = ?$

- A) 10° B) 20° C) 25° D) 30° E) 35°

● Benzerlik Oranı Olayı

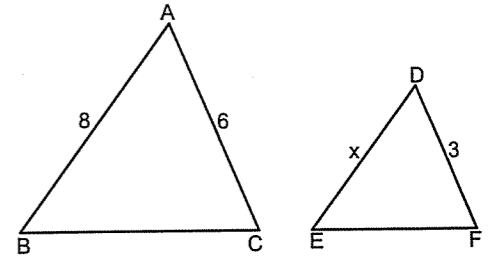


Üçgenler benzer ise eşit açılarının karşısındaki kenarlarının oranı birbirine eşittir.

$$\widehat{ABC} \sim \widehat{DEF} \text{ ise } \frac{a}{d} = \frac{b}{e} = \frac{c}{f} = k$$

k, benzerlik oranıdır.

4.

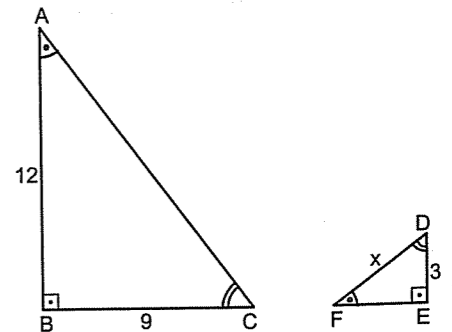


$\widehat{ABC} \sim \widehat{DEF}$ ise x = ?

- A) 4 B) 5 C) 6 D) 8 E) 10

Eğer soruda benzerliği vermişlerse aynı açılar aynı şekilde gösterip olayı netleştirin.

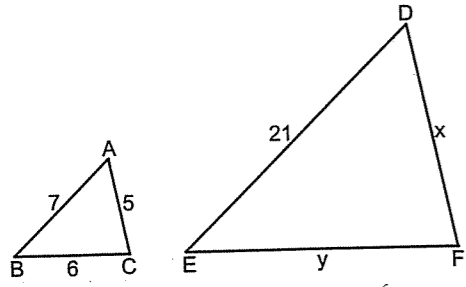
5.



$\widehat{ABC} \sim \widehat{FED}$ ise x = ?

- A) 15 B) 12 C) 10 D) 8 E) 5

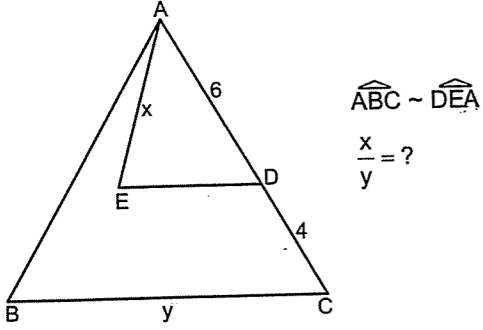
6.



$\widehat{ABC} \sim \widehat{DEF}$ ise $x + y = ?$

- A) 40 B) 35 C) 33 D) 31 E) 27

7.



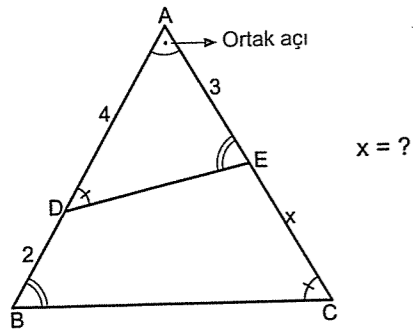
$\widehat{ABC} \sim \widehat{DEA}$

$\frac{x}{y} = ?$

- A) $\frac{3}{2}$ B) $\frac{2}{3}$ C) $\frac{5}{3}$ D) $\frac{3}{5}$ E) $\frac{1}{2}$

Tabii ki her zaman şu üçgenler benzerdir diye verilmez. Bazen de benzerliği sizin görmmeniz gerekir. Eğer sorudaki üçgenlerin iki açıları eşit ise üçüncü açıları zaten eşit olacağından üçgenler benzer olur.

8.

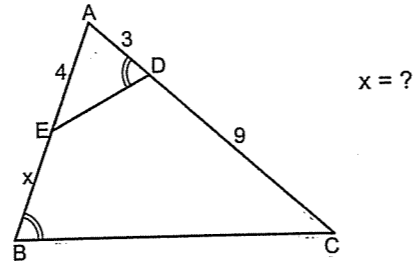


Ortak açı

$x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

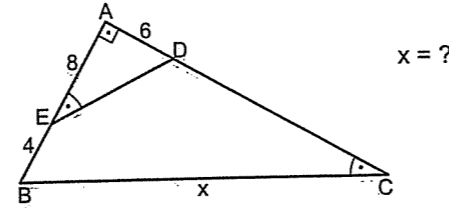
9.



$x = ?$

- A) 4 B) 5 C) 6 D) 7 E) 8

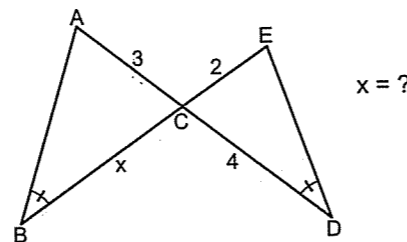
10.



$x = ?$

- A) 13 B) 15 C) 17 D) 20 E) 25

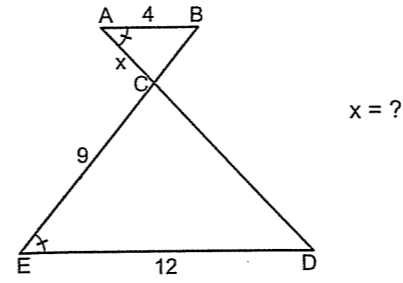
11.



$x = ?$

- A) 4 B) 5 C) 6 D) 7 E) 8

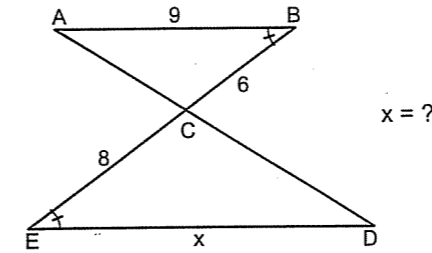
1.



$x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

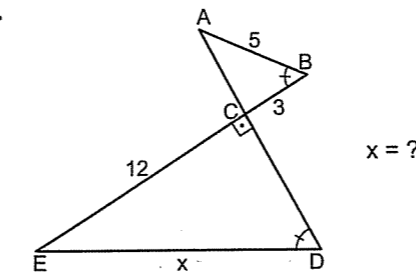
2.



$x = ?$

- A) 4 B) 6 C) 8 D) 10 E) 12

3.

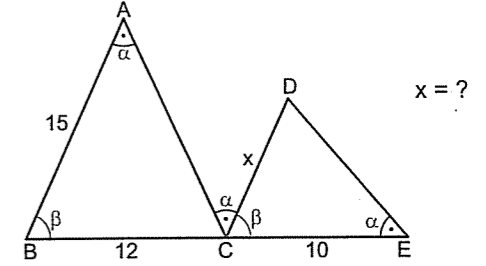


$x = ?$

- A) 13 B) 15 C) 18 D) 20 E) 25

Tabii sorularda silik yazdığım α, β lar verilmiyor. Siz yazacaksınız zahmet olmazsa.☺

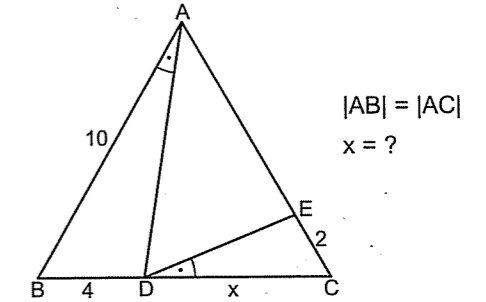
4.



$x = ?$

- A) 10 B) 9 C) 8 D) 6 E) 5

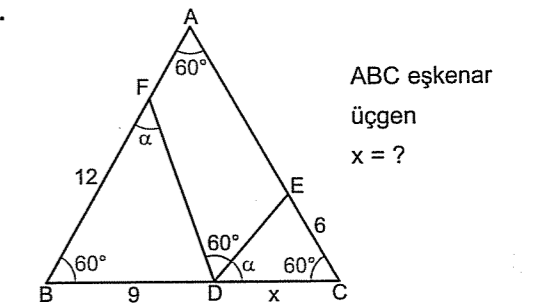
5.



$|AB| = |AC|$
 $x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 8

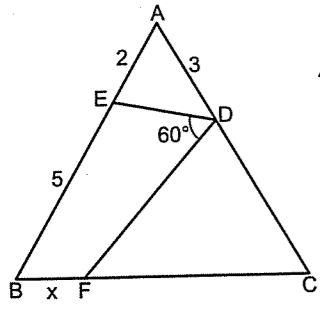
6.



ABC eşkenar üçgen
 $x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 8

7.

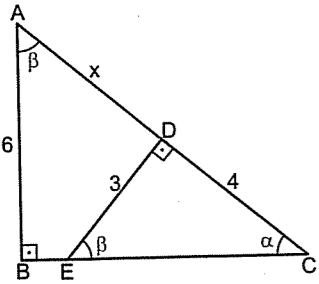


ABC eşkenar
üçgen
 $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

Eğer soruda iki dik üçgeni görürseniz, açıları harflendirerek benzer üçgenleri bulun. Bu soru tipi çok kullanılır.

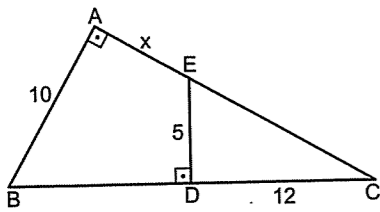
8.



$x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9

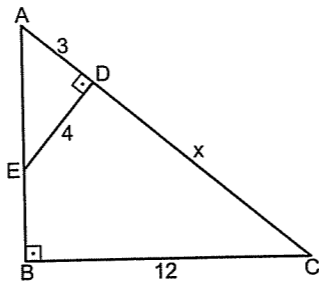
9.



$x = ?$

- A) 10 B) 12 C) 11 D) 13 E) 15

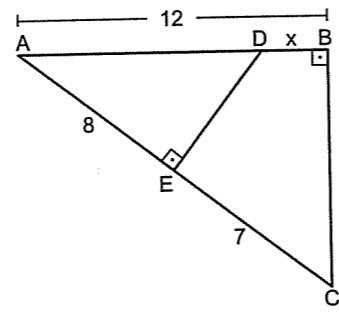
10.



$x = ?$

- A) 10 B) 12 C) 13 D) 14 E) 17

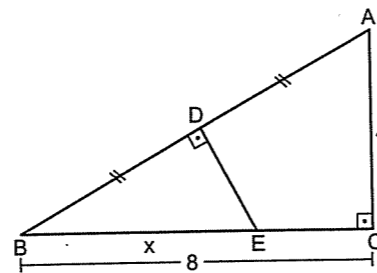
11.



$x = ?$

- A) 5 B) 4 C) 3 D) 2 E) 1

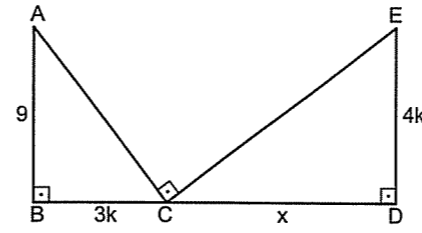
12.



$x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

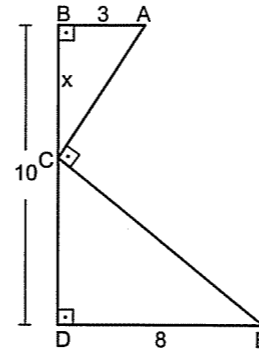
1.



$x = ?$

- A) 10 B) 12 C) 15 D) 16 E) 20

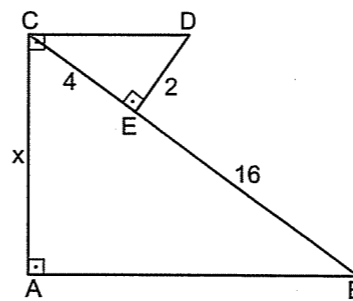
2.



x in alabileceği değerler toplamı kaçtır?

- A) 10 B) 11 C) 12 D) 13 E) 14

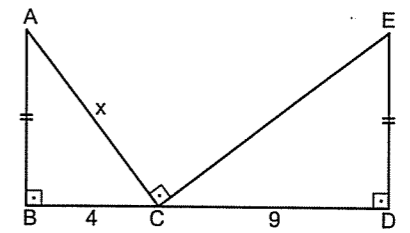
3.



$x = ?$

- A) $4\sqrt{5}$ B) 9 C) 12 D) 15 E) $8\sqrt{5}$

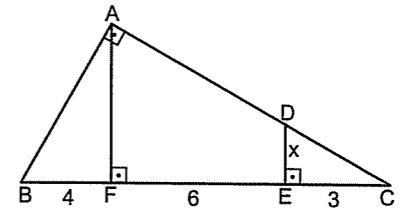
4.



$x = ?$

- A) 6 B) 7 C) $2\sqrt{13}$ D) $\sqrt{65}$ E) 10

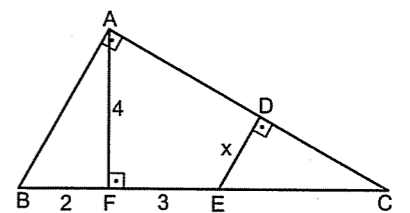
5.



$x = ?$

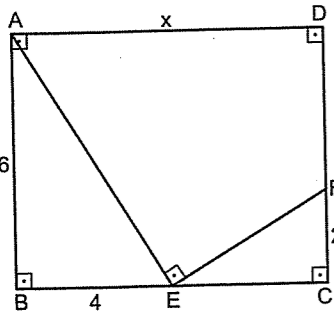
- A) 1 B) 2 C) $\frac{5}{2}$ D) 3 E) $\frac{7}{2}$

6.

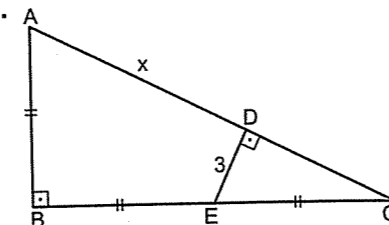


$x = ?$

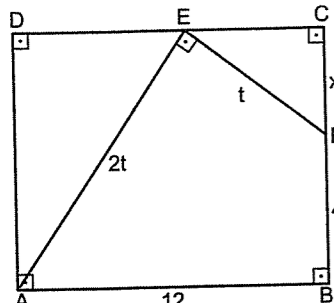
- A) $\sqrt{3}$ B) 2 C) $\sqrt{5}$ D) 3 E) 4

7.  $x = ?$

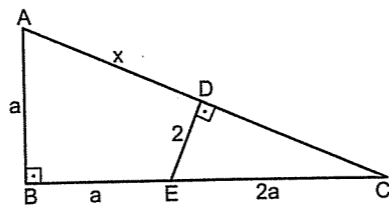
A) 5 B) 6 C) 7 D) 8 E) 9

10.  $x = ?$

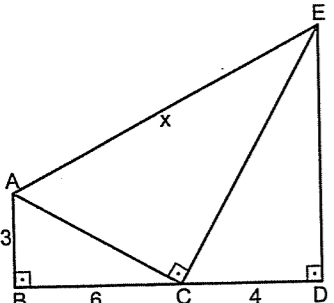
A) 6 B) 8 C) 9 D) 10 E) 12

8.  $x = ?$

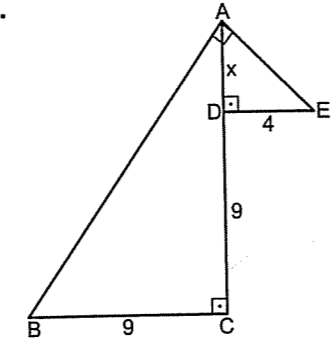
A) 1 B) 2 C) 3 D) 4 E) 5

11.  $x = ?$

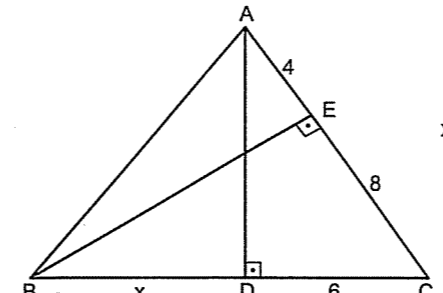
A) 4 B) 5 C) 6 D) 7 E) 8

9.  $x = ?$

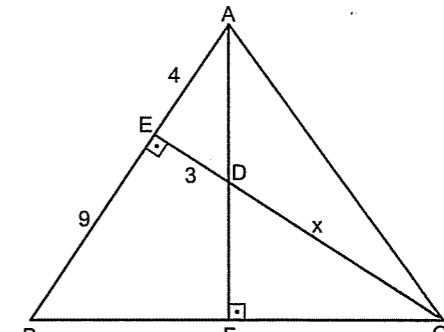
A) $3\sqrt{5}$ B) $4\sqrt{5}$ C) 9 D) 10 E) $5\sqrt{5}$

12.  $x = ?$

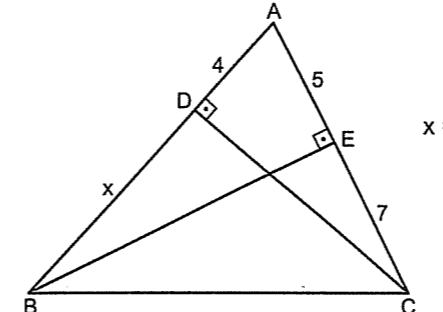
A) 1 B) 2 C) 3 D) 4 E) 5

1.  $x = ?$

A) 6 B) 8 C) 10 D) 12 E) 16

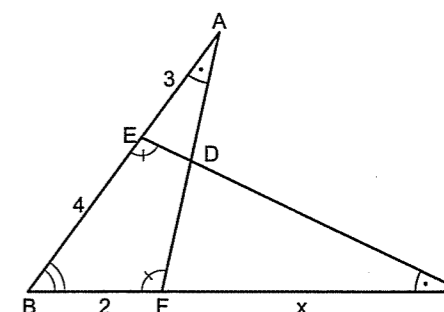
4.  $x = ?$

A) 8 B) 9 C) 10 D) 13 E) 15

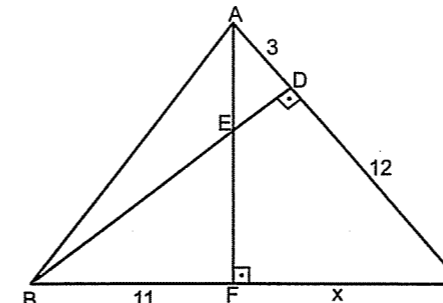
2.  $x = ?$

A) 13 B) 11 C) 10 D) 9 E) 8

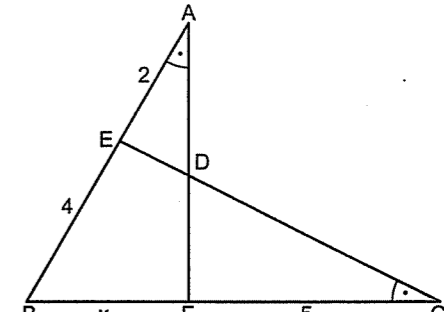
5. Şu soruda $\widehat{ABF} \sim \widehat{CBE}$ yi görmek lazım.

5.  $x = ?$

A) 12 B) 10 C) 8 D) 6 E) 4

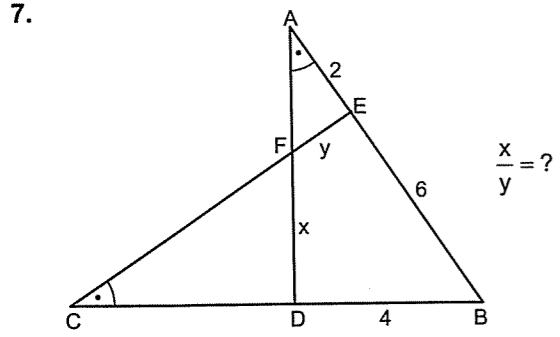
3.  $x = ?$

A) 7 B) 8 C) 9 D) 10 E) 11

6.  $x = ?$

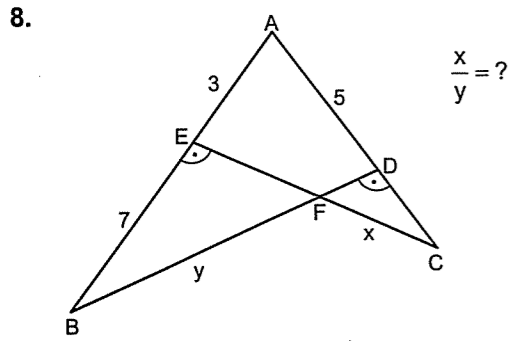
A) 6 B) 5 C) 4 D) 3 E) 2

Şu biraz daha zor.



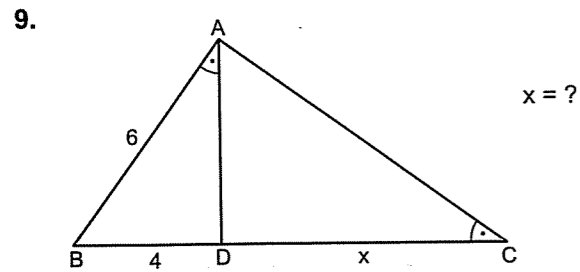
Bu soruda "[CD]"yi bulduktan sonra \widehat{CDF} üçgeni ile \widehat{AEF} üçgeninin benzerliğini kullanın.

- A) 1 B) 2 C) 3 D) 4 E) 5



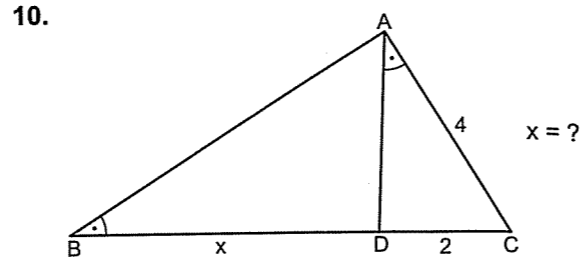
- A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{2}{5}$ E) $\frac{1}{7}$

Ve klasik bir soru tipi daha. ☺

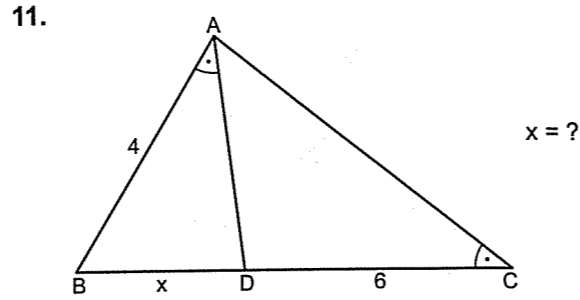


- A) 5 B) 6 C) 7 D) 8 E) 9

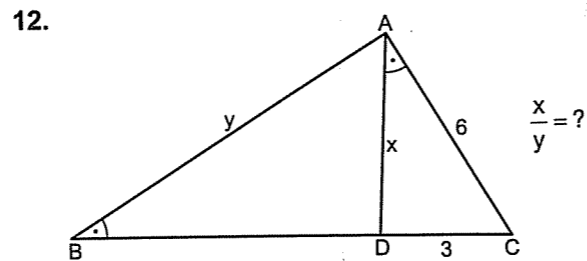
1-C 2-B 3-C 4-B 5-A 6-D



- A) 4 B) 5 C) 6 D) 7 E) 8

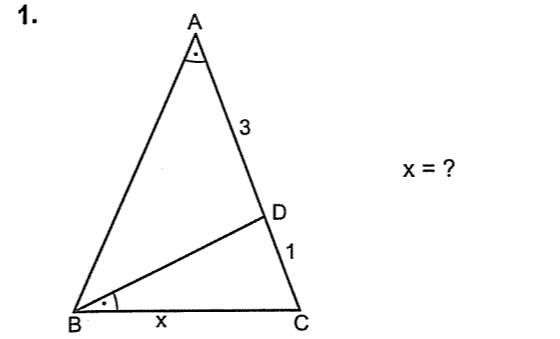


- A) 1 B) 2 C) 3 D) 4 E) 5

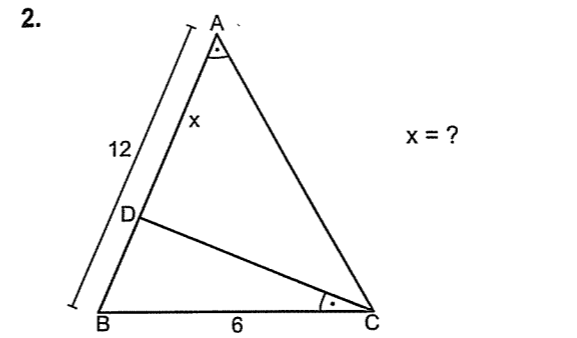


- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{5}$ E) $\frac{4}{7}$

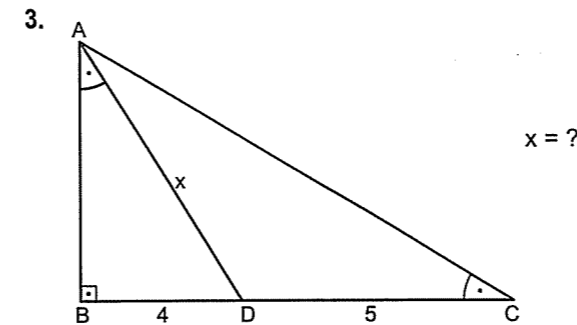
7-D 8-E 9-A 10-C 11-B 12-B



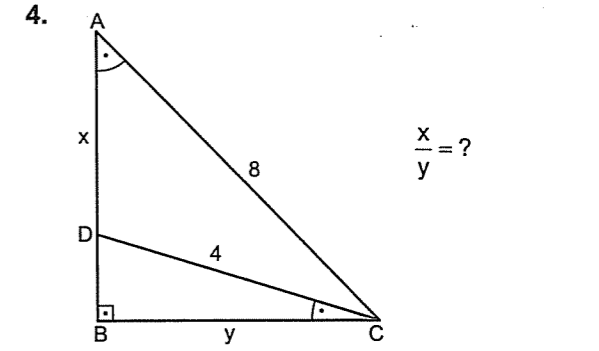
- A) 1 B) 2 C) 3 D) 4 E) 5



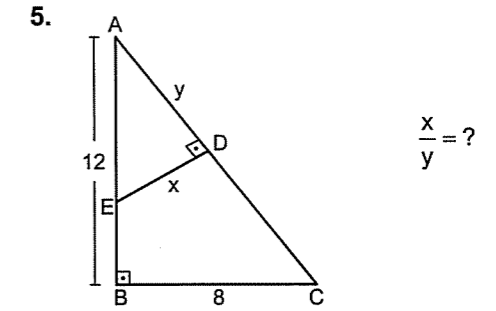
- A) 6 B) 7 C) 8 D) 9 E) 10



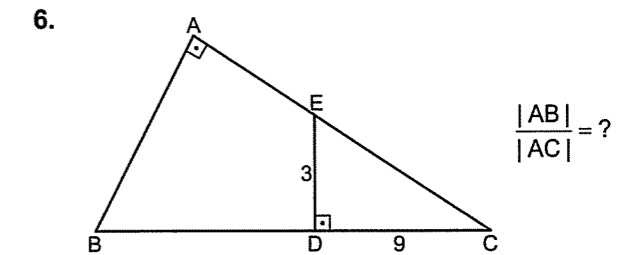
- A) 4 B) 6 C) $2\sqrt{13}$ D) $\sqrt{57}$ E) $3\sqrt{7}$



- A) $\frac{1}{2}$ B) 1 C) $\frac{2}{3}$ D) $\frac{3}{2}$ E) 2

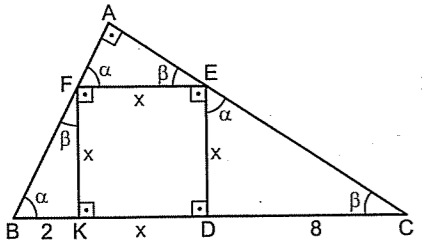


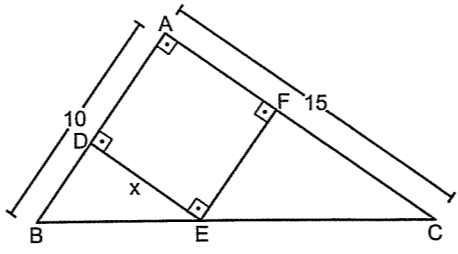
- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{3}{2}$ D) $\frac{2}{3}$ E) $\frac{4}{3}$

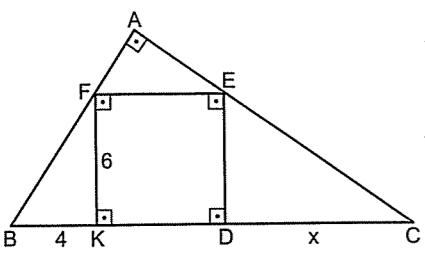


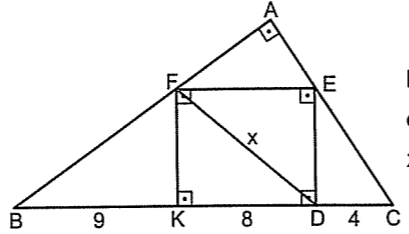
- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 3

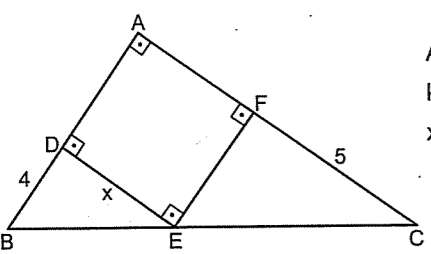
Dik üçgen içine kare, dikdörtgen filan çizilmişse açıları harflendirin, yanlardaki üçgenlerin benzer olduğunu göreceksiniz.

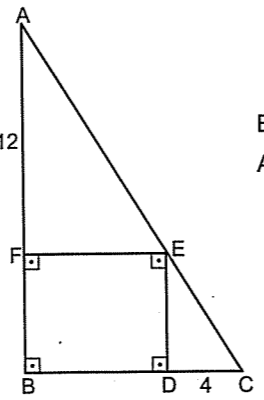
7.  DEFK kare
x = ?
A) 3 B) 4 C) 5 D) 6 E) 7

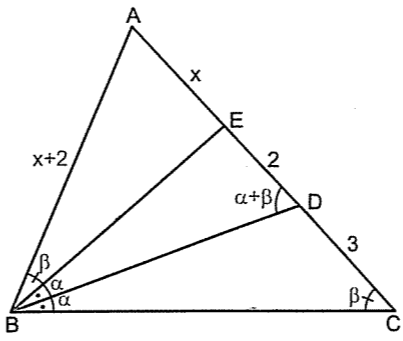
10.  ADEF kare
x = ?
A) 3 B) 4 C) 5 D) 6 E) 7

8.  DEFK kare
x = ?
A) 5 B) 6 C) 7 D) 8 E) 9

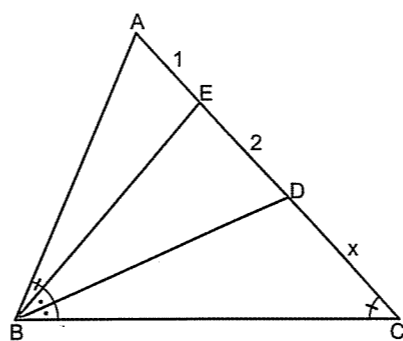
11.  DEFK dikdörtgen
x = ?
A) 10 B) 13 C) 15 D) 17 E) 20

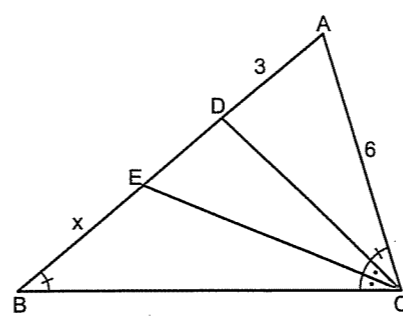
9.  ADEF kare
x = ?
A) 3 B) 4 C) $3\sqrt{2}$ D) $2\sqrt{5}$ E) $2\sqrt{6}$

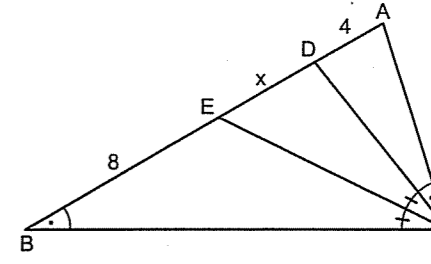
12.  BDEF dikdörtgen
Alan(BDEF) = ?
A) 64 B) 48 C) 36 D) 24 E) 18

1.  x = ?
A) 3 B) 4 C) 5 D) 6 E) 7

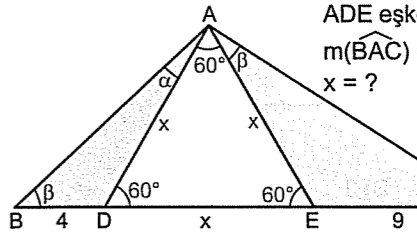
Bu tip sorularda açıları harflendirip ilk önce ikizkenar üçgeni (\widehat{ABD}) sonra da benzerliği görün. Mesela üstte $\widehat{ABE} \sim \widehat{ACB}$ dir.

2.  x = ?
A) 3 B) 4 C) 5 D) 6 E) 7

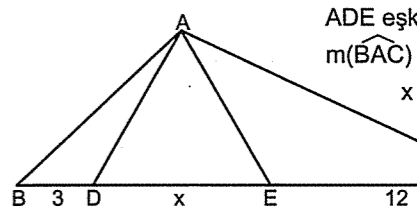
3.  x = ?
A) 4 B) 5 C) 6 D) 7 E) 8

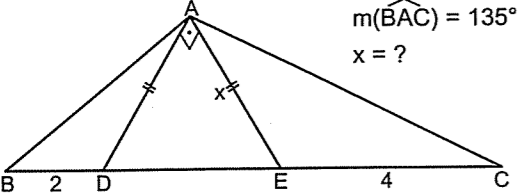
4.  x = ?
A) 3 B) 4 C) 5 D) 6 E) 7

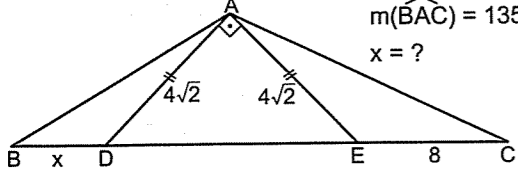
İyi soru. Sınavda gelme olasılığı düşük. ☺

5.  ADE eşkenar üçgen
 $m(\widehat{BAC}) = 120^\circ$
x = ?
A) 2 B) 3 C) 4 D) 5 E) 6

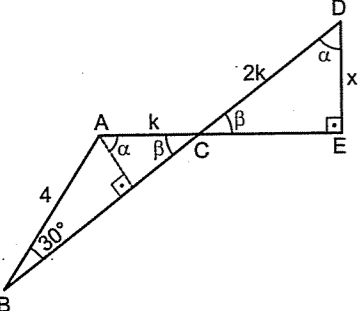
Bu tip sorularda açılarla oynayıp yanlardaki üçgenlerin benzer olduğunu görmek lazım.

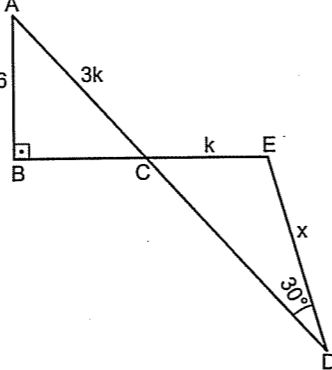
6.  ADE eşkenar üçgen
 $m(\widehat{BAC}) = 120^\circ$
x = ?
A) 4 B) 5 C) 6 D) 7 E) 8

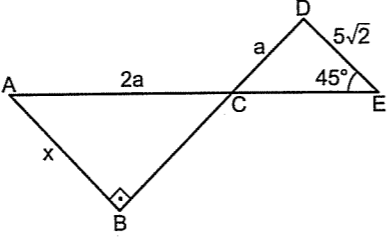
7.  $m(\widehat{BAC}) = 135^\circ$
 $x = ?$
A) $2\sqrt{2}$ B) $2\sqrt{3}$ C) 4 D) $3\sqrt{2}$ E) $2\sqrt{5}$

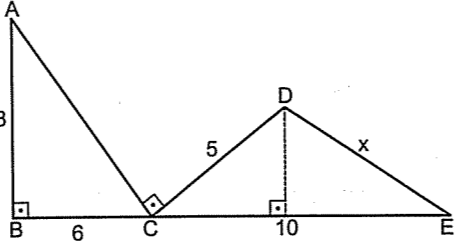
8.  $m(\widehat{BAC}) = 135^\circ$
 $x = ?$
A) 2 B) 3 C) 4 D) 5 E) 6

Bazen benzer şekli sizin oluşturmanız gerekebilir. Meselâ 9, 10, 11 ve 12. sorular ek çizgi çizerek oluşturulan benzerlik sorularıdır.

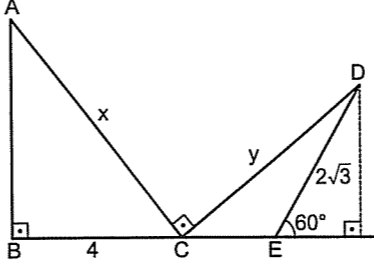
9.  $x = ?$
A) 4 B) 5 C) 6 D) 8 E) 12

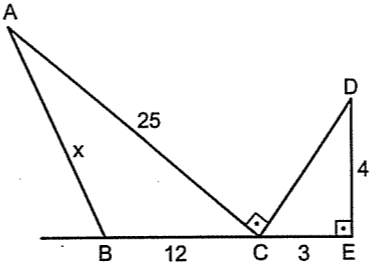
10.  $x = ?$
A) 3 B) 4 C) 6 D) 8 E) 12

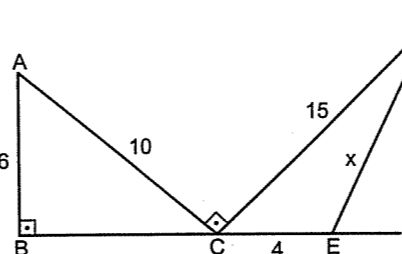
11.  $x = ?$
A) 20 B) 18 C) 15 D) 10 E) 8

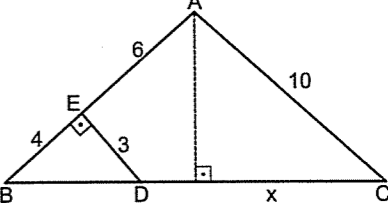
12.  $x = ?$
A) 5 B) 6 C) $3\sqrt{5}$ D) $3\sqrt{7}$ E) $6\sqrt{2}$

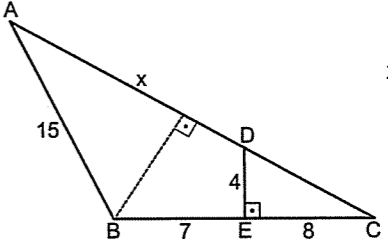
Bu sayfadaki 6 soruyu çözmek için ek çizgi çizmeniz lâzım. Ben söyleyeyim de. Yine de siz bilirsiniz. Ben ek çizgi çizmeden çözerim diyorsanız da keyfiniz bilir. ☺ Gerçi çoğunu ben çizip veriyorum.

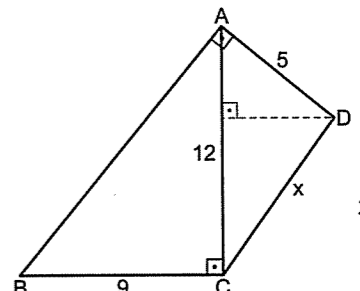
1.  $\frac{x}{y} = ?$
A) 1 B) 2 C) 3 D) $\frac{3}{2}$ E) $\frac{4}{3}$

2.  $x = ?$
A) 10 B) 13 C) 15 D) 17 E) 20

3.  $x = ?$
A) 10 B) 13 C) 15 D) 17 E) 20

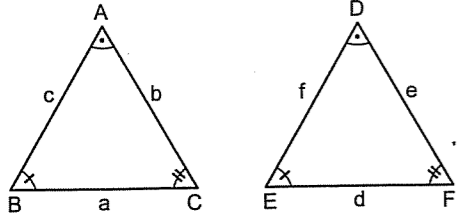
4.  $x = ?$
A) 6 B) 8 C) 10 D) 11 E) 12

5.  $x = ?$
A) $4\sqrt{5}$ B) $5\sqrt{5}$ C) $4\sqrt{5}$ D) $7\sqrt{5}$ E) $8\sqrt{5}$

6.  $x = ?$
A) $2\sqrt{13}$ B) $\sqrt{65}$ C) $6\sqrt{2}$ D) $4\sqrt{6}$ E) $\sqrt{97}$

● Eş Üçgenler

Birbirinin tıpa tıp aynısı olan üçgenler eştir. Açılırları, uzunlukları, herşeyi aynı yani.



$\frac{a}{d} = \frac{b}{e} = \frac{c}{f} = k = 1$ ise yani, benzerlik oranı 1 ise bu üçgenler, eş üçgenlerdir ve eş üçgenler

$\widehat{ABC} \cong \widehat{DEF}$ şeklinde gösterilir.

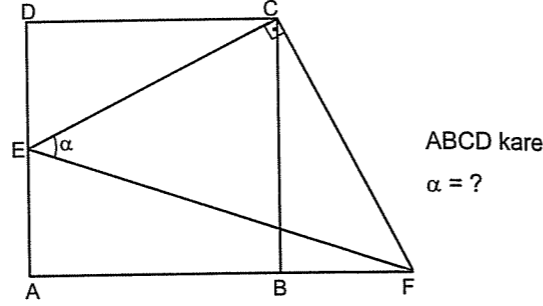
7. $\widehat{ABC} \cong \widehat{EDF}$
x = ?
A) 2 B) 4 C) 6 D) 8 E) 12

8. $\widehat{ABC} \cong \widehat{FDE}$
x = ?
A) 4 B) 5 C) 6 D) 7 E) 8

1-E 2-D 3-B 4-D

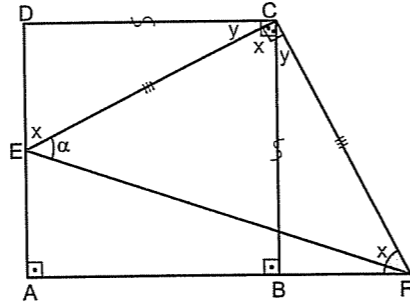
9. $\widehat{ABC} \cong \widehat{EDF}$
x - y = ?
A) 8 B) 10 C) 12 D) 14 E) 16

Örnek Soru:



Çözüm:

Şekilde bol miktarda dik üçgen var, dik üçgenleri gördüğünüz zaman açılırları harflendirmeye başlayın.



Harflendirdiğinizde $\widehat{EDC} \sim \widehat{FBC}$ olduğunu görürsünüz. Aslında bu üçgenler eş üçgenlerdir. İyi de bunu nasıl anlayacaksınız? Dikkat ederseniz her iki üçgende de x açısının karşısında karenin kenarı var. Yani benzerlik oranı 1 dir. Dolayısıyla $\widehat{EDC} \cong \widehat{FBC}$ dir. Üçgenler eş olduğundan 90° nin karşısında kenarlar da eşit olacağından $|EC| = |CF|$ dir. \widehat{ECF} üçgeni ikizkenar dik üçgendir.

Buradan da $\alpha = 45^\circ$ bulunur.

Ne soru ama?

5-E 6-E 7-B 8-C 9-C

1. $x = ?$
A) 5 B) 6 C) 7 D) 8 E) 9

2. $x = ?$
A) 2 B) 3 C) 4 D) 5 E) 6

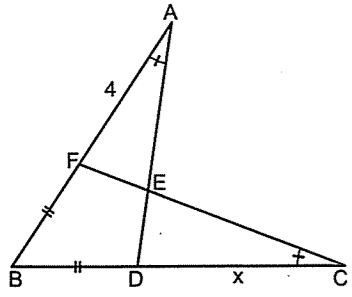
3. $x = ?$
A) 4 B) 5 C) 6 D) 7 E) 8

4. $x = ?$
A) 5 B) $4\sqrt{2}$ C) 6 D) $5\sqrt{2}$ E) $6\sqrt{2}$

5. Taralı alan = ?
A) 40 B) 36 C) 32 D) 28 E) 24

6. ABCD kare
 $\alpha = ?$
A) 15° B) 20° C) $22,5^\circ$ D) 30° E) 35°

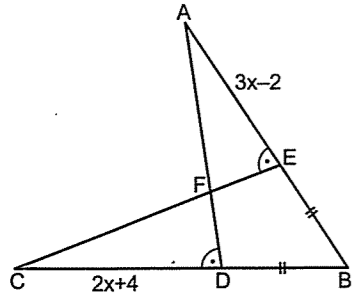
7.



$x = ?$

- A) 5 B) 4 C) 3 D) 2 E) 1

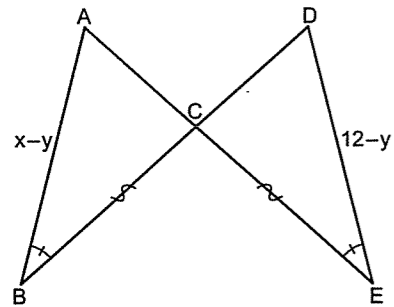
8.



$x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6

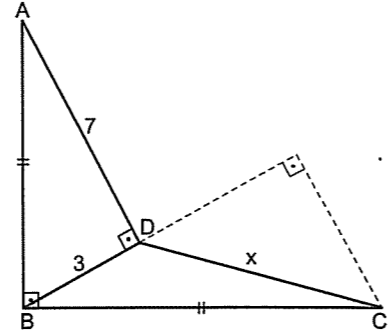
9.



$x = ?$

- A) 8 B) 10 C) 12 D) 14 E) 16

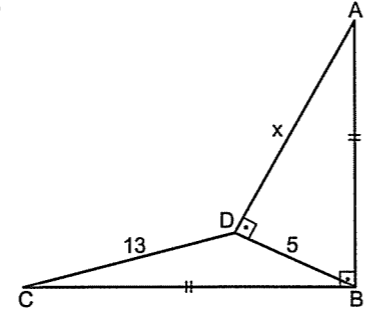
10.



$x = ?$

- A) 10 B) 8 C) 7 D) 6 E) 5

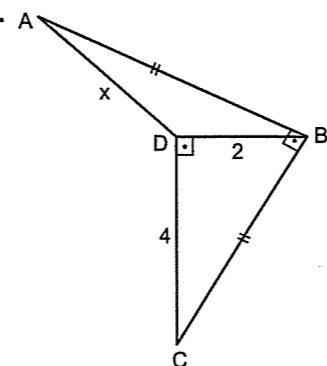
11.



$x = ?$

- A) 10 B) 12 C) 13 D) 15 E) 17

12.

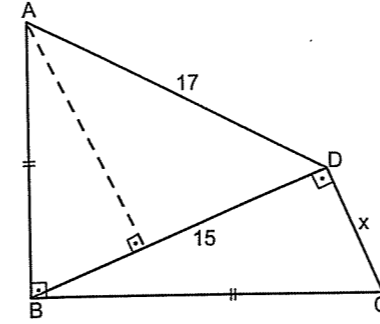


$x = ?$

- A) 2 B) $2\sqrt{2}$ C) 3 D) $2\sqrt{3}$ E) $3\sqrt{2}$

Ne yalan söyleyim. Aslında bu sayfanın soruları kolay sayılmaz. ☺

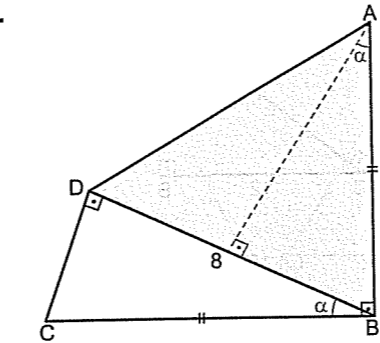
1.



$x = ?$

- A) 4 B) 5 C) 6 D) 7 E) 8

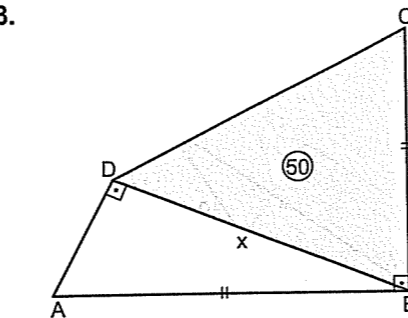
2.



Taralı alan = ?

- A) 36 B) 32 C) 28 D) 24 E) 16

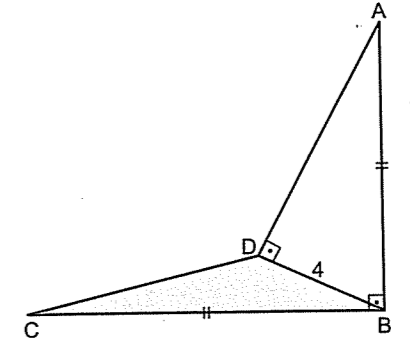
3.



$x = ?$

- A) 10 B) 15 C) 20 D) 25 E) 30

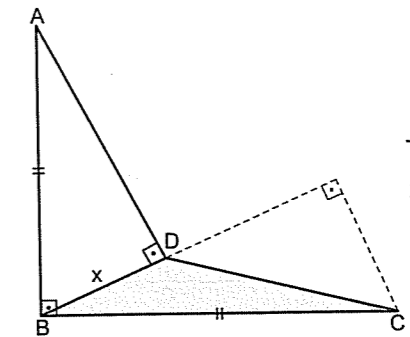
4.



Taralı alan = ?

- A) 4 B) 6 C) 8 D) 12 E) 16

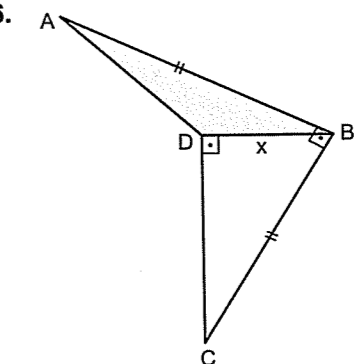
5.



Taralı alan = 18
 $x = ?$

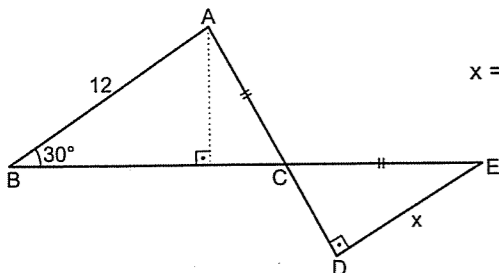
- A) 4 B) 6 C) 8 D) 9 E) 12

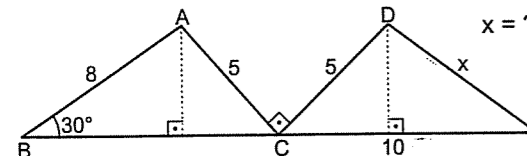
6.

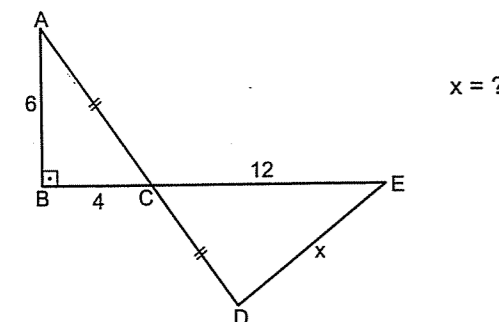


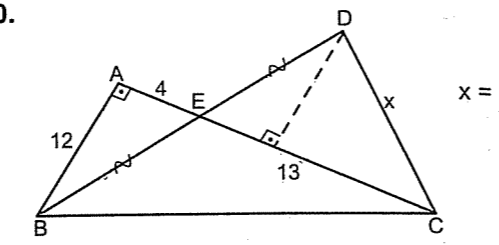
Taralı alan = 32
 $x = ?$

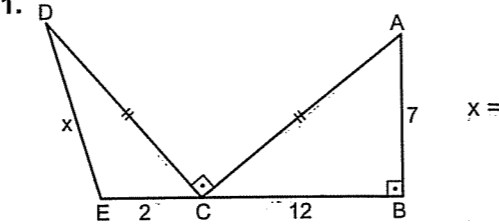
- A) 6 B) 7 C) 8 D) 9 E) 10

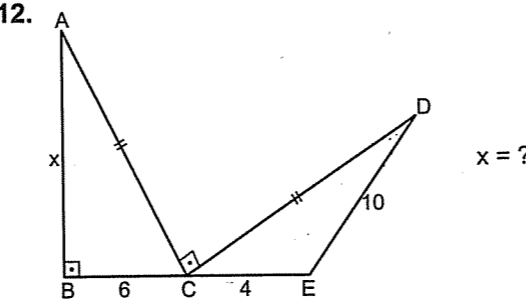
7.  $x = ?$
A) 4 B) $4\sqrt{2}$ C) 6 D) $4\sqrt{3}$ E) 8

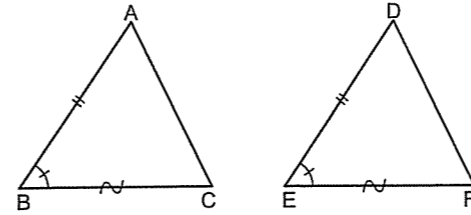
8.  $x = ?$
A) 5 B) 6 C) $3\sqrt{5}$ D) $6\sqrt{2}$ E) $4\sqrt{5}$

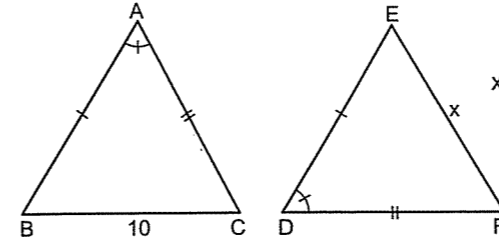
9.  $x = ?$
A) 10 B) 12 C) 13 D) 15 E) 17

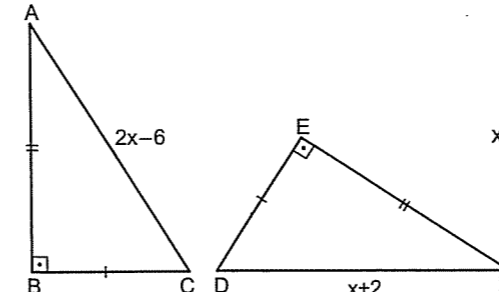
10.  $x = ?$
A) 10 B) 12 C) 13 D) 15 E) 17

11.  $x = ?$
A) 10 B) 12 C) 13 D) 14 E) 15

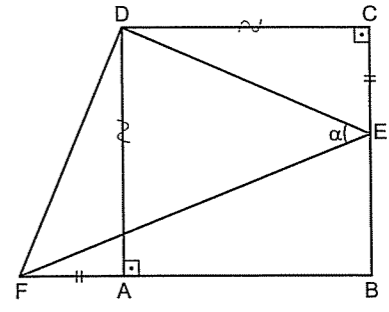
12.  $x = ?$
A) 8 B) 9 C) 10 D) 11 E) 12


İki üçgende iki kenarı ve bu iki kenarın arasındaki açı eşit ise bu üçgenler de eş üçgenlerdir.
Yani, $\widehat{ABC} \cong \widehat{DEF}$ dir.

1.  $x = ?$
A) 25 B) 20 C) 15 D) 10 E) 5

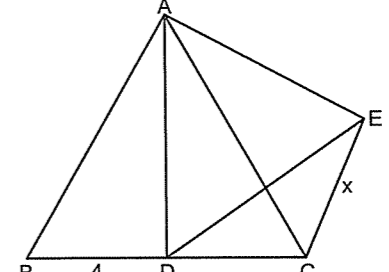
2.  $x = ?$
A) 24 B) 16 C) 12 D) 8 E) 4

Bu soruyu daha önce çözdüm. Hatırladınız mı?

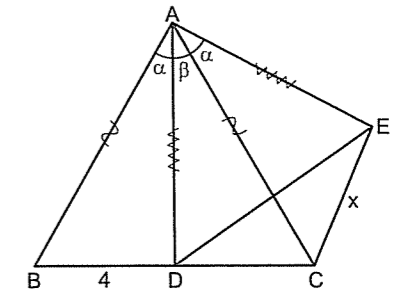
3.  ABCD kare
 $\alpha = ?$
A) 60 B) 45 C) 30 D) 22,5 E) 15

Size baba bi soru. Çözeyim. 😊

Örnek Soru:

1.  ABC ve ADE eşkenar üçgen
Find x .

Çözüm:

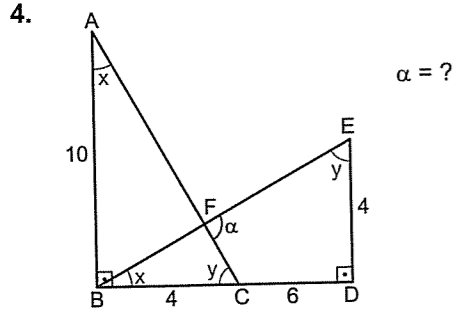


Üçgenler eşkenar ve $m(\widehat{BAC}) = m(\widehat{DAE}) = 60^\circ$ olduğundan $m(\widehat{BAD}) = m(\widehat{CAE})$ olur.

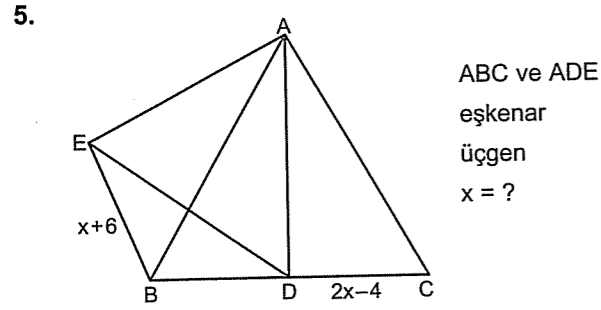
\widehat{BAD} ve \widehat{CAE} üçgenlerinin iki kenarı ve aralarındaki açı aynı olduğundan $\widehat{BAD} \cong \widehat{CAE}$ dir.

Dolayısıyla $|BD| = x = 4$ olur.

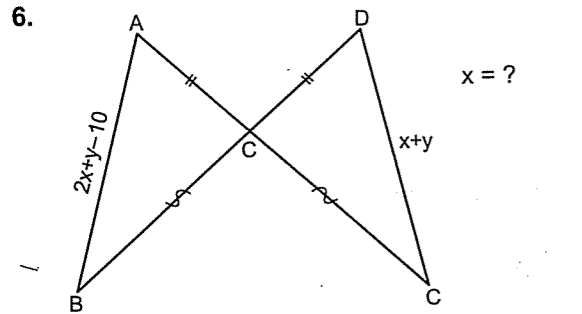
Şu soruda dik üçgenler birbirinin aynısı. Dolayısıyla eşit kenarların karşısındaki açılarda aynıdır.



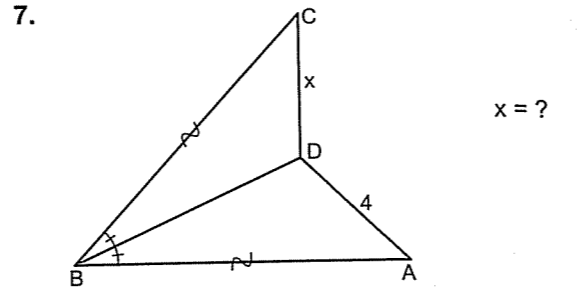
- A) 45° B) 60° C) 70° D) 75° E) 90°



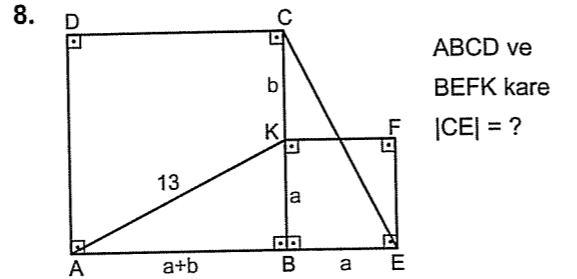
- A) 12 B) 10 C) 8 D) 6 E) 4



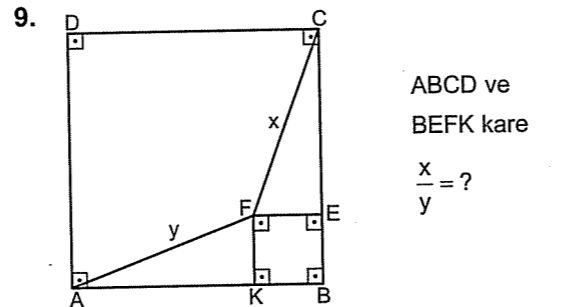
- A) 4 B) 6 C) 8 D) 10 E) 12



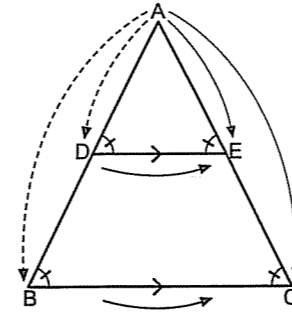
- A) 2 B) 4 C) 6 D) 8 E) 10



- A) 5 B) 10 C) 13 D) 15 E) 17



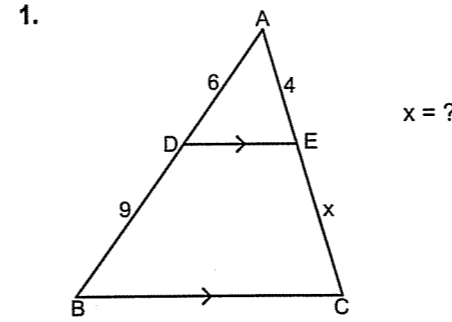
- A) 1/2 B) 1/3 C) 1 D) 2 E) 3



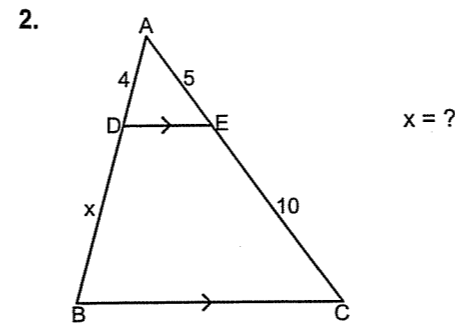
Yukarıda benzer üçgenlerde benzerlik oranı

$$\frac{|AD|}{|AB|} = \frac{|AE|}{|AC|} = \frac{|DE|}{|BC|} \text{ dir.}$$

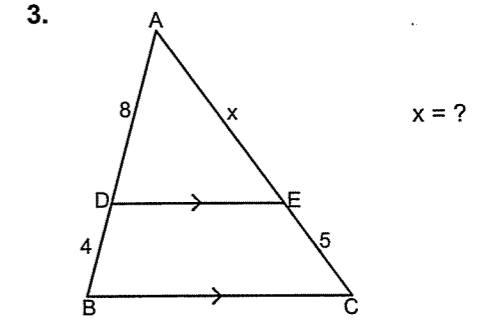
Eğer paralel kenarlar ile ilgili herhangi bir şey verilmemiş ya da sorulmuyorsa $\frac{|AD|}{|DB|} = \frac{|AE|}{|EC|}$ şeklinde yazmanız da bir sakınca yok.



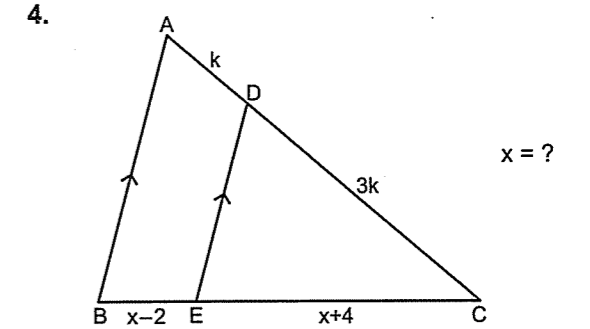
- A) 5 B) 6 C) 7 D) 8 E) 9



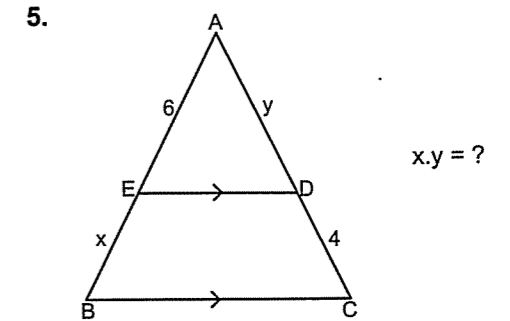
- A) 5 B) 6 C) 7 D) 8 E) 9



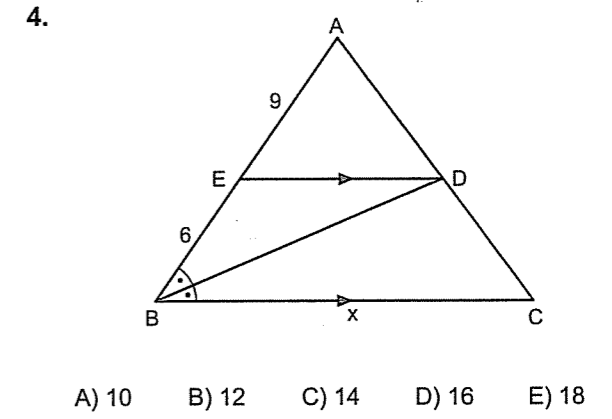
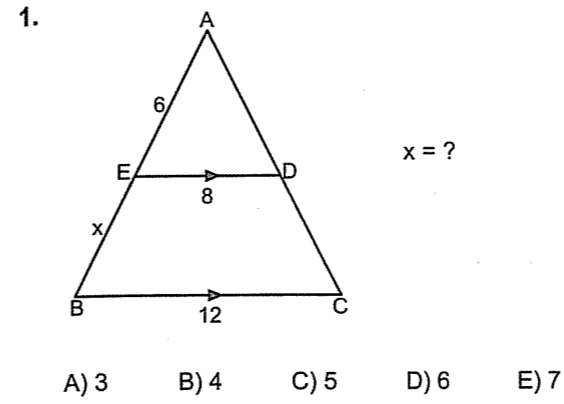
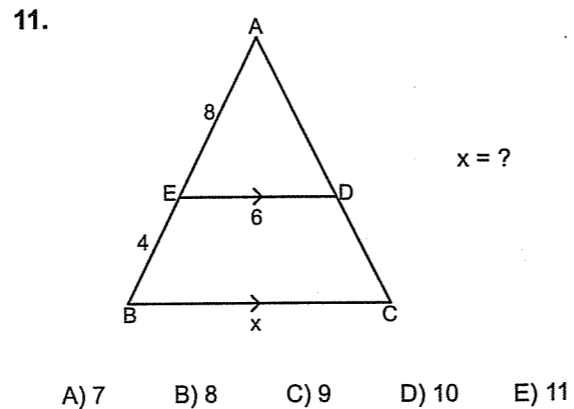
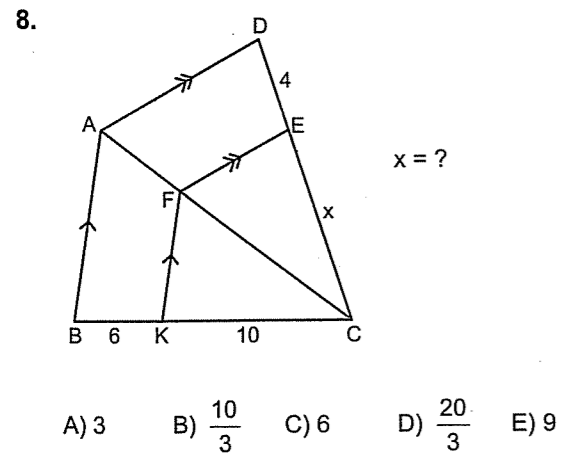
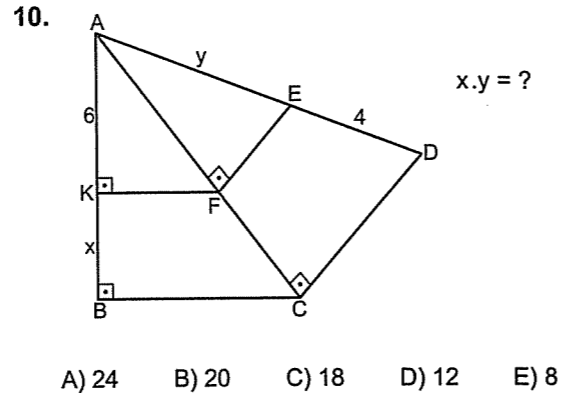
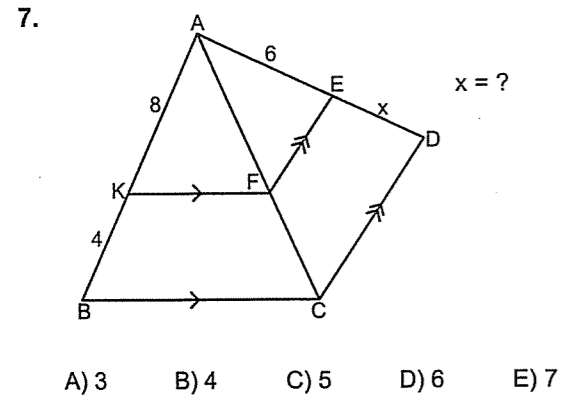
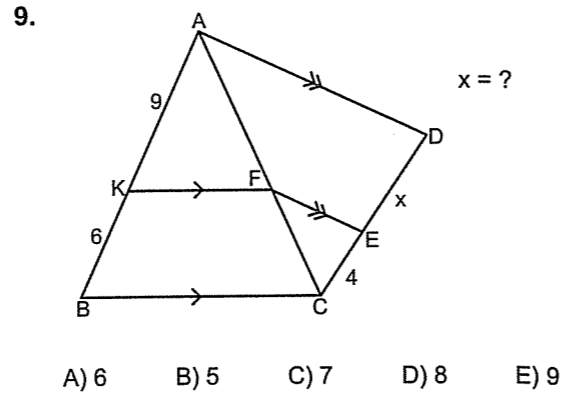
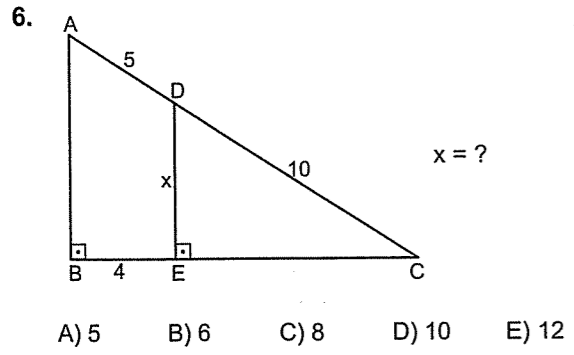
- A) 6 B) 7 C) 8 D) 9 E) 10



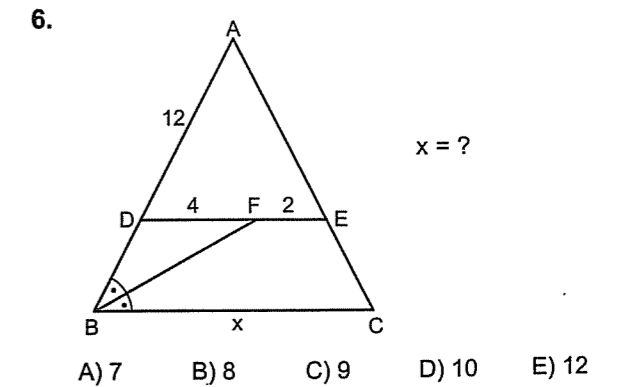
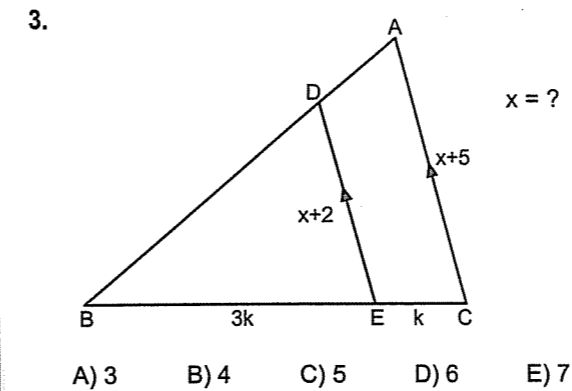
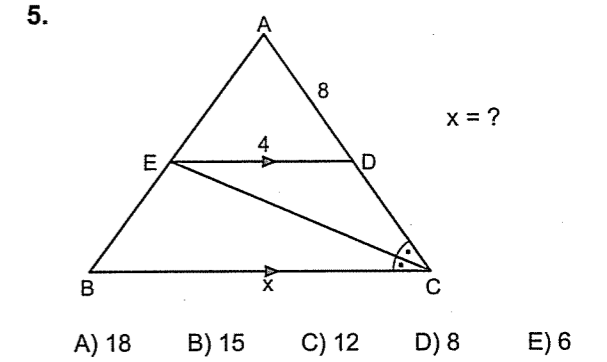
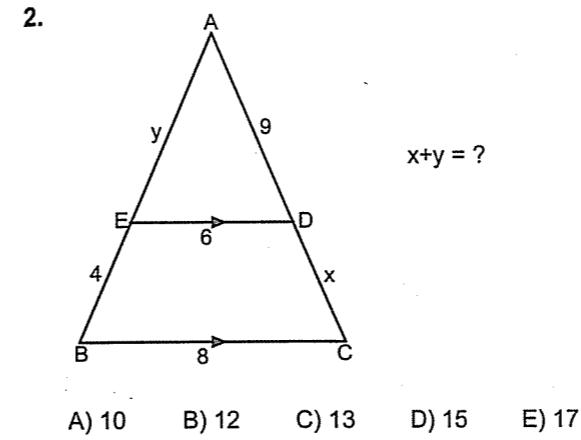
- A) 6 B) 5 C) 4 D) 3 E) 2



- A) 8 B) 12 C) 16 D) 18 E) 24



Bu tip sorularda iç ters açığı görerek ikizkenar üçgeni görmek lâzım.



7. $x = ?$
 A) 2 B) 3 C) 4 D) 5 E) 6

10. $x = ?$
 A) 10 B) 11 C) 13 D) 15 E) 17

8. $x + y = ?$
 A) 6 B) 8 C) 10 D) 12 E) 14

11. $x = ?$
 A) 24 B) 20 C) 18 D) 16 E) 12

9. $x = ?$
 A) 4 B) 5 C) 6 D) 7 E) 8

12. $x = ?$
 A) 5 B) 6 C) 7 D) 8 E) 9

1. $x = ?$
 A) 7 B) 8 C) 9 D) 10 E) 11

2. $x = ?$
 A) 11 B) 10 C) 9 D) 8 E) 7

3. $x = ?$
 A) 7 B) 8 C) 9 D) 10 E) 11

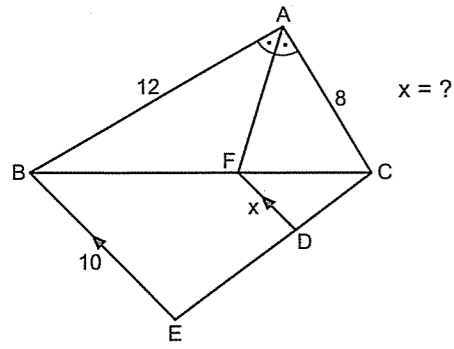
Üçgende açıortayı hatırlayın. Kolların oranı altlarındaki parçaların oranına eşitti.

4. $x = ?$
 A) 5 B) 6 C) 7 D) 8 E) 9

5. $x = ?$
 A) 3 B) 4 C) 5 D) 6 E) 7

6. $|AF| = ?$
 A) 5 B) 6 C) 7 D) 8 E) 9

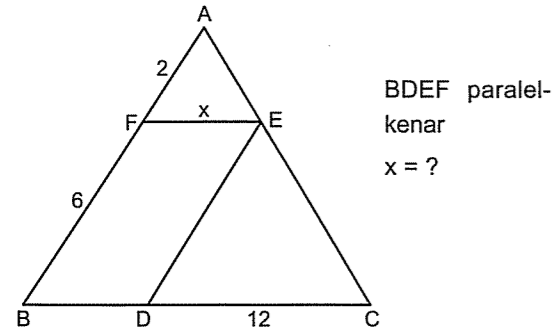
7.



- A) 2 B) 3 C) 4 D) 5 E) 6

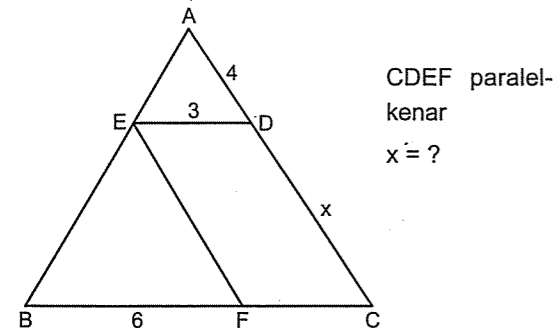
Şu soru tipi kaç defa soruldu hatırlamıyorum. Bilmeyenler için söylüyeyim. ☺ Paralelkenar karşılıklı kenarları eşit ve paralel olan dörtgendir.

8.



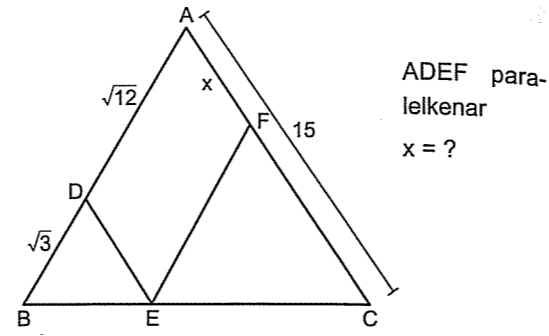
- A) 3 B) 4 C) 5 D) 6 E) 7

9.



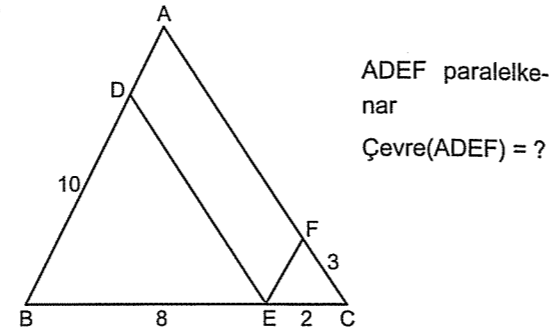
- A) 4 B) 5 C) 6 D) 7 E) 8

10.



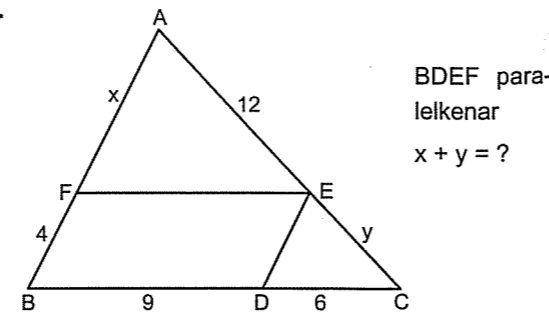
- A) 2 B) 3 C) 4 D) 5 E) 6

11.



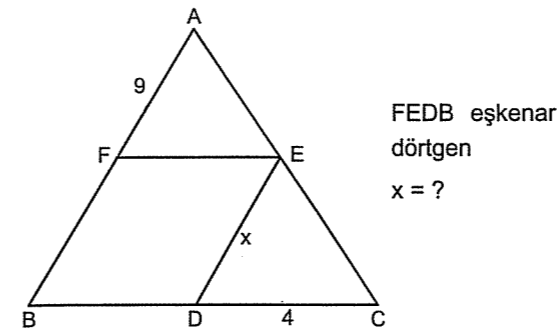
- A) 21 B) 24 C) 27 D) 29 E) 30

12.



- A) 10 B) 12 C) 14 D) 16 E) 18

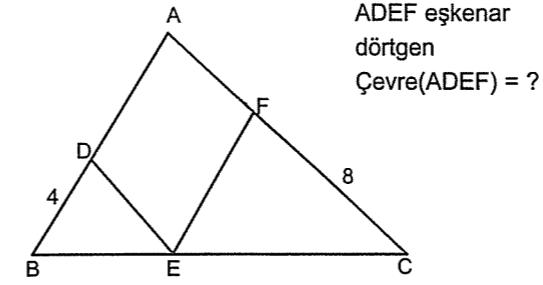
1.



Eşkenar dörtgen bütün kenarları eşit olan paralelkenardır.

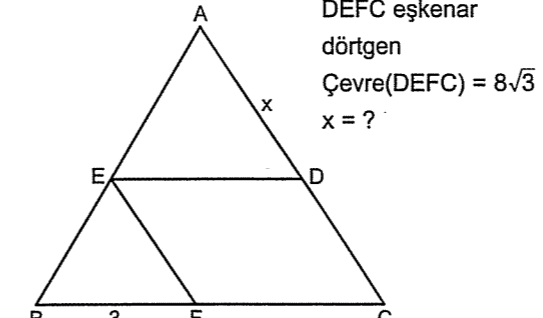
- A) 5 B) 6 C) 7 D) 8 E) 9

2.



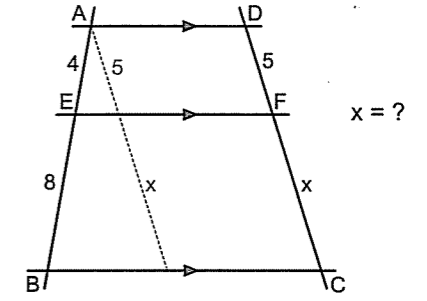
- A) 12 B) $12\sqrt{2}$ C) 16 D) $16\sqrt{2}$ E) 20

3.



- A) 8 B) 6 C) 5 D) 4 E) 3

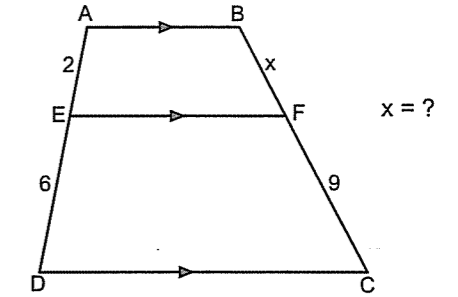
4.



- A) 6 B) 8 C) 10 D) 12 E) 16

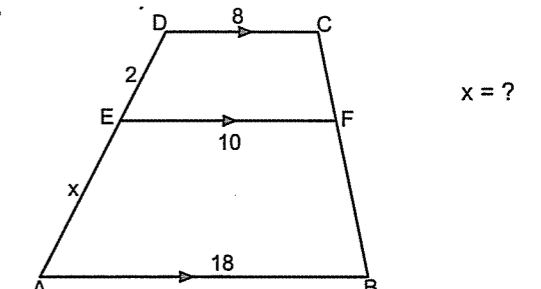
Bu tip sorularda bir paralel çizerek olayı çözüyoruz.

5.

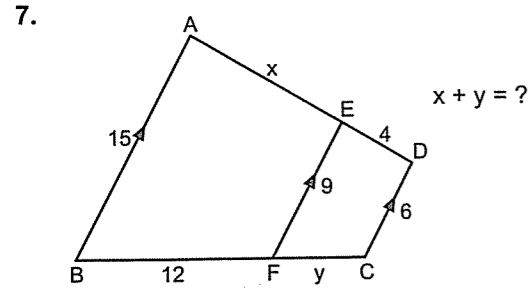


- A) 2 B) 3 C) 4 D) 5 E) 6

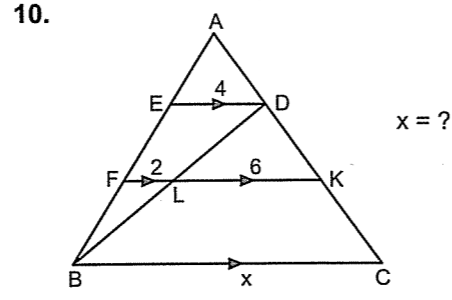
6.



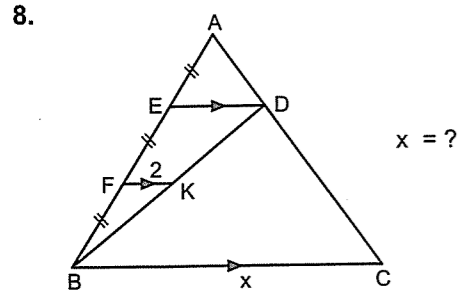
- A) 4 B) 6 C) 8 D) 10 E) 12



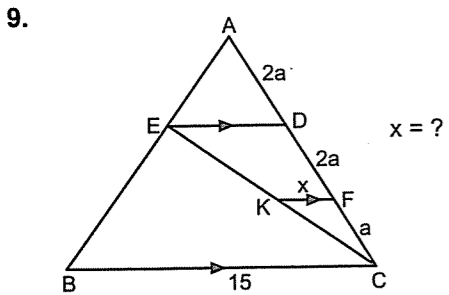
- A) 14 B) 13 C) 12 D) 11 E) 10



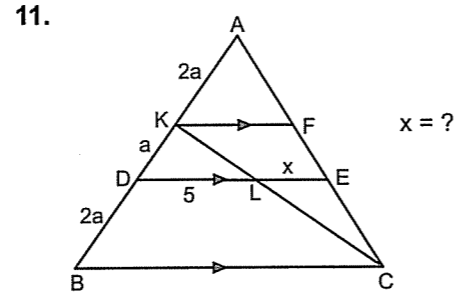
- A) 18 B) 16 C) 14 D) 12 E) 10



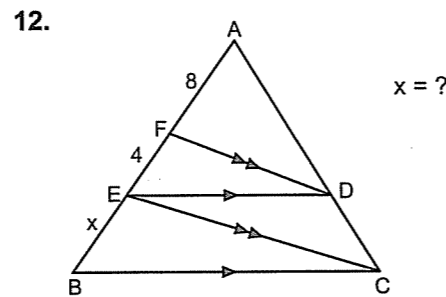
- A) 6 B) 8 C) 10 D) 12 E) 14



- A) 2 B) 3 C) 4 D) 5 E) 6

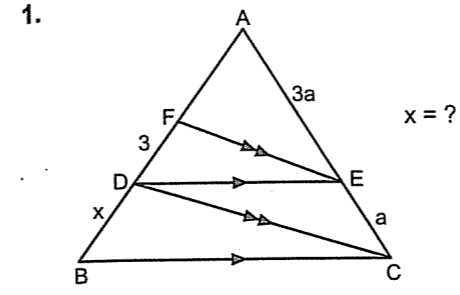


- A) 5 B) 4 C) 3 D) 2 E) 1

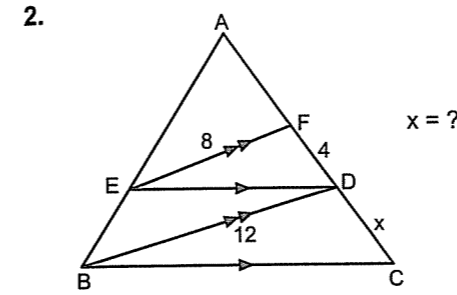


- A) 8 B) 7 C) 6 D) 5 E) 4

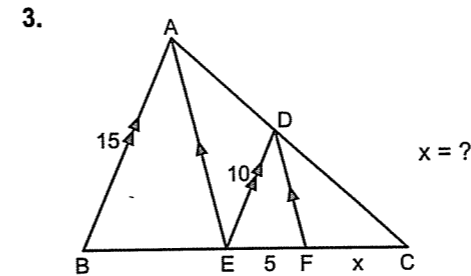
Bu soruda ilk önce çift çizgili paralelliği daha sonra da tek çizgili paralelliği kullanın.



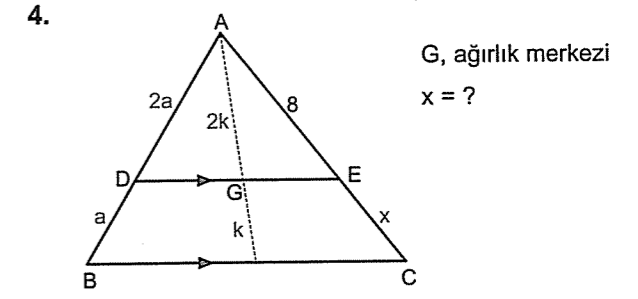
- A) 4 B) 5 C) 6 D) 8 E) 12



- A) 6 B) 5 C) 4 D) 3 E) 2



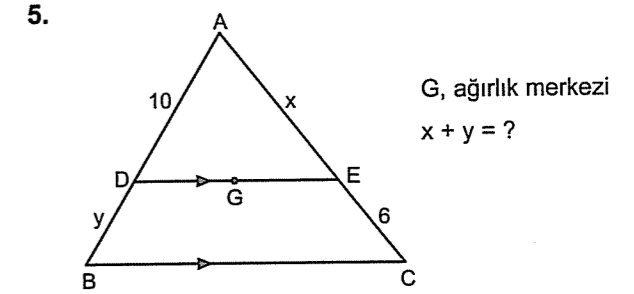
- A) 5 B) 15/2 C) 10 D) 25/2 E) 15



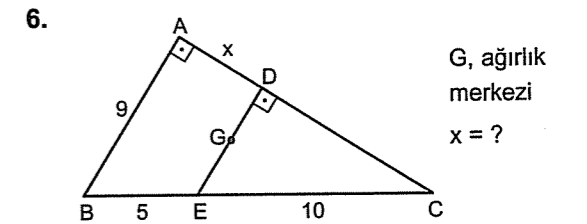
- A) 6 B) 5 C) 4 D) 3 E) 2



Aklınızda olsun. Ağırlık merkezinden paralel çizilirse kenarlarda da bire iki oran oluşur.

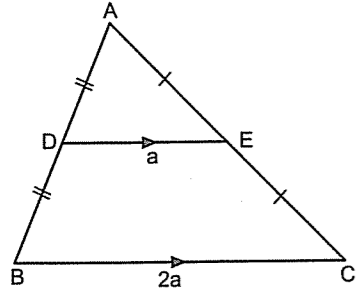


- A) 11 B) 13 C) 15 D) 17 E) 19



- A) 2 B) 3 C) 4 D) 5 E) 6

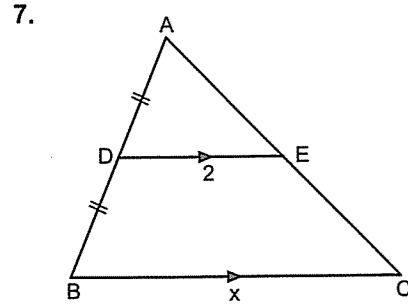
Orta Taban Olayı



$x + y = ?$

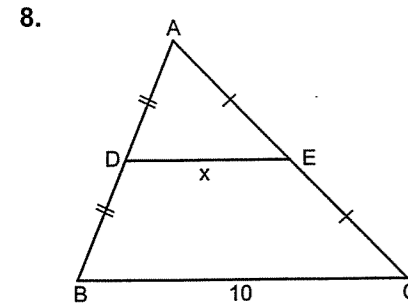
Yukarıdaki üçgende IDEI' ye orta taban denir.

$|DE| // |BC|$ ve $\frac{|DE|}{|BC|} = \frac{1}{2}$ dir.



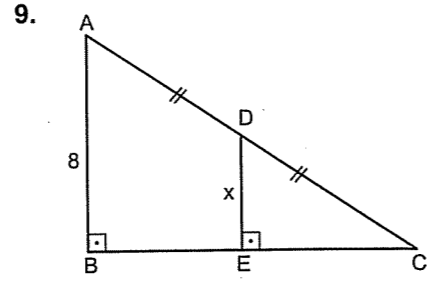
$x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6



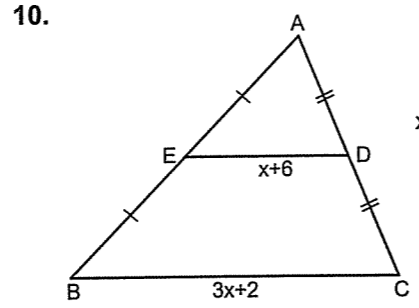
$x = ?$

- A) 5 B) 6 C) 7 D) 8 E) 9



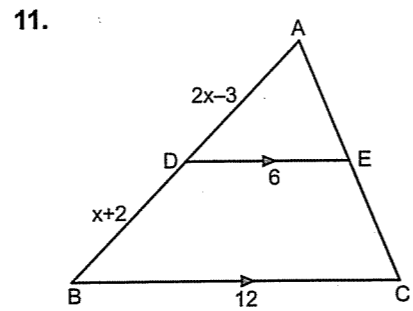
$x = ?$

- A) 2 B) 3 C) 4 D) 5 E) 6



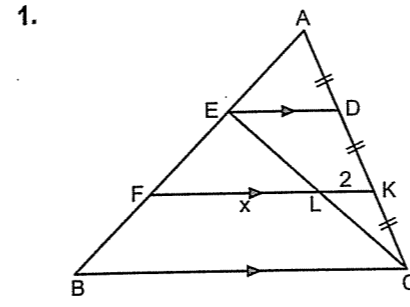
$x = ?$

- A) 8 B) 10 C) 12 D) 14 E) 16



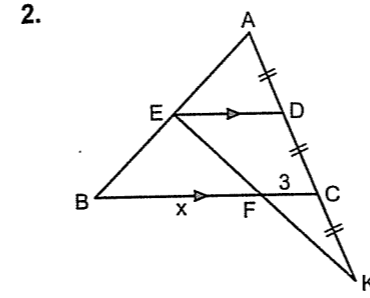
$x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5



$x = ?$

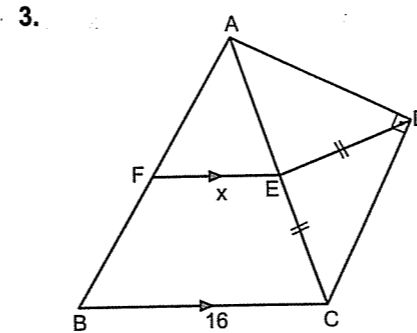
- A) 3 B) 4 C) 5 D) 6 E) 7



$x = ?$

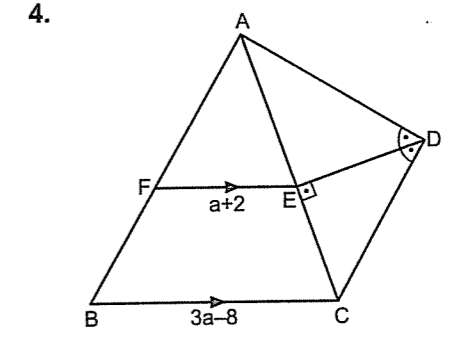
- A) 5 B) 6 C) 7 D) 8 E) 9

Muhteşem üçlü buraya da girmiş ☺



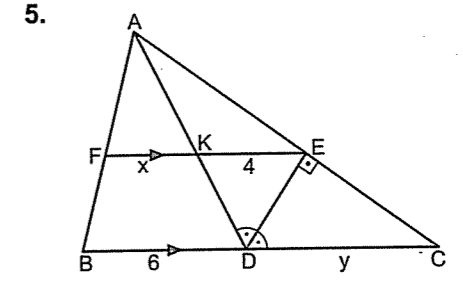
$x = ?$

- A) 9 B) 8 C) 7 D) 6 E) 5



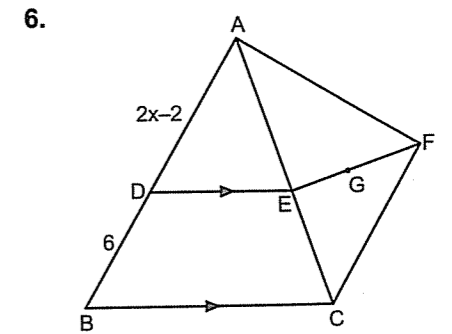
$a = ?$

- A) 18 B) 16 C) 12 D) 10 E) 8



$x + y = ?$

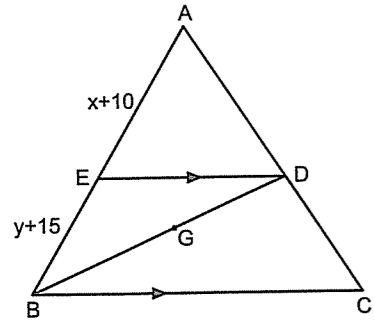
- A) 11 B) 12 C) 13 D) 15 E) 16



G ağırlık merkezi $x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

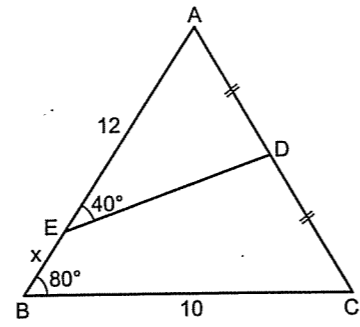
7.



G, ağırlık merkezi
 $x - y = ?$

- A) 2 B) 5 C) 7 D) 10 E) 15

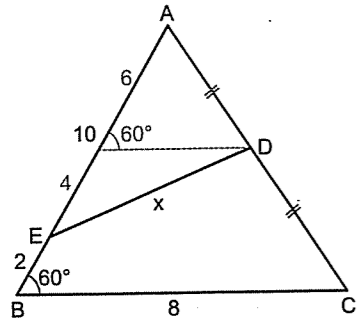
10.



$x = ?$

- A) 1 B) 2 C) 3 D) 4 E) 5

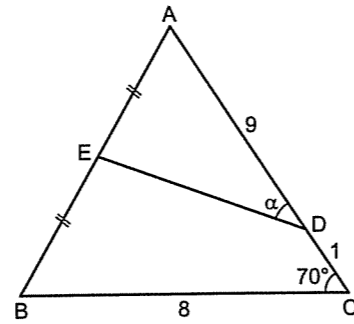
8.



$x = ?$

- A) 4 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) $6\sqrt{3}$ E) 6

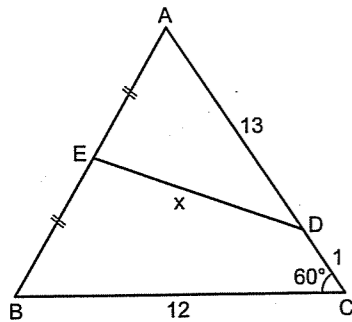
11.



$\alpha = ?$

- A) 35 B) 30 C) 25 D) 20 E) 15

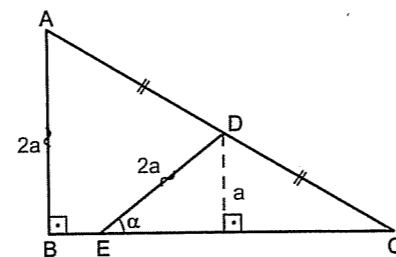
9.



$x = ?$

- A) 6 B) $6\sqrt{3}$ C) $6\sqrt{2}$ D) $4\sqrt{3}$ E) $5\sqrt{3}$

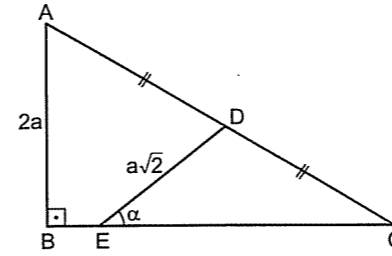
12.



$\alpha = ?$

- A) 15 B) 20 C) 22,5 D) 30 E) 45

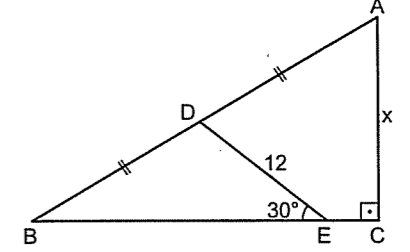
1.



$\alpha = ?$

- A) 15 B) 22,5 C) 25 D) 30 E) 45

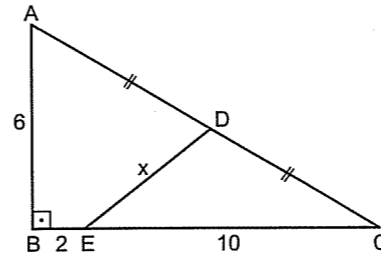
4.



$x = ?$

- A) 4 B) $4\sqrt{3}$ C) 6 D) $6\sqrt{3}$ E) 12

2.

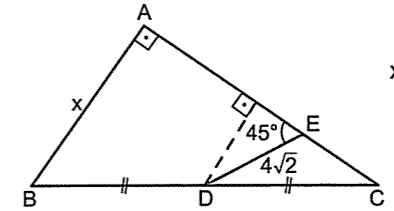


$x = ?$

- A) 3 B) 4 C) 5 D) 6 E) 7

Bundada kesik çizgi yok aslında.

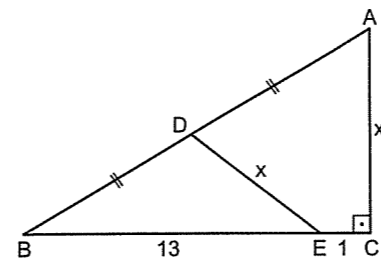
5.



$x = ?$

- A) 4 B) $4\sqrt{2}$ C) $4\sqrt{3}$ D) 8 E) $8\sqrt{2}$

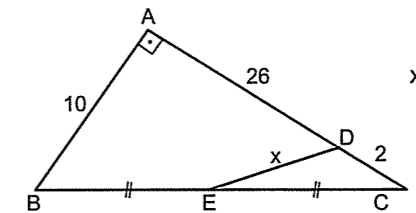
3.



$x = ?$

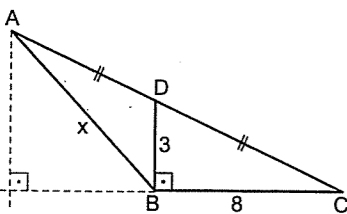
- A) 5 B) $3\sqrt{3}$ C) 6 D) $4\sqrt{3}$ E) 7

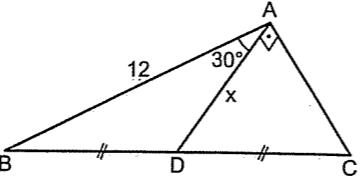
6.

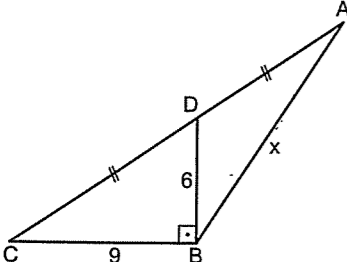


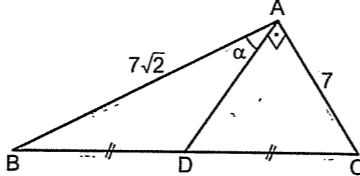
$x = ?$

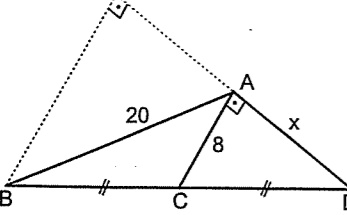
- A) 10 B) 13 C) 15 D) 17 E) 20

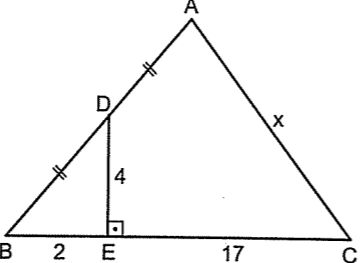
7.  $x = ?$
 A) 5 B) 8 C) 10 D) 13 E) 15

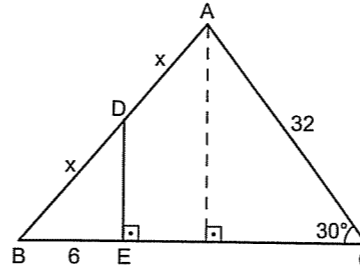
10.  $x = ?$
 A) 5 B) 6 C) $4\sqrt{3}$ D) $3\sqrt{3}$ E) 8

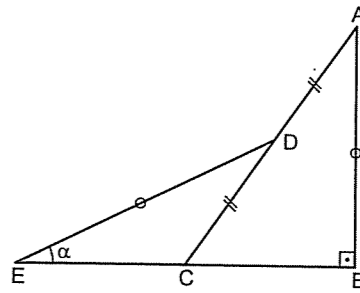
8.  $x = ?$
 A) 15 B) 13 C) 12 D) 10 E) 9

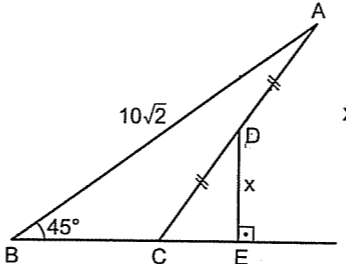
11.  $x = ?$
 A) 15° B) 30° C) $22,5^\circ$ D) 45° E) 60°

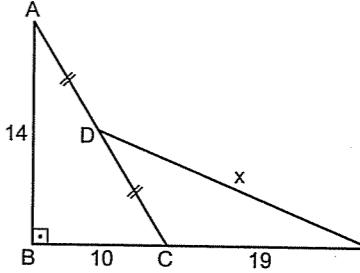
9.  $x = ?$
 A) 18 B) 16 C) 13 D) 12 E) 10

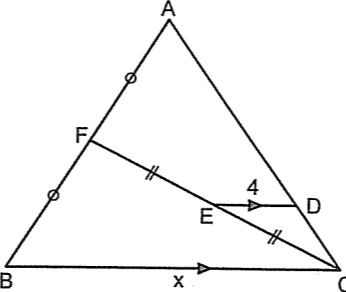
12.  $x = ?$
 A) 17 B) 15 C) 13 D) 12 E) 10

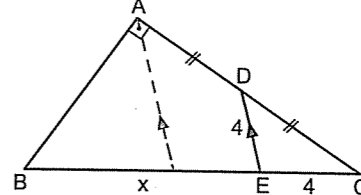
1.  $x = ?$
 A) 8 B) 9 C) 10 D) 13 E) 15

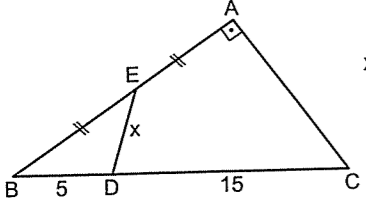
4.  $\alpha = ?$
 A) 15° B) $22,5^\circ$ C) 30° D) 35° E) 45°

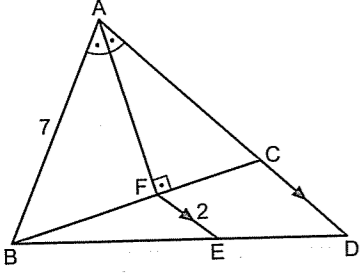
2.  $x = ?$
 A) 4 B) 5 C) $4\sqrt{2}$ D) $5\sqrt{2}$ E) 10

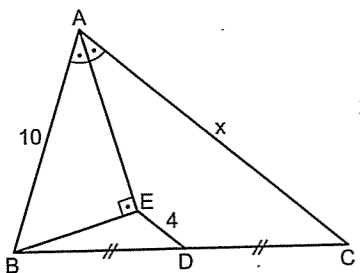
5.  $x = ?$
 A) 13 B) 15 C) 17 D) 20 E) 25

3.  $x = ?$
 A) 8 B) 12 C) 16 D) 20 E) 24

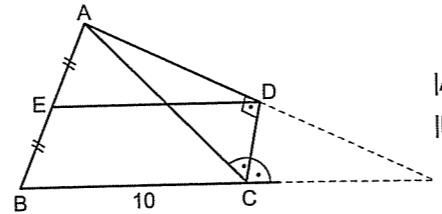
6.  $x = ?$
 A) 6 B) 8 C) 12 D) 16 E) 20

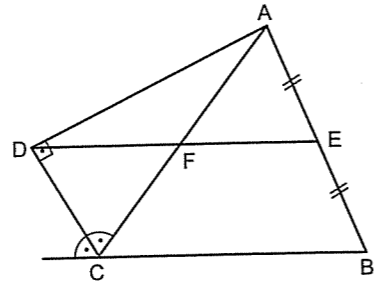
7.  $x = ?$
 A) 3 B) 5 C) 7 D) 8 E) 10

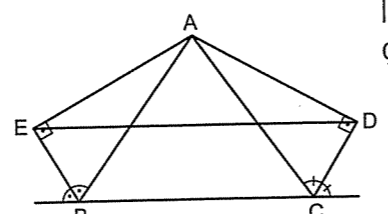
8.  $|AD| = ?$
 A) 7 B) 8 C) 9 D) 10 E) 11

9.  $x = ?$
 A) 14 B) 16 C) 18 D) 20 E) 24

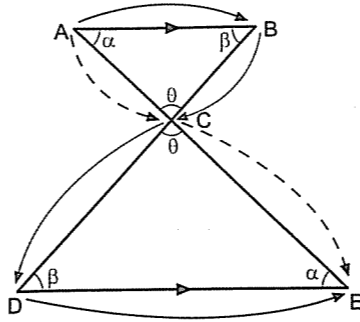
1-C 2-B 3-C 4-C 5-E 6-C

10.  $|AC| = 8$
 $|DE| = ?$
 A) 16 B) 12 C) 10 D) 9 E) 8

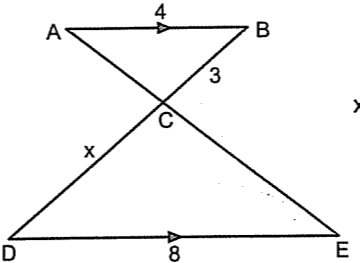
11.  $|DE| = 12$
 $|AC| + |BC| = ?$
 A) 12 B) 18 C) 20 D) 24 E) 36

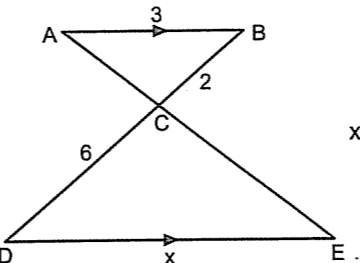
12.  $|DE| = 15$
 $\text{Çevre}(ABC) = ?$
 A) 30 B) 24 C) 20 D) 18 E) 15

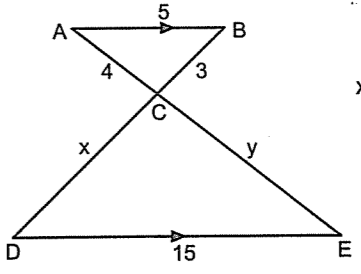
7-B 8-E 9-C 10-D 11-D 12-A

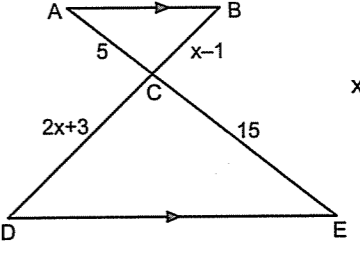
 $|AB| \parallel |DE|$
 $\frac{|AB|}{|DE|} = \frac{|BC|}{|CD|} = \frac{|AC|}{|CE|}$ şeklinde oranlanır.

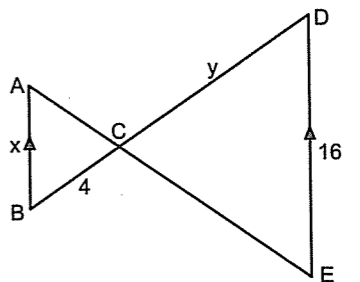
Yukarıdaki şekil kelebeğe benzediğinden bu şekil-deki benzerliğe **kelebek benzerliği** diyebilirsiniz.

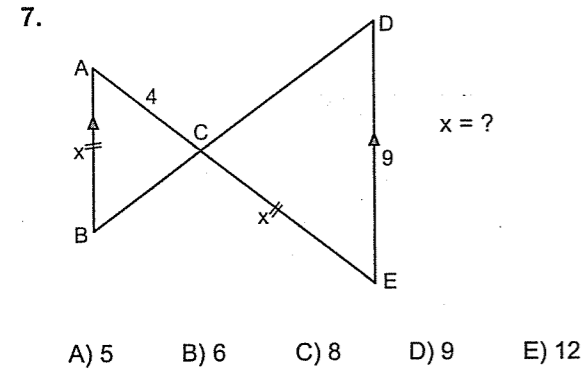
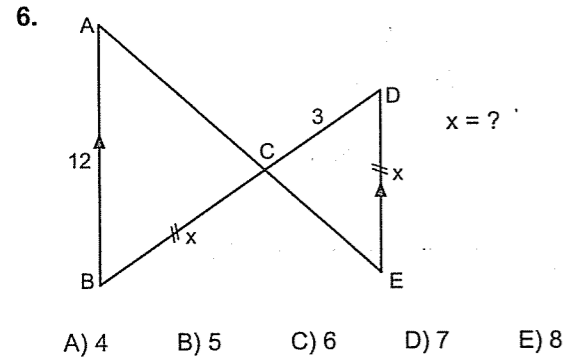
1.  $x = ?$
 A) 4 B) 5 C) 6 D) 7 E) 8

2.  $x = ?$
 A) 6 B) 9 C) 12 D) 15 E) 18

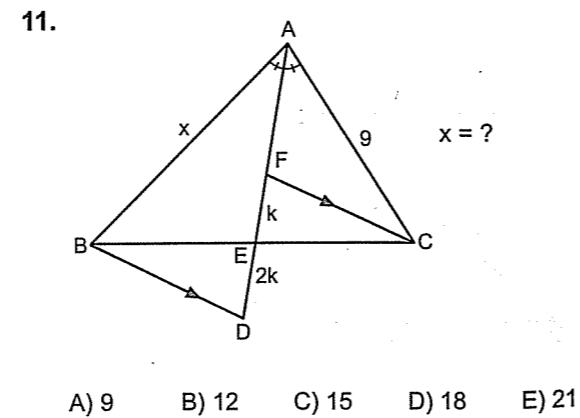
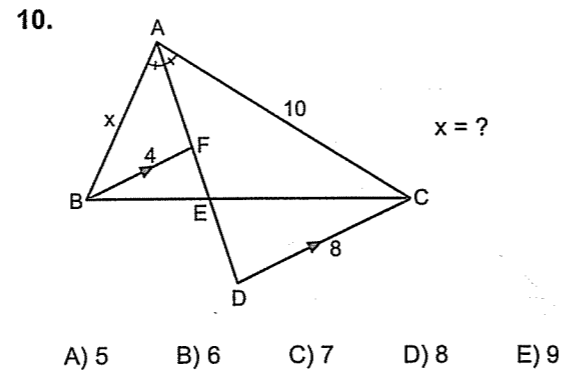
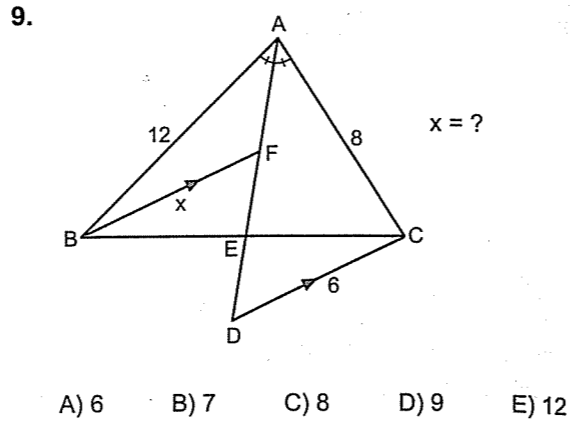
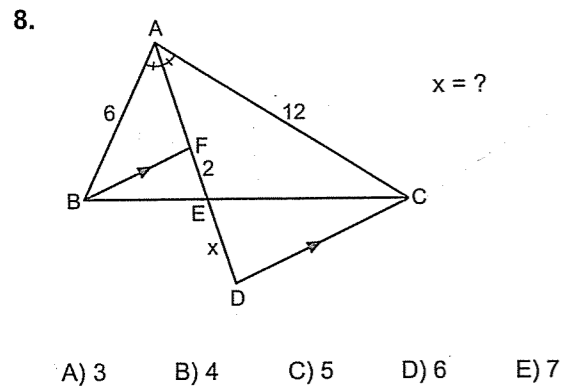
3.  $x + y = ?$
 A) 21 B) 20 C) 19 D) 18 E) 17

4.  $x = ?$
 A) 2 B) 3 C) 4 D) 5 E) 6

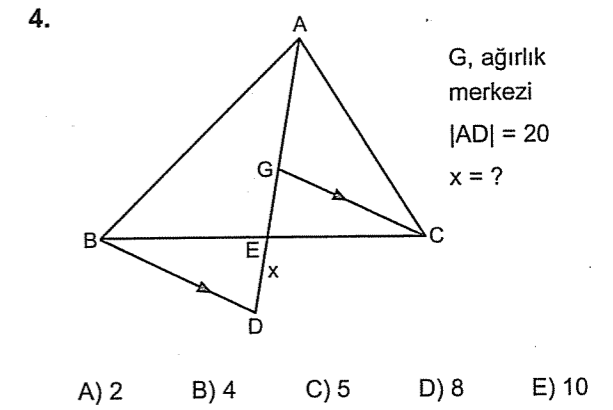
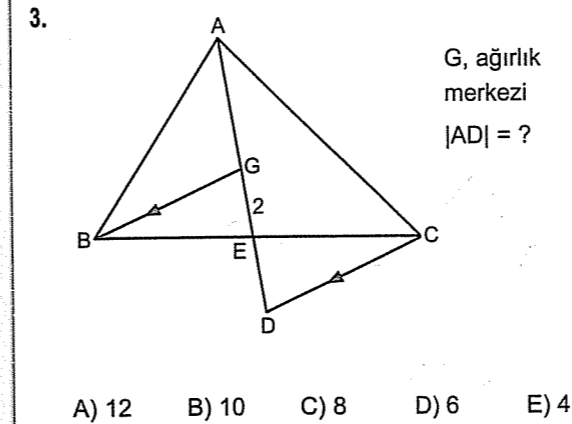
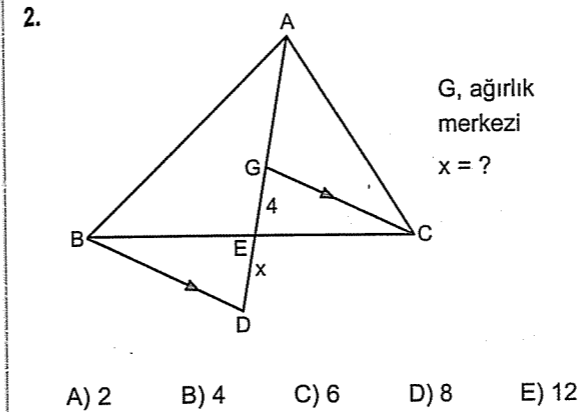
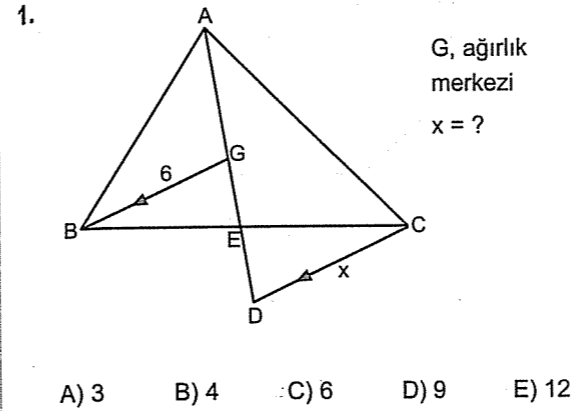
5.  $x \cdot y = ?$
 A) 32 B) 48 C) 52 D) 64 E) 72



Bu soruda iç açıortaydan $\frac{|BE|}{|EC|}$ oranını bulduktan sonra kelebek benzerliği yapın.

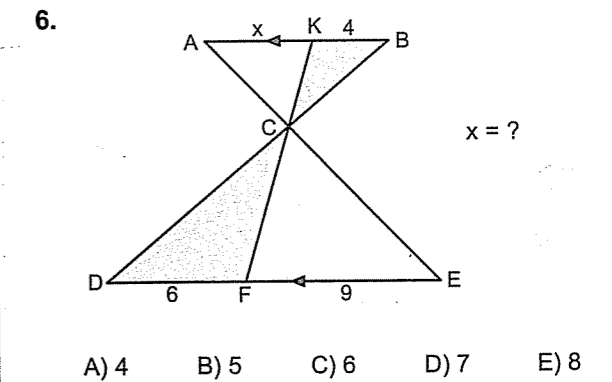
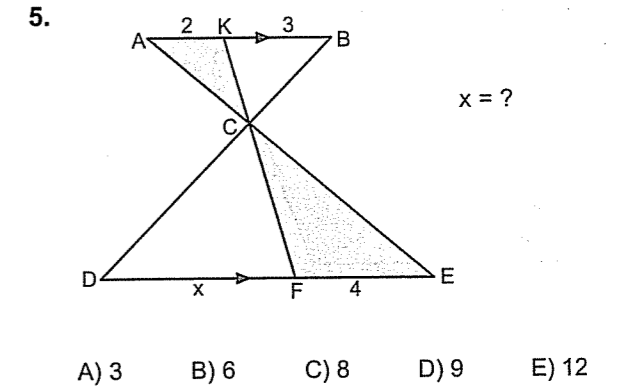


Hatırlayın. Ağırlık merkezi kenarortayı kenara 1, köşeye 2 birim olacak şekilde bölüyordu. Kenarortay da indiği kenarı ikiye bölüyordu.



Şu sorularda da üçgenler normalde taralı olarak verilmeyecek. Bilginiz olsun.

Şekiller biraz karışık gibi gelebilir. Ama korkmayın. Çok kolay. İlk önce taralı üçgenlerde kelebek benzerliği yapın daha sonra da taralı olmayan üçgenlerde kelebek yapın.



7. $x + y = ?$

A) 16 B) 17 C) 18 D) 19 E) 20

Şu soruda bir kelebek bir de temel benzerlik yapın. İstediginizi önce yapın. Farketmez. Sonuç çıkar. Ama bana sorarsanız ilk önce kelebeği yapın. $\frac{|AE|}{|EC|}$ oranını bulun, sonra da temel benzerliği kullanarak x'i bulun.

8. $x = ?$

A) 2 B) $\frac{5}{2}$ C) $\frac{3}{2}$ D) 1 E) $\frac{1}{2}$

9. $x = ?$

A) 3 B) 4 C) 5 D) 6 E) 8

Şu soruyu kolay çözmek istiyorsanız önce ABC üçgeninde temel benzerlik daha sonra da taralı üçgenlerde kelebek benzerliğini kullanın. Ama yine de siz bilirsiniz. Kelebeği önce yaparsanız da sonuç çıkar. Fakat kafayı da yedirtir. ☺

10. $x = ?$

A) 12 B) 13 C) 15 D) 16 E) 18

11. $x = ?$

A) 9 B) 10 C) 12 D) 14 E) 16

12. $x = ?$

A) 4 B) 5 C) 6 D) 7 E) 8

1. $x = ?$

A) 8 B) 6 C) 4 D) 3 E) 2

Biliyorsunuz ama yine de hatırlatayım. İki üçgende yükseklikler eşit ise tabanlar oranı, alanlar oranına eşitti.

2. $x = ?$

A) 10 B) 9 C) 8 D) 7 E) 6

3. $\frac{S_1}{S_2} = ?$

A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) $\frac{3}{4}$ D) $\frac{5}{4}$ E) $\frac{7}{4}$

Şu soruda kelebek içeride, ilk önce kelebek sonra temel benzerlik ya da tam tersi önce temel benzerlik, sonra kelebek, tercih sizin.

4. $x = ?$

A) 5 B) 6 C) 7 D) 8 E) 9

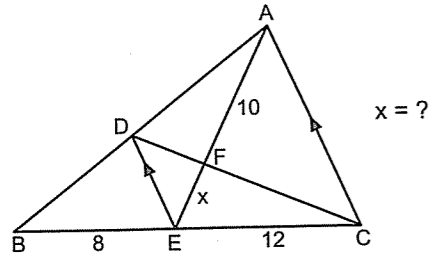
5. $x = ?$

A) 2 B) 3 C) 4 D) 5 E) 6

6. $x = ?$

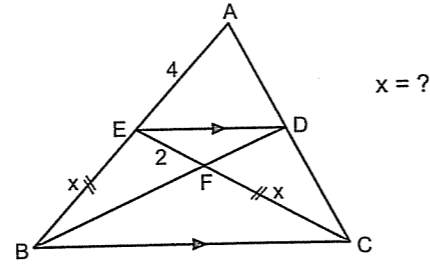
A) 3 B) 4 C) 5 D) 6 E) 7

7.



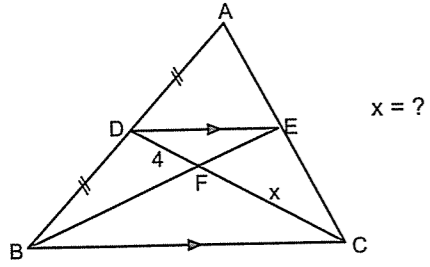
- A) 1 B) 2 C) 3 D) 4 E) 5

10.



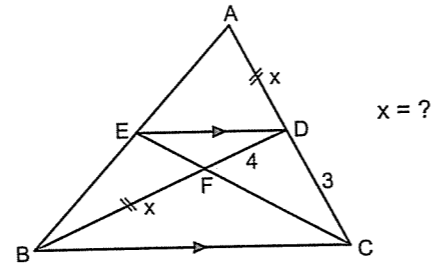
- A) 2 B) 3 C) 4 D) 5 E) 6

8.



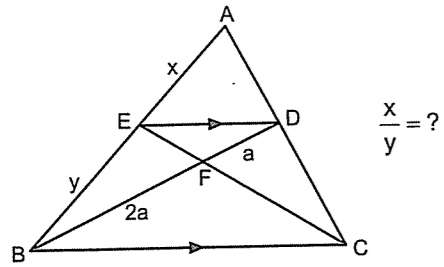
- A) 4 B) 5 C) 6 D) 8 E) 9

11.



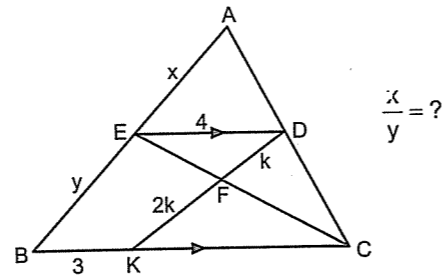
- A) 5 B) 6 C) 7 D) 8 E) 9

9.



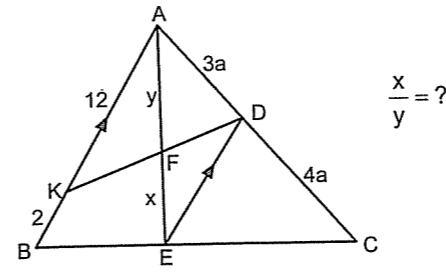
- A) 1 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) 2 E) $\frac{2}{3}$

12.



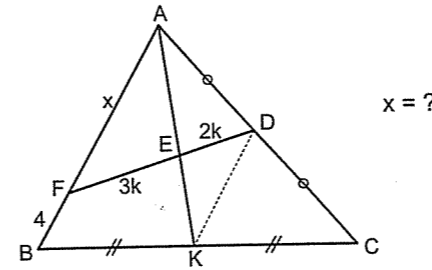
- A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{4}{5}$ D) $\frac{2}{3}$ E) $\frac{4}{7}$

1.



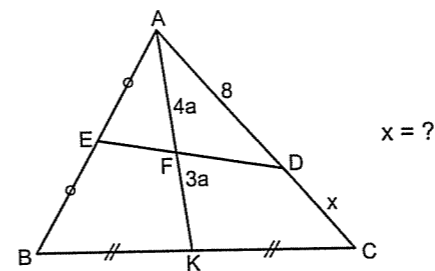
- A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{2}{3}$ D) $\frac{3}{4}$ E) $\frac{4}{5}$

2.



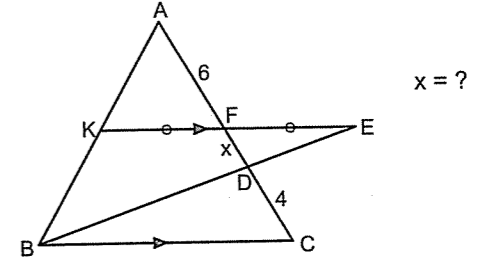
- A) 6 B) 9 C) 10 D) 11 E) 12

3.

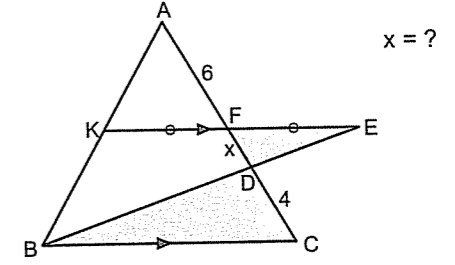


- A) 1 B) 2 C) 3 D) 4 E) 5

Örnek Soru: (Hiç de kolay değil. İyi inceleyin.☺)



Çözüm:



Önce taralı üçgenlerde kelebek benzerliğinden

$$\frac{x}{4} = \frac{|EF|}{|BC|} \text{ olduğunu görün.}$$

Sonra da büyük üçgende yani, ABC üçgeninde temel benzerlik yaparak.

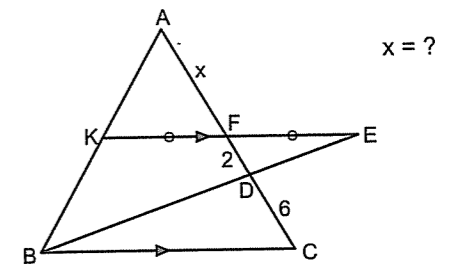
$$\frac{6}{10+x} = \frac{|KF|}{|BC|} \text{ olduğunu bulun.}$$

|KF| = |EF| olduğundan, bu ikisi eşit olacak.

$$\frac{x}{4} = \frac{6}{10+x} \Rightarrow x^2 + 10x - 24 = 0$$

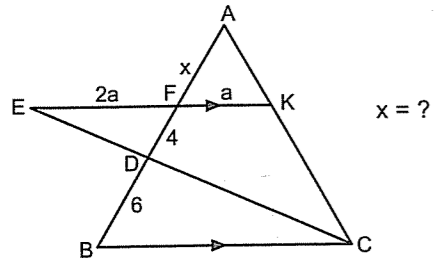
x = -12 ve x = 2 bulunur. Uzunluk negatif olamayacağından x = 2 dir.

4.



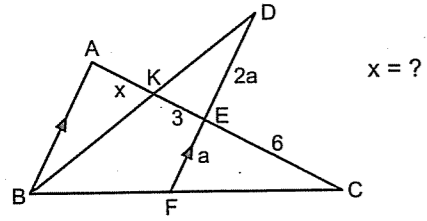
- A) 3 B) 4 C) 5 D) 6 E) 8

5.



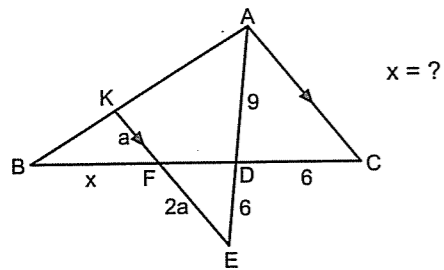
- A) 3 B) 4 C) 5 D) 6 E) 7

6.



- A) 2 B) 3 C) 4 D) 5 E) 6

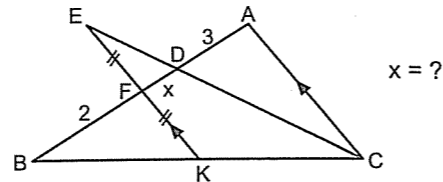
7.



- A) 2 B) 3 C) 4 D) 5 E) 6

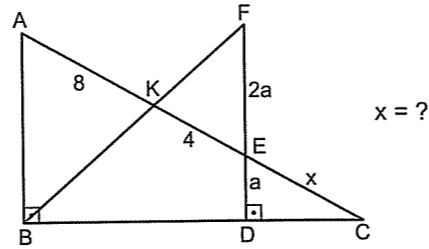
1-C 2-E 3-D 4-B 5-C

8.



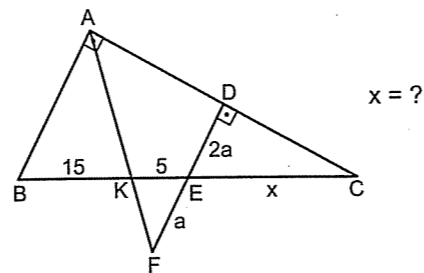
- A) 1 B) 2 C) 3 D) 4 E) 5

9.



- A) 2 B) 3 C) 4 D) 5 E) 6

10.



- A) 10 B) 15 C) 20 D) 35 E) 40

6-B 7-D 8-A 9-C 10-E

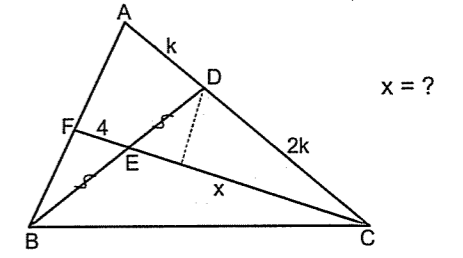
Bazı sorularda kelebek benzerliği kullanmanız lazımdır. Lâkin ortalıkta kelebek filan göremezsiniz. Bu durumda kelebeği sizin oluşturmanız gerekir. Bunun için ihtiyacınız olan tek şey çizeceğiniz paralel bir çizgi. Gerisi kolay zaten. ☺

Çizgileri ben kesik kesik çizgi ile gösteriyorum ama. Biliyorsunuz soruda yok bu kesik çizgiler. Siz çizeceksiniz.



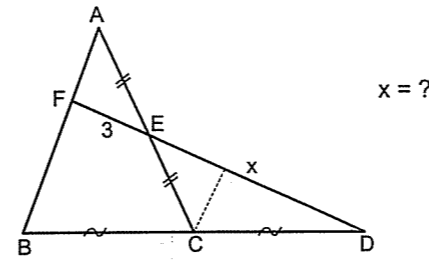
"Bu antrenman ek çizgi çizerek kelebek benzerliği yapma sorularından oluşmaktadır."

4.



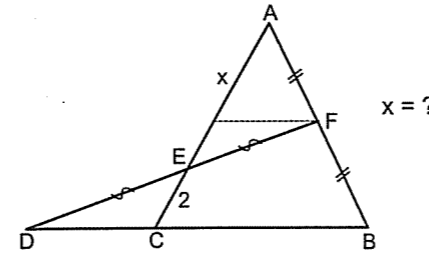
- A) 10 B) 12 C) 16 D) 18 E) 20

1.



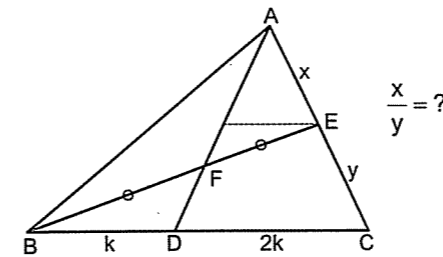
- A) 6 B) 7 C) 8 D) 9 E) 10

2.



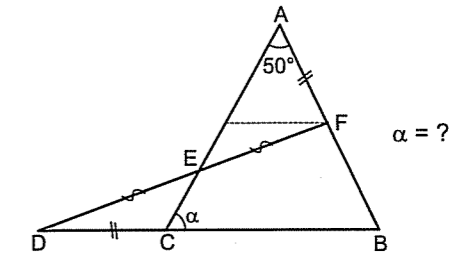
- A) 4 B) 6 C) 8 D) 10 E) 12

3.



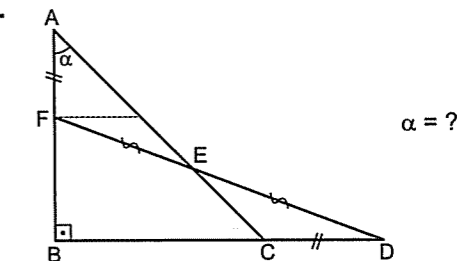
- A) 1 B) 1/2 C) 1/3 D) 2 E) 2/3

5.

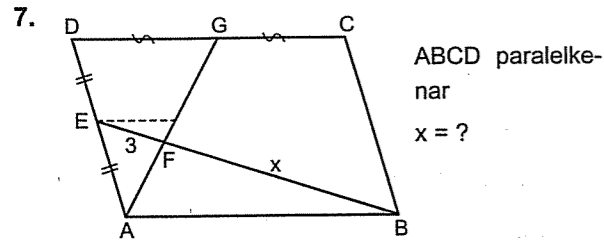


- A) 100 B) 80 C) 65 D) 60 E) 50

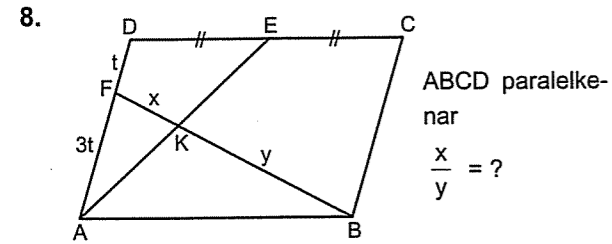
6.



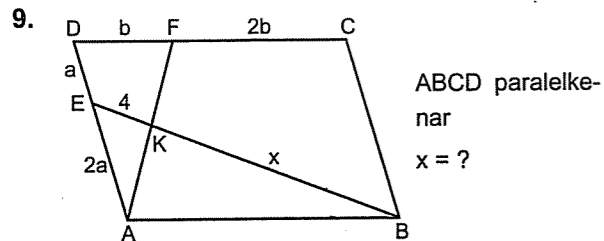
- A) 75 B) 60 C) 45 D) 30 E) 10



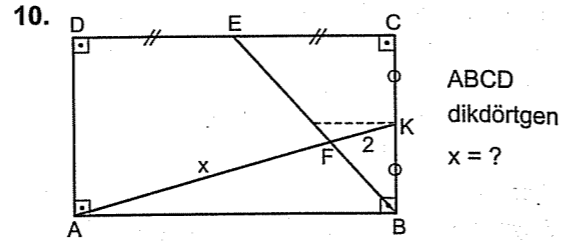
- A) 6 B) 8 C) 12 D) 16 E) 18



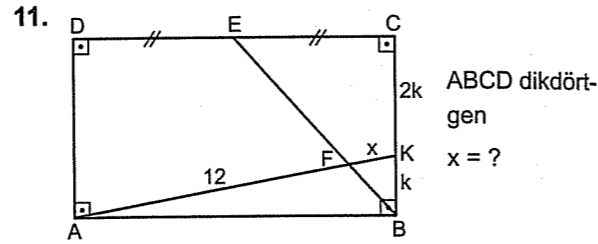
- A) $\frac{3}{8}$ B) $\frac{3}{7}$ C) $\frac{1}{4}$ D) $\frac{5}{7}$ E) $\frac{5}{8}$



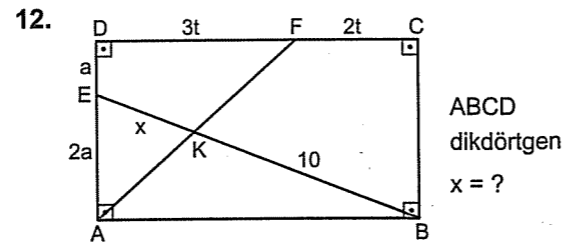
- A) 8 B) 12 C) 16 D) 18 E) 20



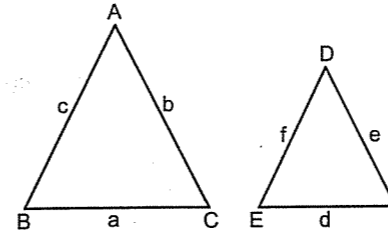
- A) 6 B) 8 C) 10 D) 12 E) 16



- A) 1 B) 2 C) 3 D) 4 E) 5



- A) 3 B) 4 C) 5 D) 6 E) 8



$\widehat{ABC} \sim \widehat{DEF}$ ise $\frac{a}{d} = \frac{b}{e} = \frac{c}{f} = k$ dir.

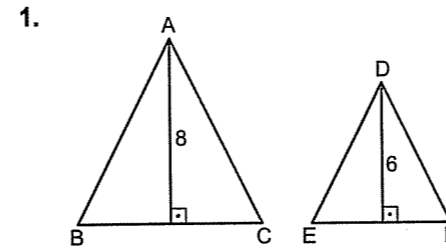
Benzer üçgenlerde eşit açılardan gelen yüksekliklerin oranı, kenarortayların oranı ve açıortayların oranı da benzerlik oranına eşittir.

(h, yükseklik; n, açıortay; V, kenarortay)

$$\frac{a}{d} = \frac{b}{e} = \frac{c}{f} = \frac{h_a}{h_d} = \frac{h_b}{h_e} = \frac{h_c}{h_f} = k$$

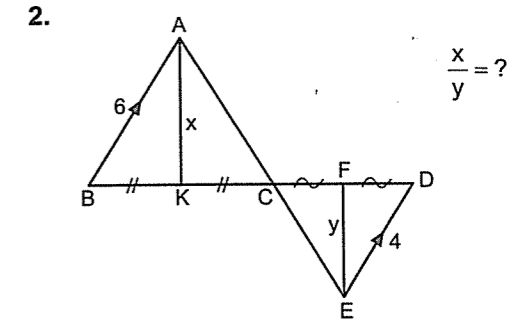
$$\frac{n_A}{n_D} = \frac{n_B}{n_E} = \frac{n_C}{n_F} = \frac{V_a}{V_d} = \frac{V_b}{V_e} = \frac{V_c}{V_f} = k$$

Benzer iki üçgenin çevreleri oranı da yine benzerlik oranına eşittir. $\frac{\text{Çevre}(ABC)}{\text{Çevre}(DEF)} = k$ dir.

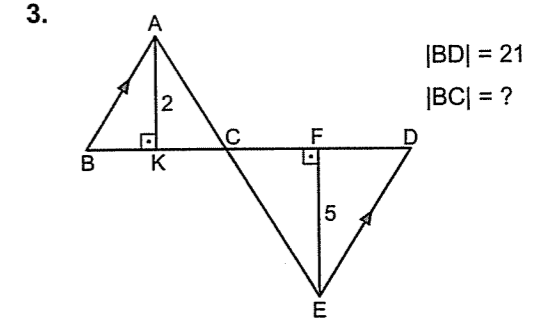


$\widehat{ABC} \sim \widehat{DEF}$ ise $\frac{|BC|}{|EF|} = ?$

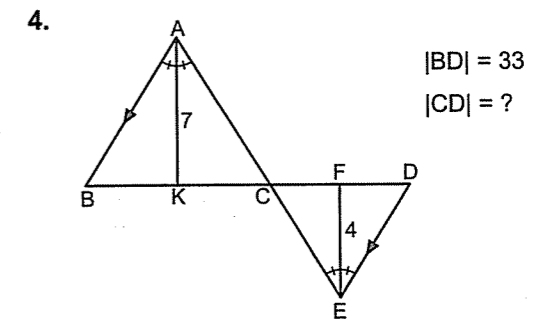
- A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) $\frac{9}{16}$ D) $\frac{16}{9}$ E) $\frac{9}{4}$



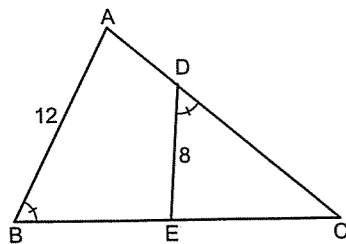
- A) $\frac{3}{2}$ B) $\frac{2}{3}$ C) $\frac{9}{4}$ D) $\frac{4}{9}$ E) $\frac{9}{2}$



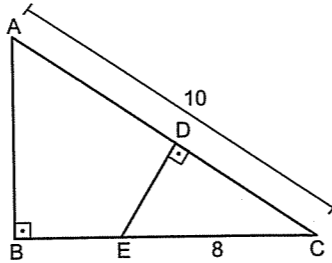
- A) 2 B) 4 C) 6 D) 8 E) 10



- A) 7 B) 8 C) 12 D) 14 E) 16

5.  $\frac{\text{Çevre(DEC)}}{\text{Çevre(ABC)}} = ?$

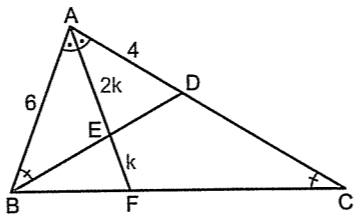
A) $\frac{2}{3}$ B) $\frac{3}{2}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ E) $\frac{1}{2}$

8.  $\frac{\text{Çevre(DEC)}}{\text{Çevre(ABC)}} = ?$

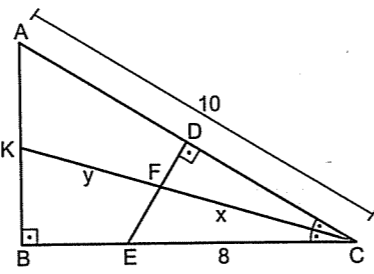
A) $\frac{16}{25}$ B) $\frac{25}{16}$ C) $\frac{5}{4}$ D) $\frac{4}{5}$ E) $\frac{3}{5}$

Şu soru zor gibi.

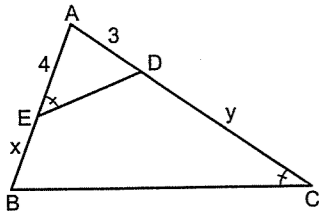
Bu soruda ilk önce benzer üçgenleri görün. Daha sonra da benzerlik oranının aynı zamanda açıortayların oranı olduğuna dikkat edin.

9.  $\frac{|AE|}{|AF|} = ?$

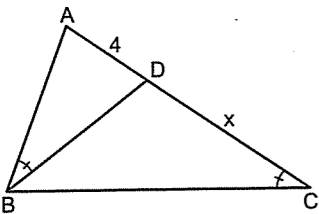
A) $\frac{3}{2}$ B) $\frac{2}{3}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ E) $\frac{1}{3}$

10.  $\frac{x}{y} = ?$

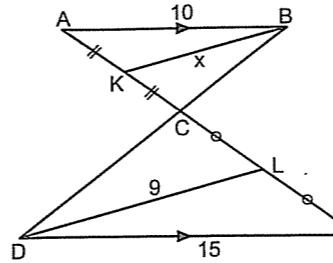
A) $\frac{4}{5}$ B) $\frac{5}{4}$ C) $\frac{1}{5}$ D) $\frac{1}{4}$ E) 4

6.  $\frac{\text{Çevre(ADE)}}{\text{Çevre(ABC)}} = \frac{1}{3}$
 $x + y = ?$

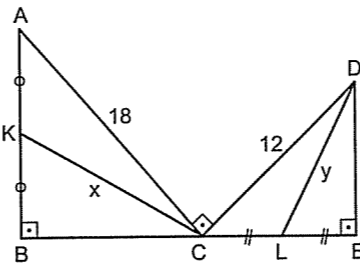
A) 11 B) 12 C) 13 D) 14 E) 15

7.  $\frac{\text{Çevre(ABD)}}{\text{Çevre(ABC)}} = \frac{1}{2}$
 $x = ?$

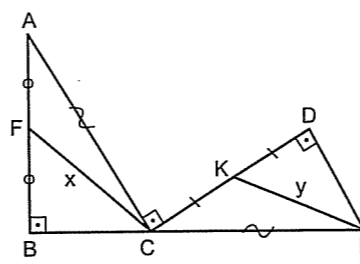
A) 6 B) 8 C) 9 D) 10 E) 12

1.  $x = ?$

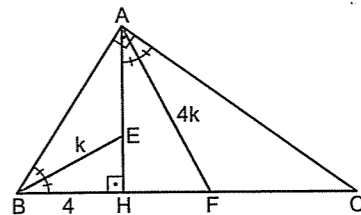
A) 9 B) 8 C) 7 D) 6 E) 5

2.  $\frac{x}{y} = ?$

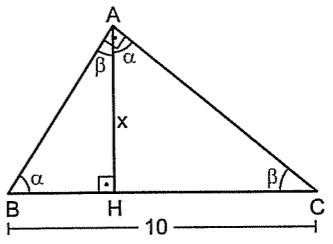
A) $\frac{3}{2}$ B) $\frac{2}{3}$ C) $\frac{9}{2}$ D) $\frac{9}{4}$ E) $\frac{4}{9}$

3.  $\frac{x}{y} = ?$

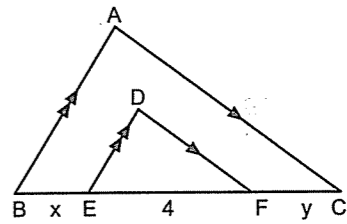
A) 1 B) $\frac{1}{2}$ C) $\frac{1}{3}$ D) 2 E) $\frac{2}{3}$

4.  $|AH| = ?$

A) 6 B) 8 C) 12 D) 14 E) 16

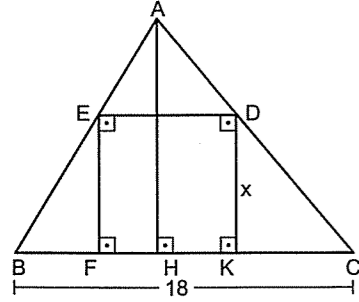
5.  $\frac{\text{Çevre(ABH)}}{\text{Çevre(AHC)}} = \frac{1}{2}$
 $x = ?$

A) 2 B) 4 C) 6 D) 8 E) 10

6.  $\frac{\text{Çevre(ABC)}}{\text{Çevre(DEF)}} = 3$
 $x + y = ?$

A) 6 B) 7 C) 8 D) 9 E) 12

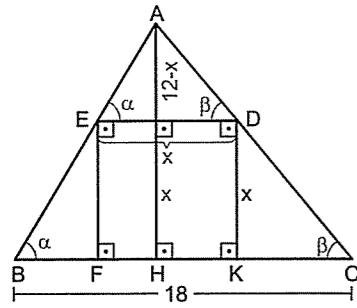
Örnek Soru:



DEFK kare
|AH| = 12
x = ?

Çözüm:

Karede karşılıklı kenarlar paralel olduğundan |ED| // |BC| dir. Dolayısıyla $\widehat{AED} \sim \widehat{ABC}$ olur.



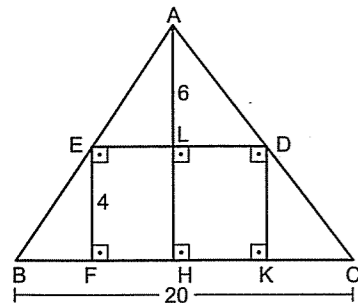
Yüksekliklerin oranı benzerlik oranına eşit olduğundan $\frac{12-x}{12} = \frac{x}{18}$ olur. Buradan

$$\frac{12-x}{12} = \frac{x}{18}$$

$$36 - 3x = 2x$$

$$36 = 5x \Rightarrow x = \frac{36}{5} \text{ bulunur.}$$

7.



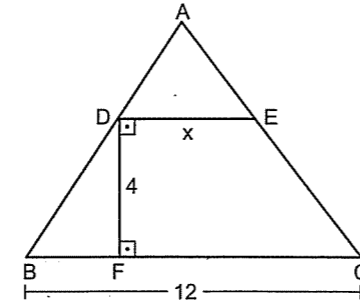
DEFK dikdörtgen
|ED| = ?

- A) 6 B) 7 C) 8 D) 10 E) 12

1-D 2-A 3-A 4-E 5-B

8.

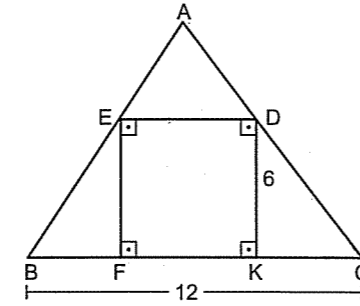
Şu soruda ilk önce alanı kullanarak yüksekliği bulun. Sonra da yüksekliklerin oranı benzerlik oranı olduğunu düşünerek x i bulun.



Alan(ABC) = 48
x = ?

- A) 4 B) 6 C) 8 D) 9 E) 10

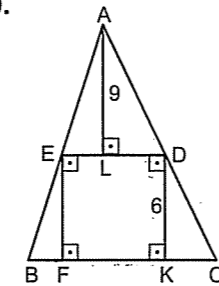
9.



DEFK kare
Alan(ABC) = ?

- A) 72 B) 96 C) 100 D) 120 E) 144

10.

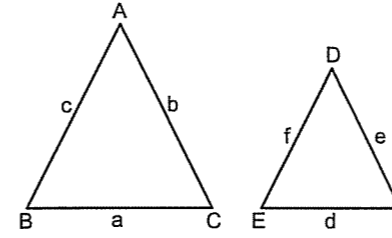


DEFK kare
|BC| = ?

- A) 7 B) 8 C) 9 D) 10 E) 12

6-C 7-E 8-B 9-A 10-D

● Benzer Şekillerin Alanları Oranı:



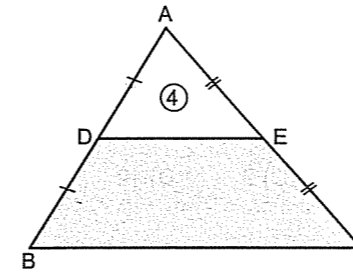
$\widehat{ABC} \sim \widehat{DEF}$ ise $\frac{a}{d} = \frac{b}{e} = \frac{c}{f} = k$ olduğunu biliyoruz.

Benzerlikle alan arasındaki muhabbeti şunu unutmanız lâzım. Üçgenler benzer ise, bu üçgenlerin alanları oranı benzerlik oranının karesine eşittir.

Yani $\frac{\text{Alan(ABC)}}{\text{Alan(DEF)}} = k^2$ dir.

Başka da birşey yok. Önceki anlattıklarımda sıkıntınız yoksa problem yaşamazsınız. Ama unutmayın. Benzer şekillerin alanlarıyla ilgili şeyler söz konusuysa size benzerlik oranının karesi lâzım.

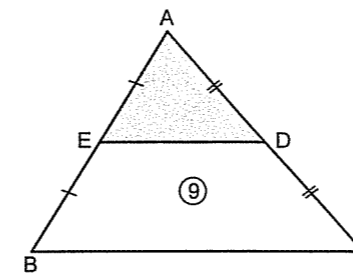
1.



Taralı alan = ?

- A) 1 B) 8 C) 12 D) 16 E) 20

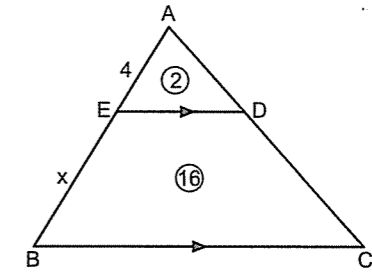
2.



Taralı alan = ?

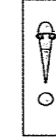
- A) 12 B) 9 C) 6 D) 4 E) 3

3.



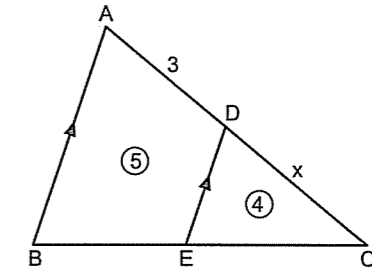
x = ?

- A) 4 B) 6 C) 8 D) 12 E) 16



Üçgenlerin alanları verilirse az önceki olayı tersinden düşünün. Bu durumda alanlar oranının karekökü benzerlik oranına eşit olur. Tabii ki üstteki üçgenin alanı alttaki dörtgenin alanına değil.

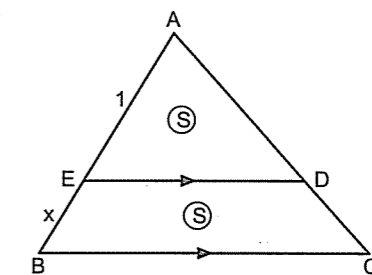
4.



x = ?

- A) 9 B) 8 C) 7 D) 6 E) 4

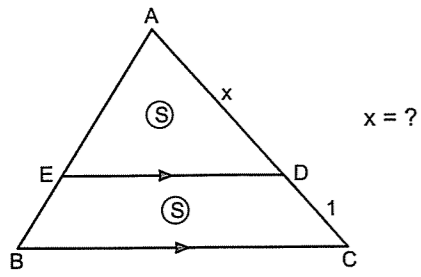
5.



x = ?

- A) 1 B) $\sqrt{2}$ C) $\sqrt{2}+1$ D) $\sqrt{2}-1$ E) $\sqrt{3}$

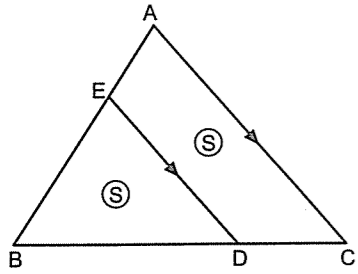
6.



$x = ?$

- A) 1 B) $\sqrt{2}$ C) $\sqrt{2}+1$ D) $\sqrt{2}-1$ E) $\sqrt{3}$

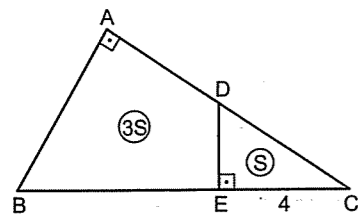
7.



$\frac{|BE|}{|BA|} = ?$

- A) $\frac{1}{2}$ B) $\frac{1}{\sqrt{2}}$ C) $\sqrt{2}$ D) $\frac{1}{3}$ E) $\frac{1}{\sqrt{3}}$

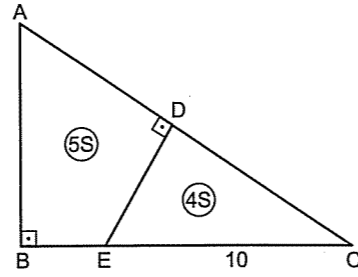
8.



$|AC| = ?$

- A) 8 B) 9 C) 12 D) 16 E) 20

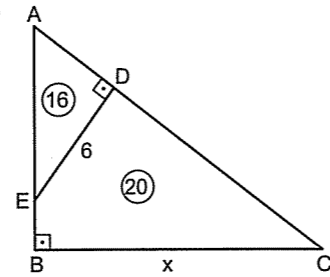
9.



$|AC| = ?$

- A) 12 B) 15 C) 18 D) 20 E) 25

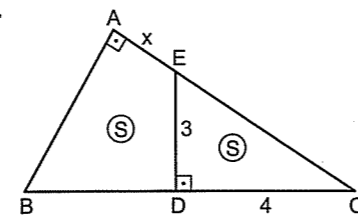
10.



$x = ?$

- A) 7 B) 8 C) 9 D) 12 E) 15

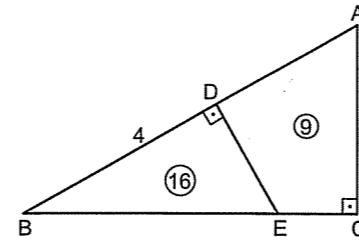
11.



$x = ?$

- A) 5 B) $4\sqrt{3}$ C) $4\sqrt{2}$
D) $4\sqrt{2}+5$ E) $4\sqrt{2}-5$

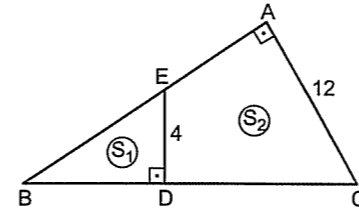
1.



$|BC| = ?$

- A) 5 B) 6 C) 8 D) 10 E) 12

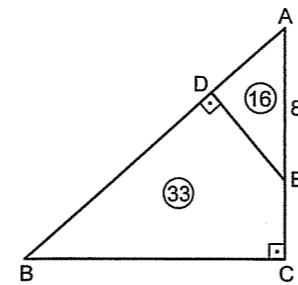
2.



$\frac{S_1}{S_2} = ?$

- A) $\frac{1}{3}$ B) $\frac{1}{9}$ C) $\frac{1}{2}$ D) $\frac{1}{8}$ E) $\frac{4}{9}$

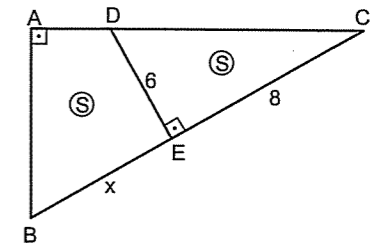
3.



$|AB| = ?$

- A) 10 B) 12 C) 14 D) 16 E) 20

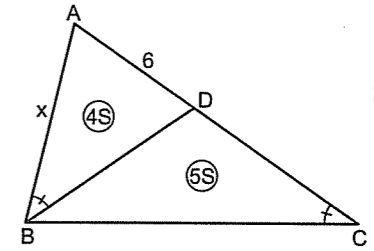
4.



$x = ?$

- A) 8 B) 10 C) $10\sqrt{2}$
D) $10\sqrt{2}-8$ E) $5\sqrt{2}-8$

5.

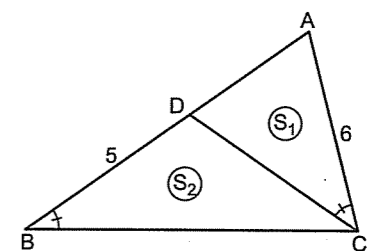


$x = ?$

- A) 7 B) 8 C) 9 D) 12 E) 18

Şu soruda, $|AD|$ 'yi bulduktan sonra $\frac{S_1}{S_2}$ oranını bulun.

6.



$\frac{S_1}{S_2} = ?$

- A) $\frac{4}{5}$ B) $\frac{4}{7}$ C) $\frac{4}{9}$ D) $\frac{2}{3}$ E) $\frac{2}{5}$

7. $x = ?$
 A) 7 B) 8 C) 9 D) 12 E) 15

8. Taralı alan = ?
 A) 1 B) 2 C) 4 D) 6 E) 8

9. $x = ?$
 A) 8 B) 10 C) 12 D) 16 E) 18

10. $\frac{S_1}{S_2} = ?$
 A) $\frac{2}{3}$ B) $\frac{3}{2}$ C) $\frac{4}{9}$ D) $\frac{9}{4}$ E) $\frac{25}{4}$

11. $\frac{\text{Alan}(ADE)}{\text{Alan}(BCED)} = \frac{9}{16}$
 $\frac{x}{y} = ?$
 A) $\frac{4}{9}$ B) $\frac{4}{9}$ C) $\frac{2}{3}$ D) $\frac{3}{2}$ E) $\frac{3}{5}$

12. $\frac{\text{Alan}(ADE)}{\text{Alan}(BCDE)} = ?$
 A) $\frac{4}{5}$ B) $\frac{5}{4}$ C) $\frac{4}{9}$ D) $\frac{5}{9}$ E) $\frac{3}{5}$

1. BDEF paralelkenar
 Taralı alan = ?
 A) 12 B) 18 C) 24 D) 30 E) 35

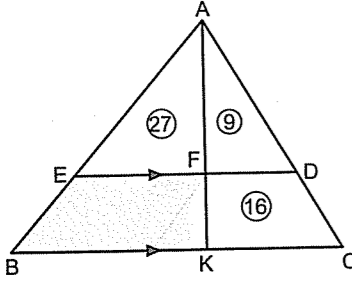
2. CDEF paralelkenar
 Taralı alan = ?
 A) 12 B) 16 C) 18 D) 20 E) 24

3. BDEF paralelkenar
 $\frac{S_1}{S_2} = ?$
 A) $\frac{1}{9}$ B) $\frac{1}{8}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$ E) $\frac{2}{9}$

4. CDEF paralelkenar
 Taralı alan = ?
 A) 20 B) 16 C) 12 D) 8 E) 6

5. Taralı alan = ?
 A) 10 B) 13 C) 15 D) 20 E) 25

6. Taralı alan = ?
 A) 6 B) 8 C) 9 D) 10 E) 12

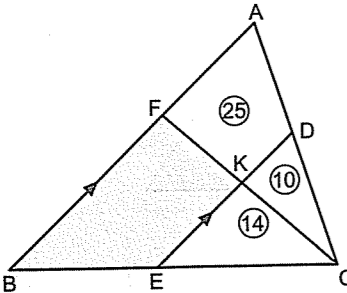
7.  Taralı alan = ?
A) 24 B) 32 C) 36 D) 42 E) 48

10. Çevreleri oranı $\frac{3}{4}$ olan benzer iki üçgenin benzerlik oranı kaçtır?
A) $\frac{4}{9}$ B) $\frac{3}{4}$ C) $\frac{16}{9}$ D) $\frac{9}{16}$ E) $\frac{1}{4}$

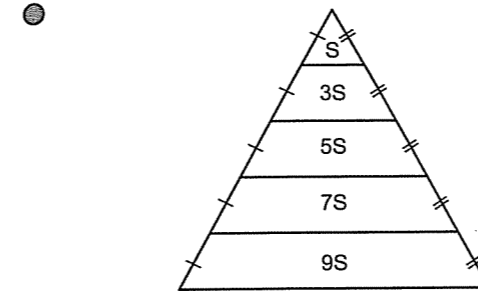
11. Çevreleri oranı $\frac{3}{5}$ olan benzer iki üçgenin alanları oranı kaçtır?
A) $\frac{25}{3}$ B) $\frac{5}{3}$ C) $\frac{3}{5}$ D) $\frac{25}{16}$ E) $\frac{9}{25}$

12. Alanları oranı $\frac{49}{81}$ olan benzer iki üçgenin çevreleri oranı kaçtır?
A) $\frac{49}{81}$ B) $\frac{81}{49}$ C) $\frac{7}{9}$ D) $\frac{12}{7}$ E) $\frac{2}{9}$

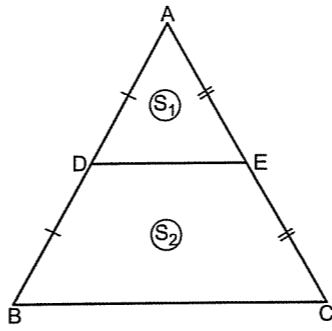
13. Benzer iki üçgenin küçük olanının alanı 36, çevresi 24, büyük olanının alanı 64 ise çevresi kaçtır?
A) 48 B) 32 C) 28 D) 24 E) 20

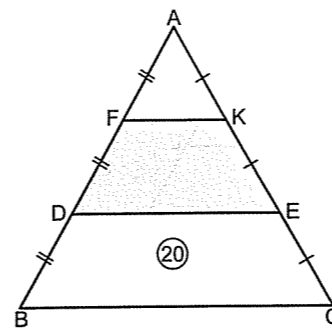
8.  Taralı alan = ?
A) 20 B) 25 C) 28 D) 35 E) 40

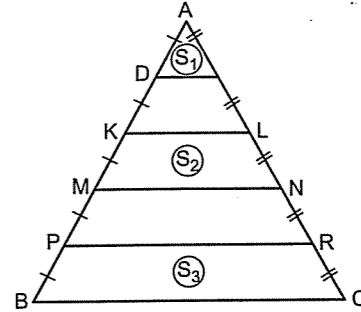
9. Benzerlik oranı $\frac{2}{3}$ olan, benzer iki üçgenin çevreleri oranı kaçtır?
A) $\frac{2}{3}$ B) $\frac{3}{4}$ C) $\frac{4}{9}$ D) $\frac{4}{9}$ E) $\frac{1}{3}$

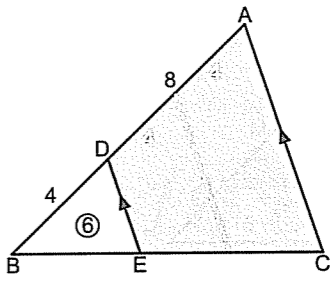



Şekildeki gibi kenarları eşit aralıklarla bölünmüş olan üçgende oluşan alanlar 1, 3, 5, 7, 9... gibi tek sayılarla orantılı olarak artar.
Çoğu soruyu bununla çözebilirsiniz. Yeter ki eşit aralıklarla bölebilin.

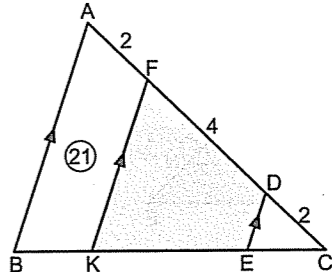
1.  $\frac{S_1}{S_2} = ?$
A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{2}{3}$ E) $\frac{3}{4}$

2.  Taralı alan = ?
A) 8 B) 10 C) 12 D) 16 E) 18

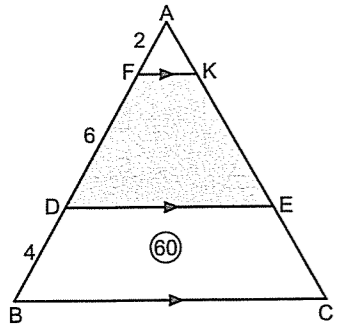
4.  $S_1 + S_2 = 18$
 $S_3 = ?$
A) 18 B) 21 C) 27 D) 30 E) 35

4.  Taralı alan = ?
A) 12 B) 18 C) 24 D) 36 E) 48

 Soruda yanlar eşit aralıklarla bölünmemiş olabilir. Bu durumda eşit aralıklara siz bölün ve daha sonra bu kuralı uygulayın.

5.  Taralı alan = ?
A) 16 B) 18 C) 20 D) 24 E) 28

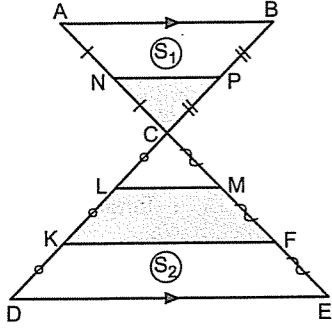
6.



Taralı alan = ?

- A) 15 B) 20 C) 25 D) 35 E) 45

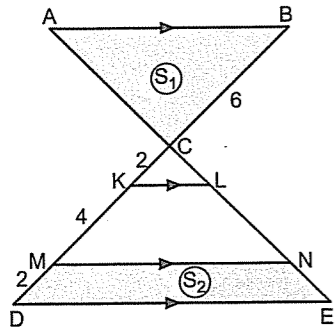
7.



Taralı alanlar eşit ve toplamı 12 cm^2 dir. $S_1 + S_2 = ?$

- A) 36 B) 32 C) 28 D) 24 E) 18

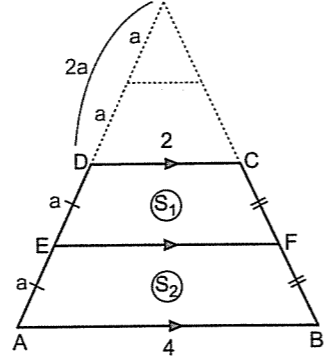
8.



$\frac{S_1}{S_2} = ?$

- A) $\frac{9}{7}$ B) $\frac{7}{9}$ C) $\frac{5}{9}$ D) $\frac{9}{5}$ E) $\frac{3}{4}$

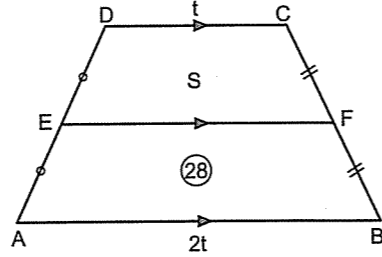
9.



$\frac{S_1}{S_2} = ?$

- A) $\frac{7}{5}$ B) $\frac{5}{7}$ C) $\frac{3}{5}$ D) $\frac{5}{3}$ E) $\frac{7}{9}$

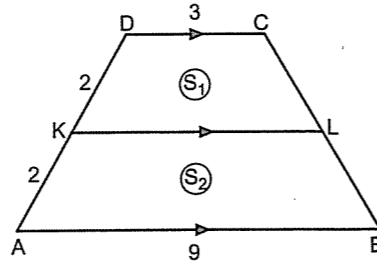
10.



$S = ?$

- A) 14 B) 18 C) 20 D) 24 E) 25

11.



$\frac{S_1}{S_2} = ?$

- A) $\frac{3}{5}$ B) $\frac{5}{3}$ C) $\frac{5}{7}$ D) $\frac{7}{5}$ E) $\frac{3}{7}$

Şu soruda, $S_1 = S_2$ gibi duruyor. Ama değil. Bu tip sorularda şekli yukarı doğru uzatarak üçgen oluşturun. Göreceksiniz soru daha önceki sorulara benzeyecek.

10. Bölüm

Üçgende Açık Kenar Bağlantıları

Genel kavramlar

Doğru Açılar

En uzun yolculuklara bile küçük bir adımla başlanır...

Çoğu, zekâdan daha önemlidir.

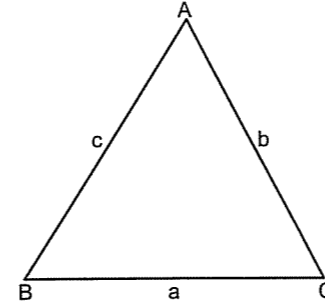
Albert Einstein

— ÜÇGENDE AÇI-KENAR BAĞINTILARI

1. Antrenman

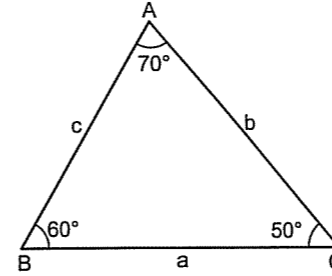
● ÜÇGENDE AÇI-KENAR BAĞINTILARI

Üçgende açı kenar bağıntılarında bilmeniz gereken ilk husus şu. Bir üçgende küçük açının karşısında küçük kenar büyük açının karşısında büyük kenar bulunur.



$\hat{A} < \hat{B} < \hat{C}$ ise $a < b < c$ dir.

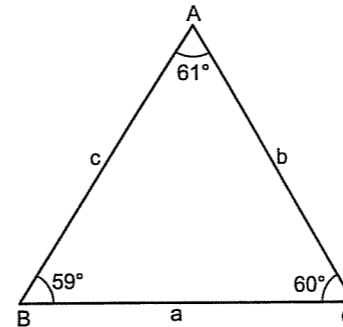
1.



Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $b < c < a$ B) $b < a < c$ C) $a < b < c$
D) $c < b < a$ E) $a < c < b$

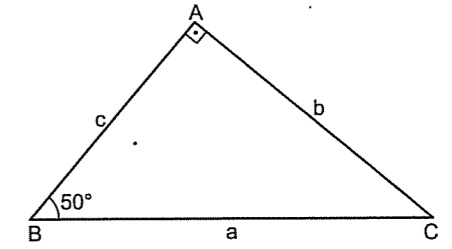
2.



Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $a < b < c$ B) $a < c < b$ C) $b < c < a$
D) $c < a < b$ E) $c < b < a$

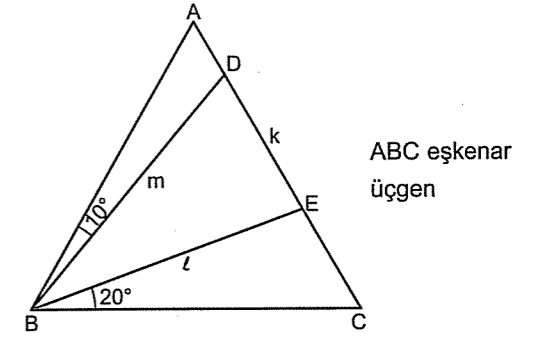
3.



Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $c < b < a$ B) $c < a < b$ C) $a < b < c$
D) $a < c < b$ E) $b < c < a$

4.

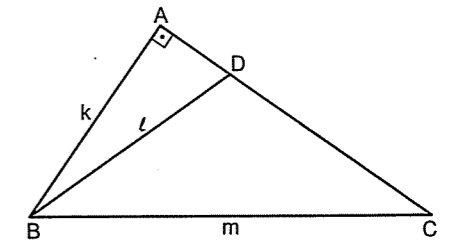


ABC eşkenar üçgen

Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $k < m < l$ B) $k < l < m$ C) $m < k < l$
D) $l < m < k$ E) $l < k < m$

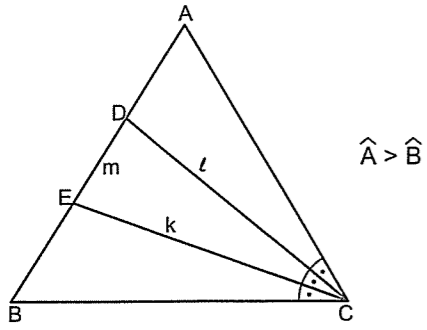
5.



Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $k < m < l$ B) $l > m > k$ C) $m < k < l$
D) $m < l < k$ E) $m > l > k$

6.

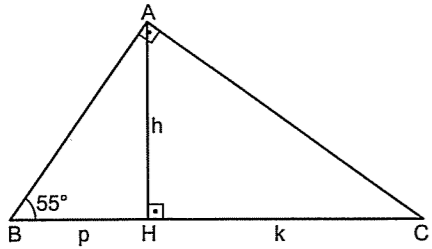


$\hat{A} > \hat{B}$

Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $k < m < l$ B) $k < l < m$ C) $l < k < m$
D) $m < l < k$ E) $m < k < l$

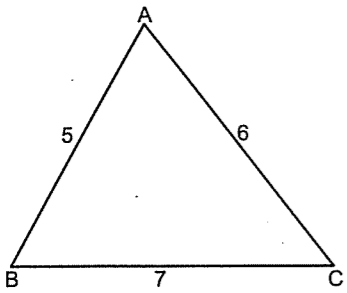
7.



Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $p < k < h$ B) $h < p < k$ C) $p < h < k$
D) $h < k < p$ E) $k < h < p$

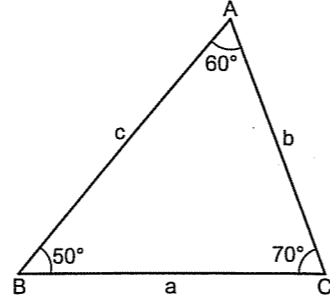
8.



Yukarıdaki şekle göre aşağıdakilerden hangisi doğrudur?

- A) $\hat{C} < \hat{B} < \hat{A}$ B) $\hat{C} < \hat{A} < \hat{B}$ C) $\hat{A} < \hat{C} < \hat{B}$
D) $\hat{A} < \hat{B} < \hat{C}$ E) $\hat{B} < \hat{A} < \hat{C}$

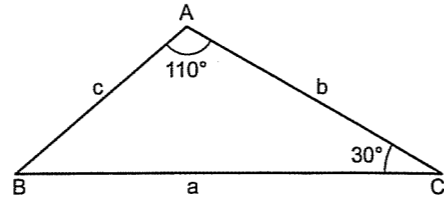
9.



Şekle göre, $|b-a| + |a-c|$ ifadesinin eşiti nedir?

- A) $c + b$ B) $c - b$ C) $b - c$
D) $b + a$ E) $c + a$

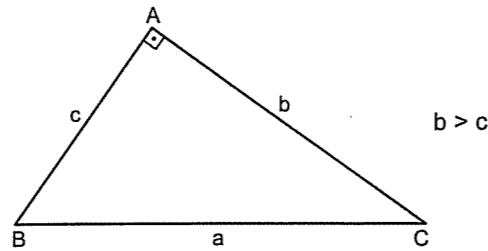
10.



Şekle göre $\frac{|c-b| + |c-a| + |a-b|}{2}$ ifadesinin eşiti nedir?

- A) a B) $a - b$ C) $a - c$
D) b E) $2c$

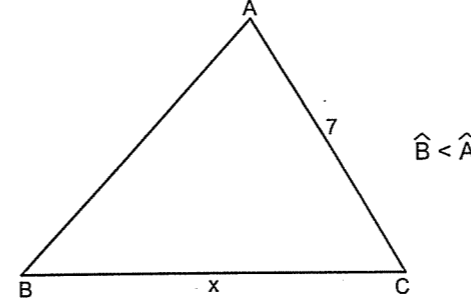
11.



Şekle göre $|b^2 - a^2| + |b^2 - c^2|$ ifadesinin eşiti nedir?

- A) $a^2 - b^2$ B) $a^2 + b^2$ C) $a^2 + c^2$
D) a^2 E) b^2

1.

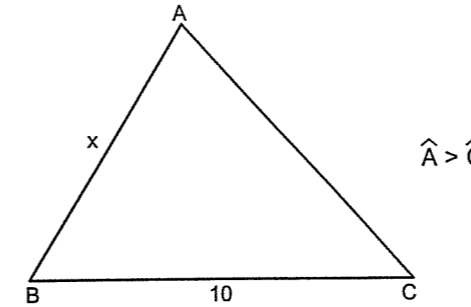


$\hat{B} < \hat{A}$

x'in en küçük tamsayı değeri kaçtır?

- A) 7 B) 8 C) 6 D) 5 E) 9

2.

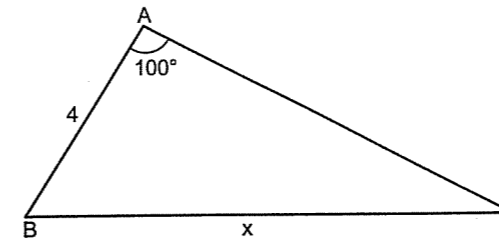


$\hat{A} > \hat{C}$

x'in en büyük tamsayı değeri kaçtır?

- A) 11 B) 12 C) 9 D) 8 E) 7

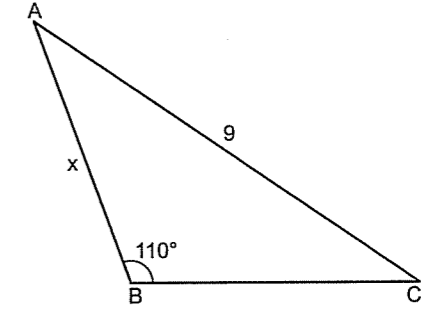
3.



x'in en küçük tamsayı değeri kaçtır?

- A) 6 B) 5 C) 4 D) 3 E) 2

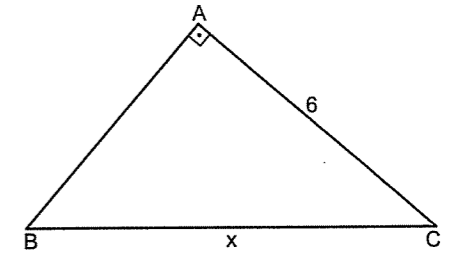
4.



x'in en büyük tamsayı değeri kaçtır?

- A) 10 B) 11 C) 9 D) 8 E) 7

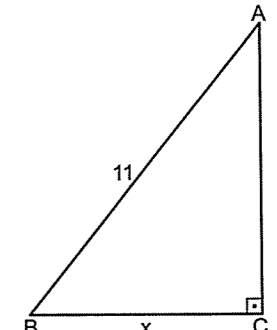
5.



x'in en küçük tamsayı değeri kaçtır?

- A) 4 B) 5 C) 6 D) 7 E) 8

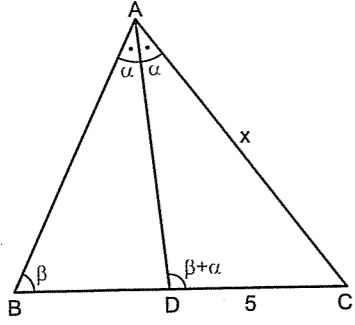
6.



x'in en büyük tamsayı değeri kaçtır?

- A) 13 B) 12 C) 8 D) 9 E) 10

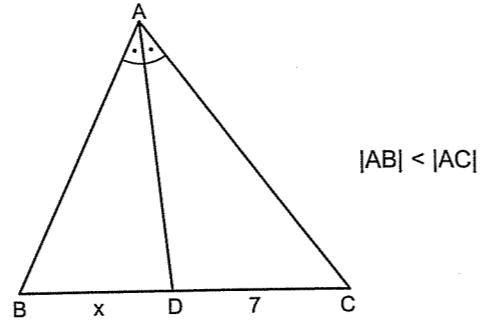
7.



x'in en küçük tamsayı değeri kaçtır?

- A) 4 B) 3 C) 5 D) 6 E) 7

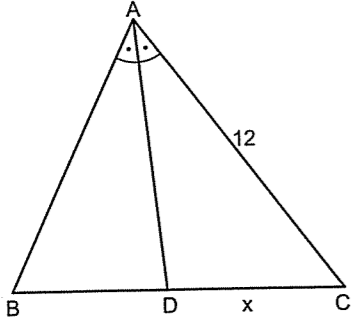
10.



x'in en büyük tamsayı değeri kaçtır?

- A) 9 B) 8 C) 7 D) 6 E) 5

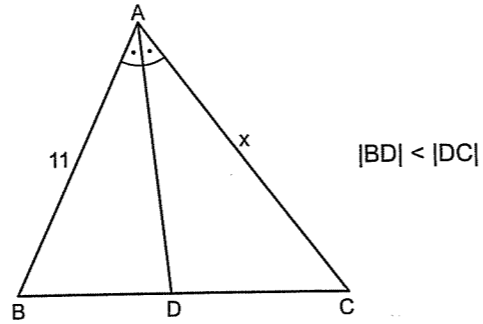
8.



x'in en büyük tamsayı değeri kaçtır?

- A) 11 B) 10 C) 9 D) 13 E) 8

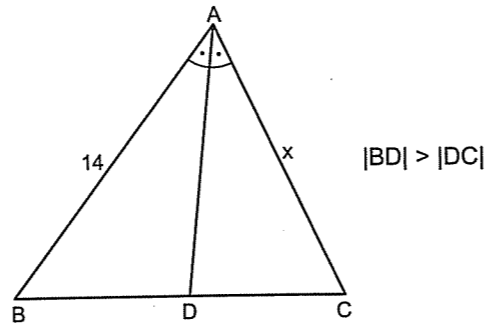
11.



x'in en küçük tamsayı değeri kaçtır?

- A) 13 B) 12 C) 11 D) 10 E) 9

12.

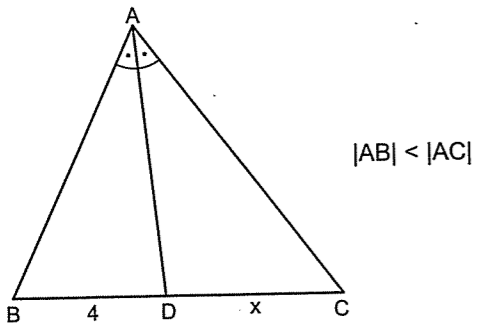


x'in en büyük tamsayı değeri kaçtır?

- A) 13 B) 14 C) 15 D) 12 E) 11

İç açıortayda kolların oranı parçaların oranına eşit olduğunu hatırlayın.

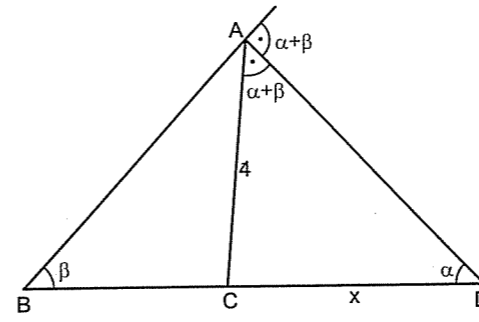
9.



x'in en küçük tamsayı değeri kaçtır?

- A) 3 B) 4 C) 5 D) 6 E) 7

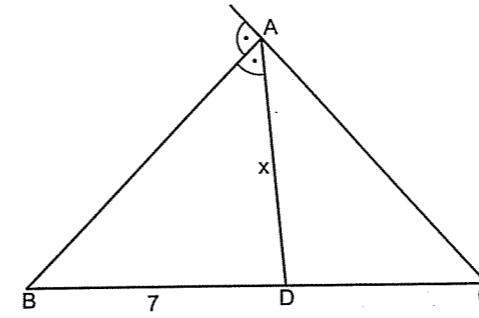
1.



x'in en küçük tamsayı değeri kaçtır?

- A) 3 B) 4 C) 5 D) 6 E) 7

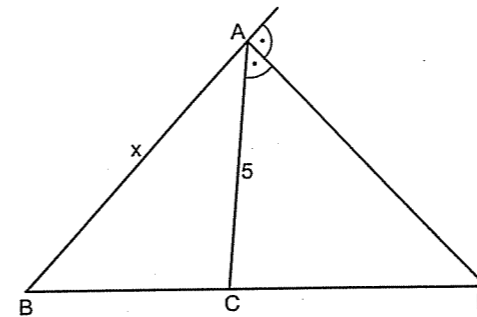
2.



x'in en büyük tamsayı değeri kaçtır?

- A) 5 B) 6 C) 7 D) 8 E) 9

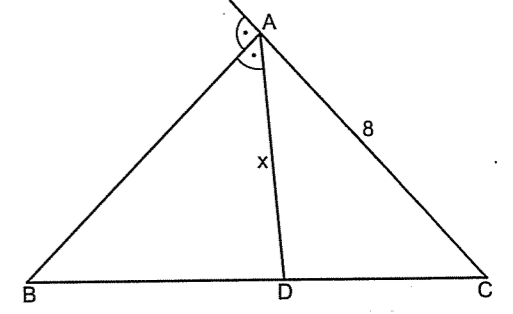
3.



x'in en küçük tamsayı değeri kaçtır?

- A) 4 B) 5 C) 6 D) 7 E) 8

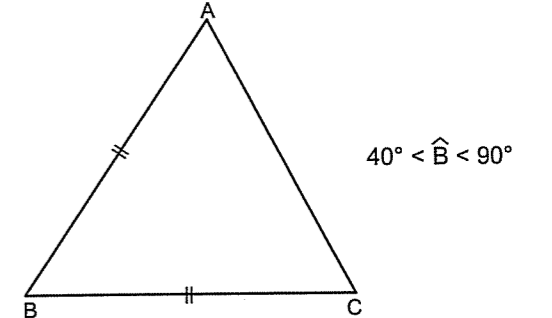
4.



x'in en büyük tamsayı değeri kaçtır?

- A) 7 B) 8 C) 9 D) 10 E) 11

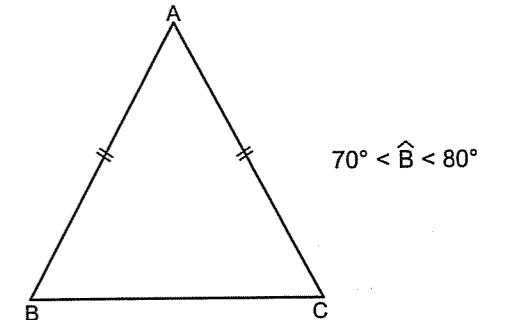
5.



\hat{A} açısının alacağı kaç tamsayı değeri vardır?

- A) 32 B) 30 C) 27 D) 24 E) 20

6.



\hat{A} açısının alacağı kaç tamsayı değeri vardır?

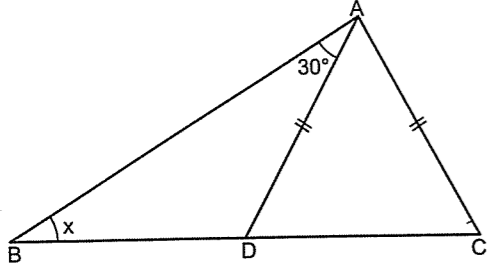
- A) 25 B) 23 C) 21 D) 20 E) 19

— ÜÇGENDE AÇI-KENAR BAĞINTILARI

3. Antrenman

Aklınızda olsun. İkizkenar üçgenin taban açıları 90° den küçüktür.

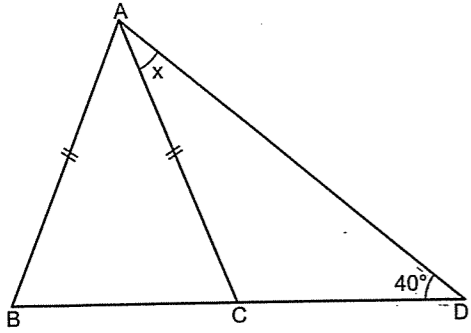
7.



x açısının en büyük tamsayı değeri kaçtır?

- A) 49 B) 52 C) 59 D) 60 E) 61

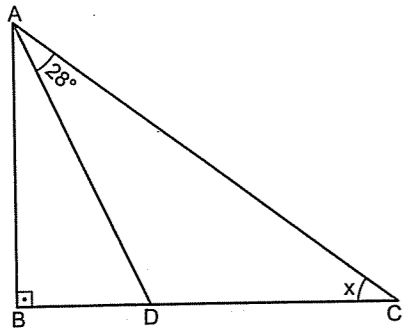
8.



x açısının en büyük tamsayı değeri kaçtır?

- A) 49 B) 50 C) 57 D) 60 E) 61

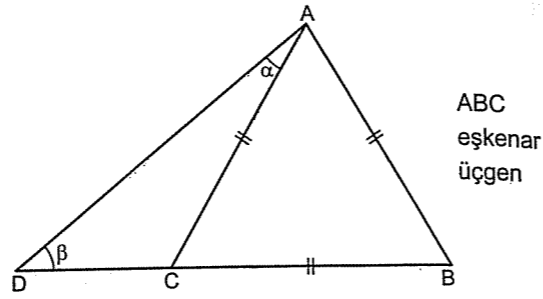
9.



x açısının en büyük tamsayı değeri kaçtır?

- A) 52 B) 57 C) 59 D) 61 E) 62

10.

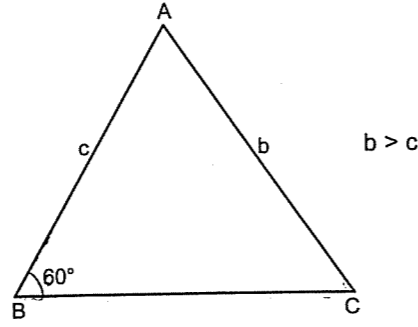


ABC eşkenar üçgen

$\alpha > 24^\circ$ ise β açısının en büyük tamsayı değeri kaçtır?

- A) 32 B) 35 C) 36 D) 37 E) 46

11.

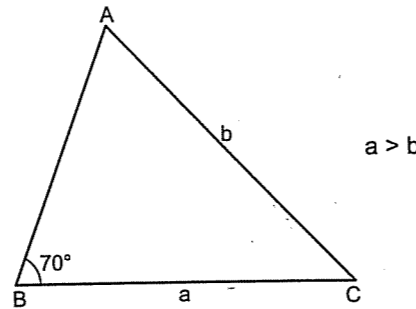


$b > c$

\hat{C} açısının en büyük tamsayı değeri kaçtır?

- A) 61 B) 60 C) 59 D) 58 E) 57

12.



$a > b$

\hat{A} açısının en küçük tamsayı değeri kaçtır?

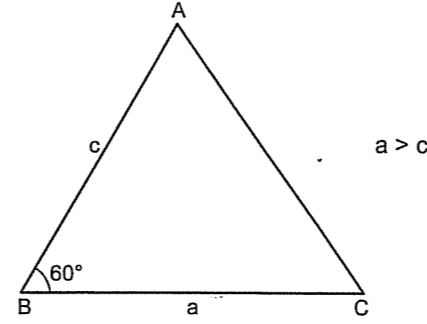
- A) 60 B) 68 C) 69 D) 70 E) 71

— ÜÇGENDE AÇI-KENAR BAĞINTILARI

4. Antrenman

Şu soruda a ve c eşit olsaydı ne olurdu diye düşünün.

1.

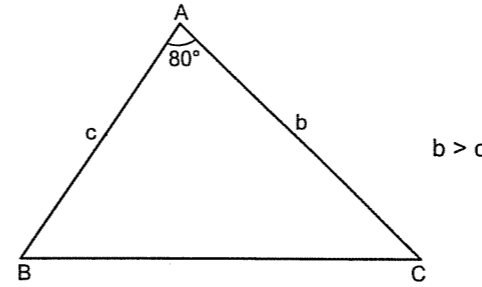


$a > c$

\hat{A} açısının en küçük tamsayı değeri kaçtır?

- A) 59 B) 60 C) 61 D) 62 E) 63

2.

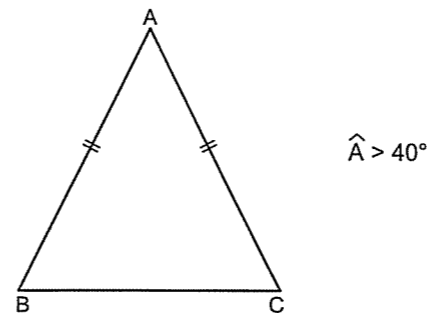


$b > c$

\hat{C} açısının en büyük tamsayı değeri kaçtır?

- A) 39 B) 42 C) 49 D) 50 E) 51

3.

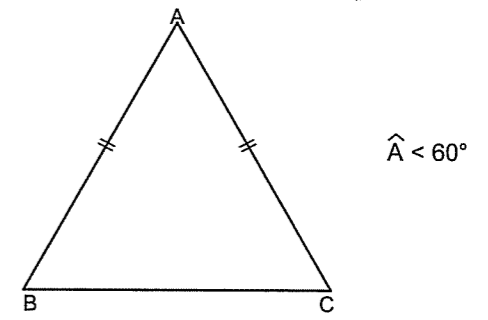


$\hat{A} > 40^\circ$

\hat{B} açısının en büyük tamsayı değeri kaçtır?

- A) 68 B) 69 C) 70 D) 71 E) 72

4.

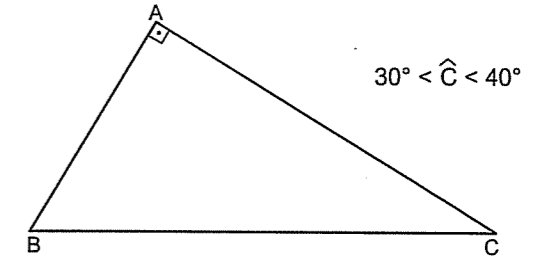


$\hat{A} < 60^\circ$

\hat{B} açısının en küçük tamsayı değeri kaçtır?

- A) 58 B) 59 C) 60 D) 61 E) 62

5.

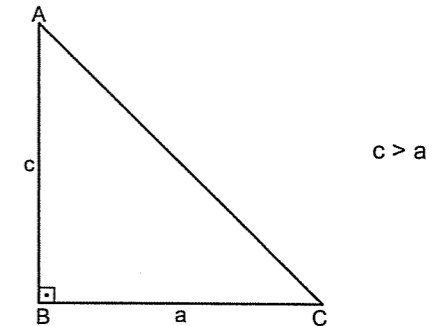


$30^\circ < \hat{C} < 40^\circ$

\hat{B} açısının alacağı tamsayı değerleri sayısı kaçtır?

- A) 13 B) 12 C) 11 D) 10 E) 9

6.

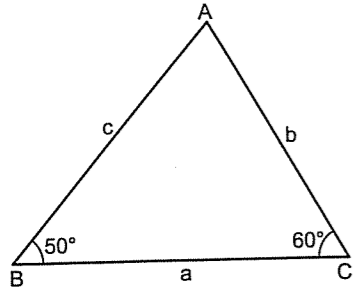


$c > a$

\hat{A} açısının en büyük tamsayı değeri kaçtır?

- A) 43 B) 44 C) 45 D) 46 E) 47

7.

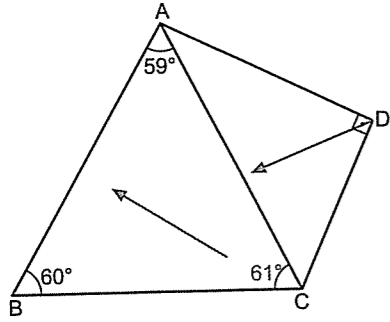


Şekildeki en uzun kenar hangisidir?

- A) |AB| B) |AC| C) b D) c E) a

Üçgende en uzun kenar bulunurken iki üçgende de en uzun kenarı ok ile gösterin ve okları takip edin. Bu oklar sizi şeklin tamamındaki en büyük kenara götürür.

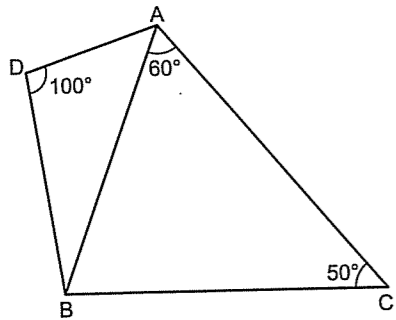
8.



Şekildeki en uzun kenar hangisidir?

- A) |AD| B) |AC| C) |DC| D) |AB| E) |BC|

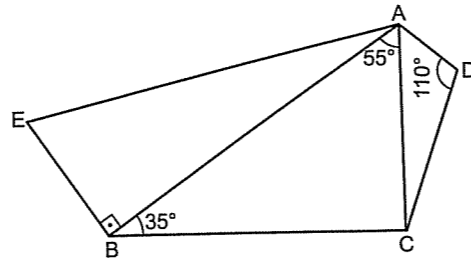
9.



Şekildeki en uzun kenar hangisidir?

- A) |AC| B) |BC| C) |AB| D) |AD| E) |DB|

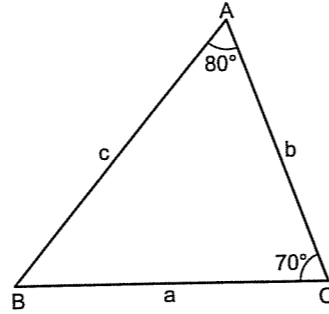
10.



Şekildeki en uzun kenar hangisidir?

- A) |AE| B) |AB| C) |BC| D) |AC| E) |DC|

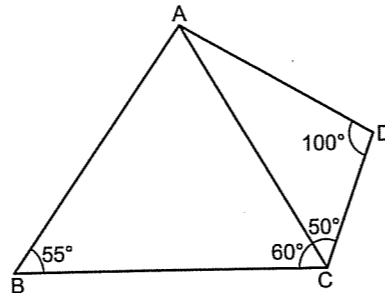
11.



Şekildeki en kısa kenar hangisidir?

- A) |AB| B) |BC| C) b D) a E) c

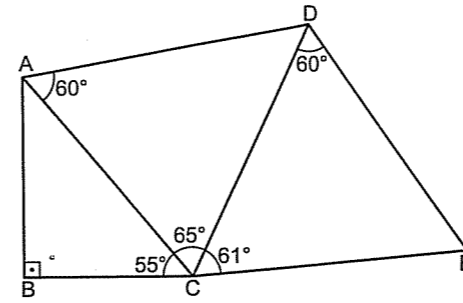
12.



Şekildeki en kısa kenar hangisidir?

- A) |AB| B) |BC| C) |AC| D) |DC| E) |AD|

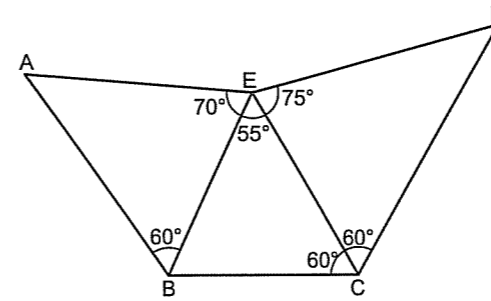
1.



Şekildeki en kısa kenar hangisidir?

- A) |AB| B) |BC| C) |AD| D) |DC| E) |CE|

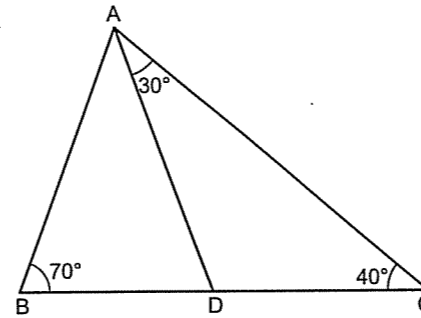
2.



Şekildeki en kısa kenar hangisidir?

- A) |EB| B) |EC| C) |BC| D) |AE| E) |DE|

3.

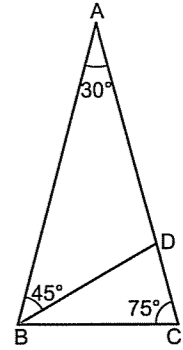


Yukarıdaki şekle göre aşağıdakilerden hangileri doğrudur?

- I. |AC| = |BC|
II. |AB| = |AD|
III. |BD| < |AB|
IV. |DC| > |AB|
V. |BD| > |AC|

- A) I, II B) I, V C) I, II, IV
D) I, IV, V E) I, II, III

4.

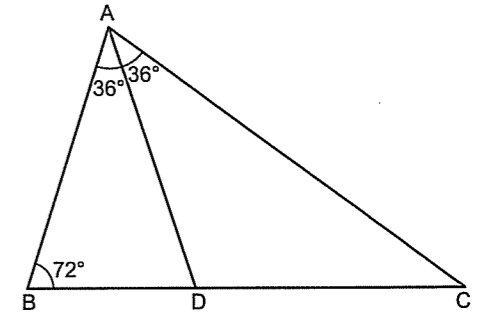


Yukarıdaki şekle göre aşağıdakilerden hangileri doğrudur?

- I. |AB| = |AC|
II. |BD| = |BC|
III. |BC| > |AD|
IV. |DC| < |AD|
V. |AD| > |AB|

- A) I, III B) I, II, V C) I, II, IV
D) I, V E) I, IV, V

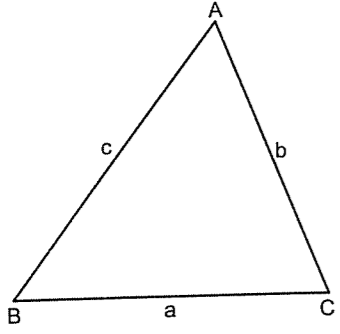
5.



Yukarıdaki şekle göre aşağıdakilerden hangileri doğrudur?

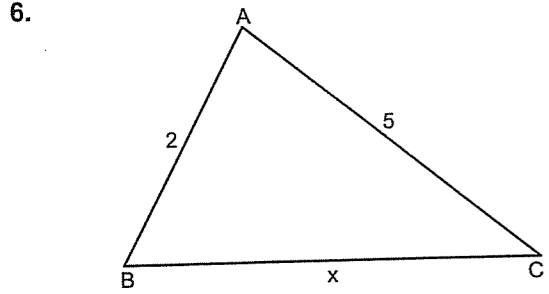
- I. |AB| = |AD|
II. |AB| = |DC|
III. |BC| = |AC|
IV. |BD| < |AD|
V. |BD| > |DC|

- A) I, III, V B) I, IV, V C) I, II, V
D) I, II, III, IV E) II, III, V



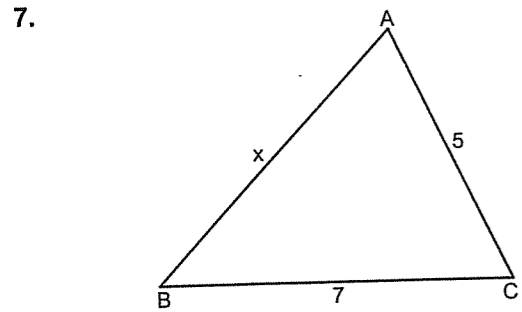
Bir üçgende bir kenar diğer iki kenarın toplamından küçük farkından büyüktür.

Yani $|b - c| < a < b + c$ dir.



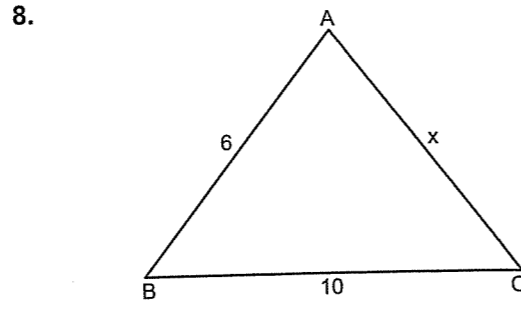
x'in alacağı kaç tamsayı değeri vardır?

- A) 3 B) 4 C) 5 D) 6 E) 7



x'in en büyük tamsayı değeri kaçtır?

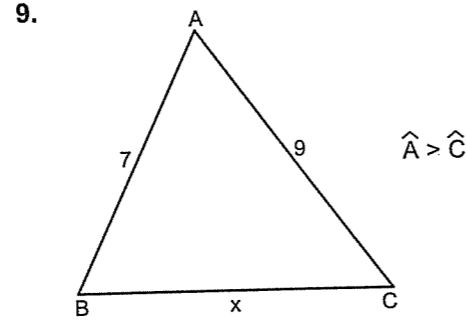
- A) 2 B) 3 C) 11 D) 12 E) 13



x'in en küçük tamsayı değeri kaçtır?

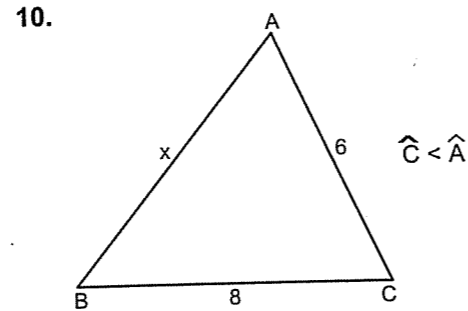
- A) 4 B) 5 C) 6 D) 9 E) 15

Şu soruda $\hat{A} > \hat{C}$ şartına dikkat edin.



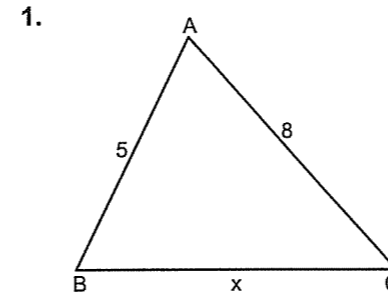
x'in alacağı kaç tamsayı değeri vardır?

- A) 5 B) 6 C) 7 D) 8 E) 9



x'in alacağı tamsayı değerleri toplamı kaçtır?

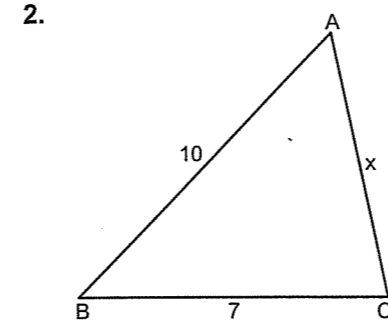
- A) 25 B) 23 C) 18 D) 15 E) 14



$$\hat{C} < \hat{A} < \hat{B}$$

x'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 13 B) 15 C) 18 D) 24 E) 27

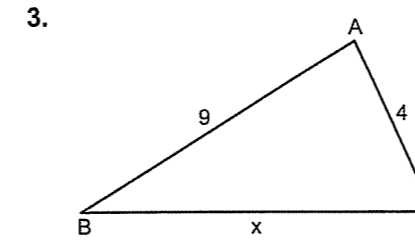


$$\hat{A} < \hat{B} < \hat{C}$$

x'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 15 B) 17 C) 19 D) 22 E) 26

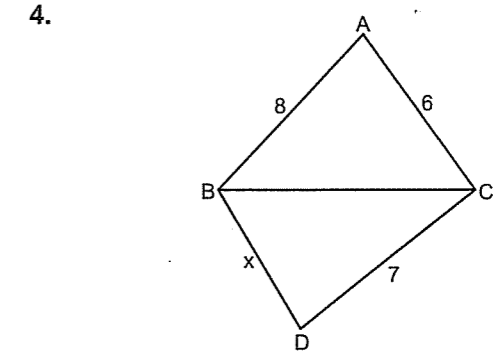
Şu soruda x'in değer aralığını kenarlardan da yazmayınız. Daha sonra açılırları devreye sokarsınız.



$$\hat{B} < \hat{A} < \hat{C}$$

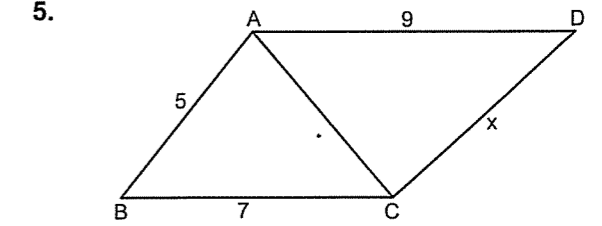
x'in alacağı kaç tamsayı değeri vardır?

- A) 1 B) 2 C) 3 D) 4 E) 5



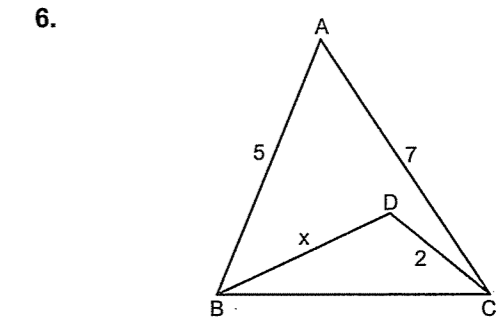
|BC| nin en küçük tamsayı değeri için x'in en büyük tamsayı değeri kaçtır?

- A) 9 B) 8 C) 7 D) 6 E) 5



|AC| nin en büyük tamsayı değeri için x'in alacağı en büyük tamsayı değeri kaçtır?

- A) 15 B) 16 C) 17 D) 18 E) 19



|BC| nin en küçük tamsayı değeri için x'in alacağı tamsayı değerleri toplamı kaçtır?

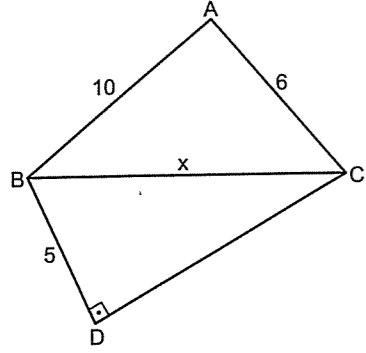
- A) 6 B) 7 C) 8 D) 9 E) 10

— ÜÇGENDE AÇI-KENAR BAĞINTILARI

6. Antrenman

Şu soruda x 'i iki üçgen için de ayrı ayrı düşünün.

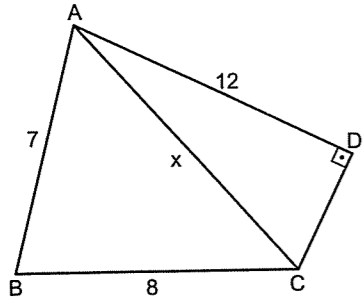
7.



x 'in alacağı tamsayı değerleri sayısı kaçtır?

- A) 9 B) 10 C) 11 D) 12 E) 13

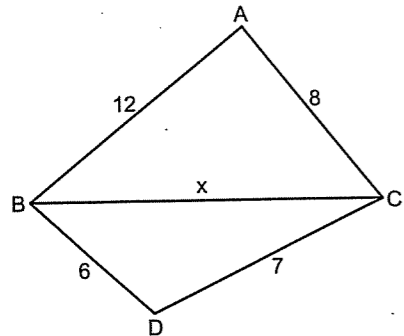
8.



x 'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 21 B) 24 C) 27 D) 28 E) 30

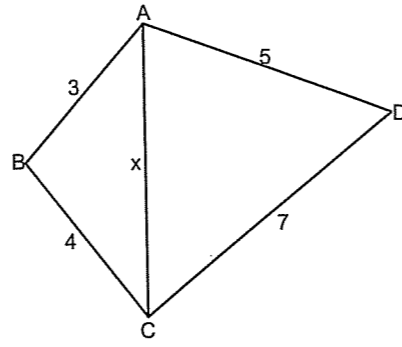
9.



x 'in alacağı kaç tamsayı değeri vardır?

- A) 6 B) 7 C) 8 D) 9 E) 10

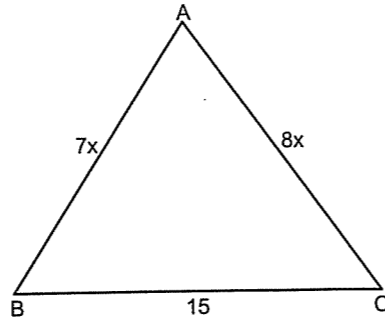
10.



x 'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 12 B) 13 C) 15 D) 17 E) 18

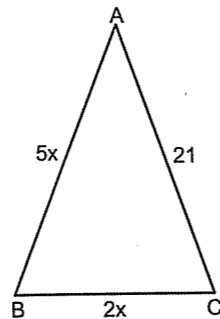
11.



x 'in alacağı kaç tamsayı değeri vardır?

- A) 12 B) 13 C) 15 D) 16 E) 18

12.



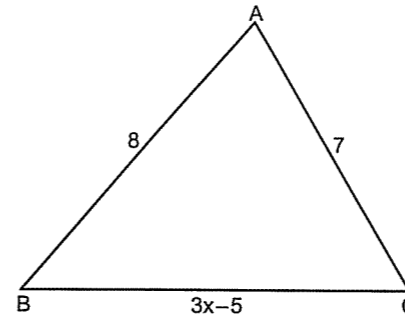
x 'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 10 B) 12 C) 13 D) 15 E) 16

— ÜÇGENDE AÇI-KENAR BAĞINTILARI

7. Antrenman

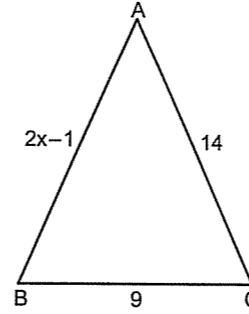
1.



x 'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 15 B) 16 C) 17 D) 18 E) 19

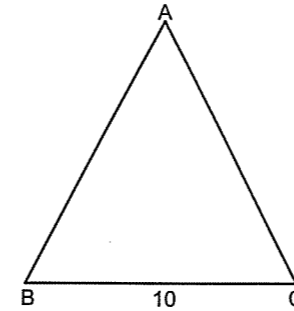
2.



x 'in alacağı kaç tamsayı değeri vardır?

- A) 10 B) 9 C) 8 D) 7 E) 6

3.

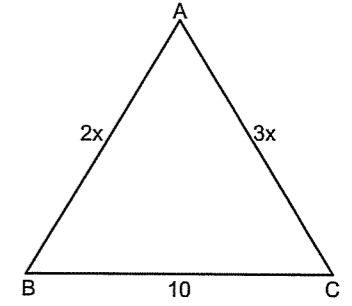


Çevre(ABC)'nin en küçük tamsayı değeri kaçtır?

- A) 20 B) 21 C) 22 D) 18 E) 19

Bu soru tipleri tam sazanlıktır. Çok dikkatli olmanız gerekir. Çünkü kenarlara tamsayı denmemiş. Önemli olan çevrenin tamsayı olması.

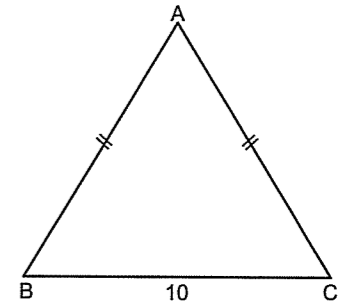
4.



Çevre(ABC)'nin en büyük tamsayı değeri kaçtır?

- A) 42 B) 48 C) 54 D) 59 E) 62

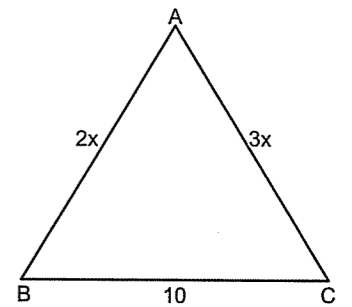
5.



Üçgenin kenarları tamsayı olduğuna göre, Çevre(ABC)'nin en küçük değeri kaçtır?

- A) 22 B) 20 C) 19 D) 18 E) 15

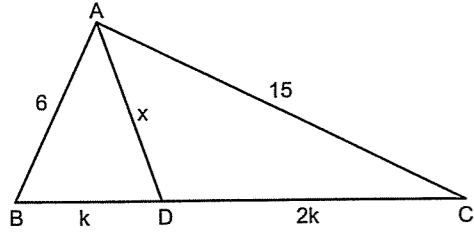
6.



Üçgenin kenarları tamsayı olduğuna göre, Çevre(ABC)'nin en büyük değeri kaçtır?

- A) 52 B) 54 C) 55 D) 96 E) 58

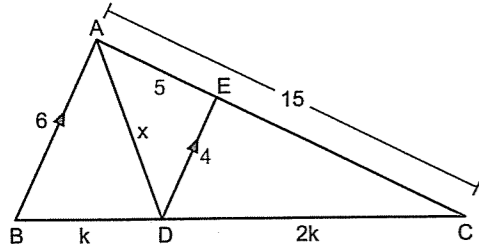
Örnek Soru:



x'in alacağı kaç tamsayı değeri kaçtır?

Çözüm:

İki kenarı bilinen üçüncü kenarında x olan bir üçgen oluşturalım. Yani D noktasından [AB] ye paralel çizelim.



Temel benzerlikten

$$\frac{2k}{3k} = \frac{|DE|}{6} = \frac{|EC|}{15} \text{ buradan}$$

$|DE| = 4$ ve $|EC| = 10$ bulunur.

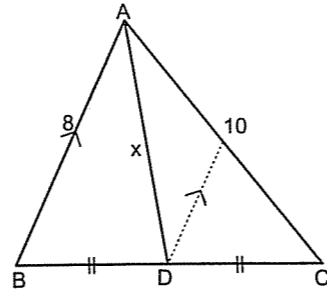
$|AE| = 15 - 10 = 5$ olur.

$$5 - 4 < x < 4 + 5$$

$$1 < x < 9 \text{ olur.}$$

x'in alacağı değerler, 2, 3, 4, 5, 6, 7, 8 dir. Yani x, 7 tamsayı değeri alır.

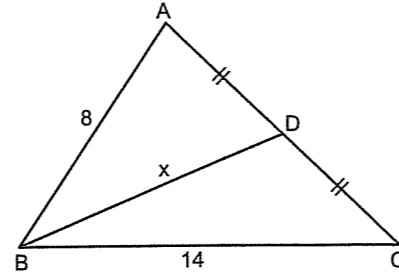
7.



x'in alacağı kaç tamsayı değeri vardır?

- A) 8 B) 7 C) 6 D) 5 E) 4

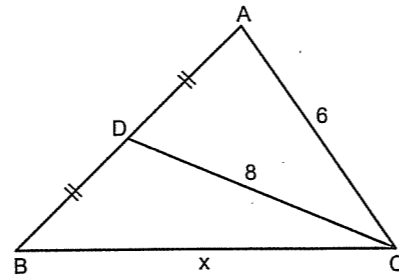
8.



x'in en büyük tamsayı değeri kaçtır?

- A) 9 B) 10 C) 11 D) 12 E) 13

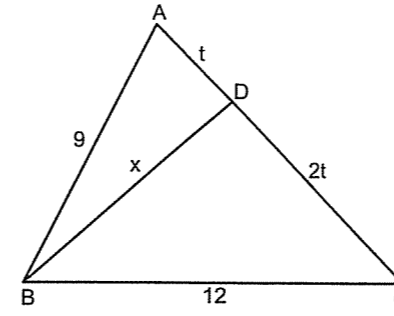
9.



x'in alacağı kaç tamsayı değeri vardır?

- A) 15 B) 14 C) 13 D) 12 E) 11

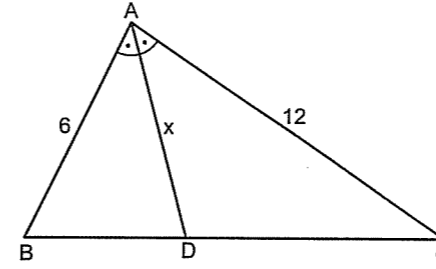
1.



x'in alacağı en küçük tamsayı değeri kaçtır?

- A) 1 B) 2 C) 3 D) 4 E) 5

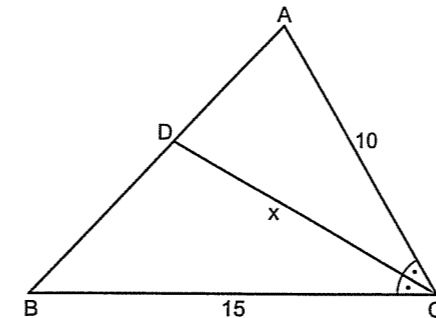
2.



x'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 24 B) 25 C) 26 D) 27 E) 28

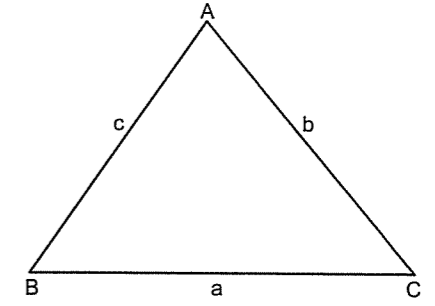
3.



x'in en büyük tamsayı değeri kaçtır?

- A) 11 B) 12 C) 13 D) 14 E) 15

4.



Yukarıdaki üçgende,

$\hat{B} = 90^\circ$ ise $b = \sqrt{a^2 + c^2}$ dir. Pisagor bağıntısından

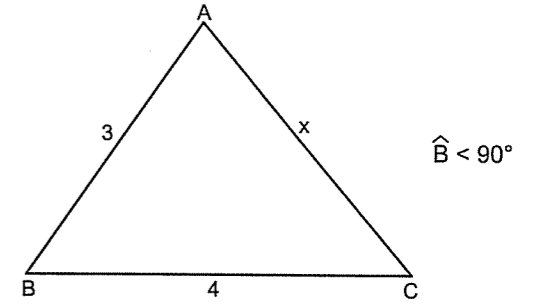
$\hat{B} < 90^\circ$ ise $|a - c| < b < \sqrt{a^2 + c^2}$

$\hat{B} > 90^\circ$ ise $\sqrt{a^2 + c^2} < b < a + c$ dir.



90° den küçük ve büyük sorularında ilk önce eşit gibi düşünülüp kenar bulunur. 90° küçük ise bulunan değerden küçük, 90° büyük ise bulunan değerden büyük alınır.

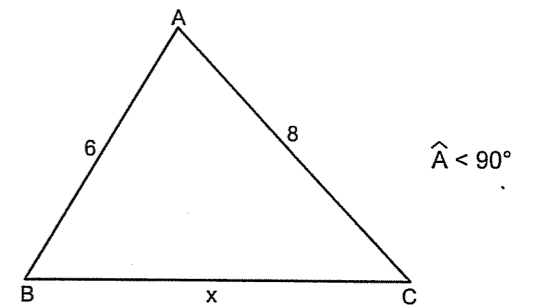
4.



x'in en büyük tamsayı değeri kaçtır?

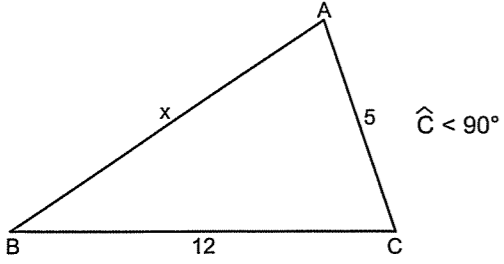
- A) 3 B) 4 C) 5 D) 6 E) 7

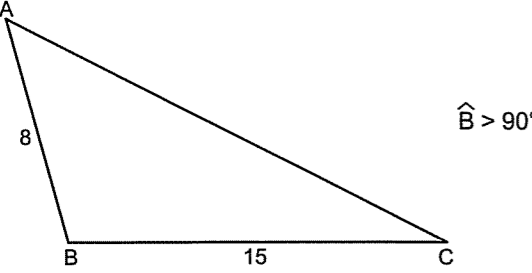
5.

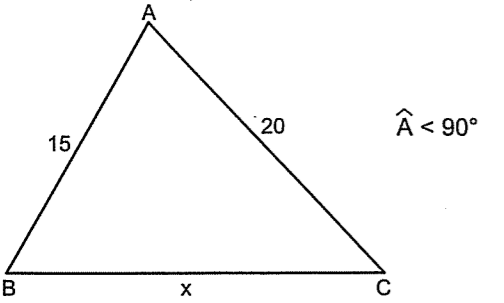


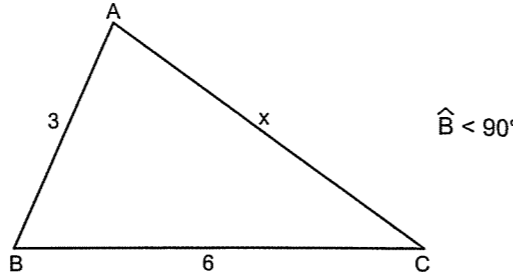
x'in alacağı kaç tamsayı değeri vardır?

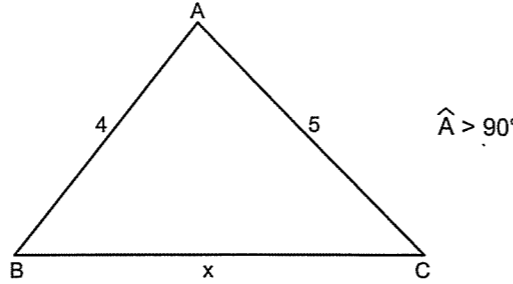
- A) 10 B) 9 C) 8 D) 7 E) 6

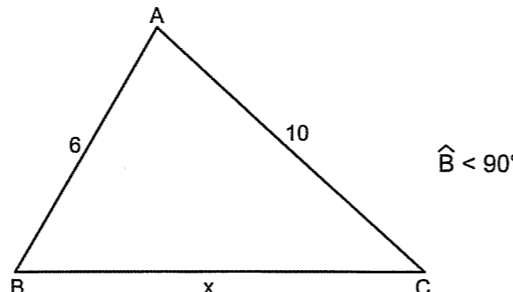
6.  $\hat{C} < 90^\circ$
x'in alacağı tamsayı değerleri toplamı kaçtır?
A) 40 B) 48 C) 50 D) 52 E) 54


7.  $\hat{B} > 90^\circ$
x'in en küçük tamsayı değeri kaçtır?
A) 16 B) 17 C) 18 D) 19 E) 20

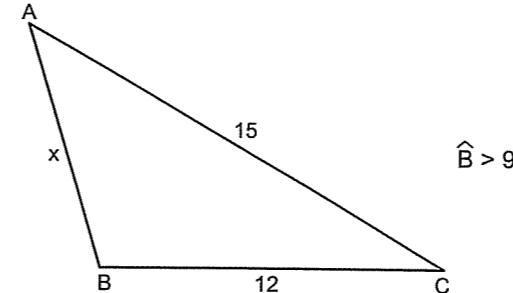
8.  $\hat{A} < 90^\circ$
x'in alacağı kaç tamsayı değeri vardır?
A) 19 B) 21 C) 23 D) 25 E) 27

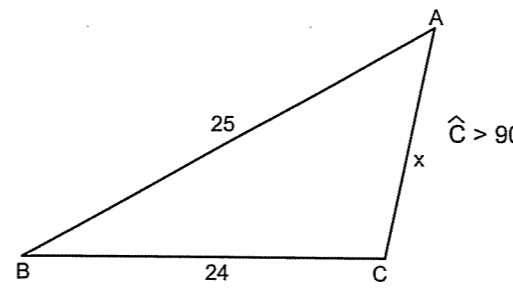
9.  $\hat{B} < 90^\circ$
x'in en büyük tamsayı değeri kaçtır?
A) 3 B) 4 C) 5 D) 6 E) 7

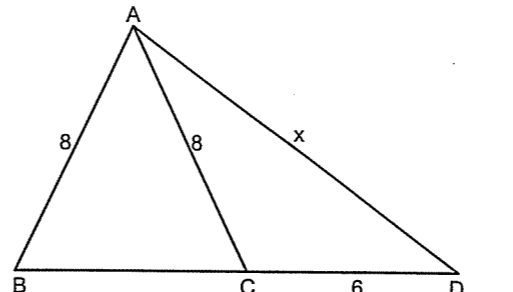
10.  $\hat{A} > 90^\circ$
x'in en küçük tamsayı değeri kaçtır?
A) 6 B) 7 C) 8 D) 9 E) 10

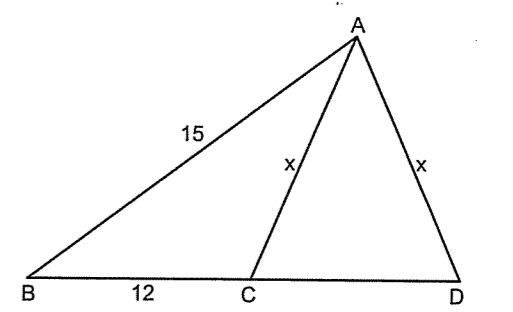
11.  $\hat{B} < 90^\circ$
x'in en küçük tamsayı değeri kaçtır?
A) 7 B) 8 C) 9 D) 10 E) 11

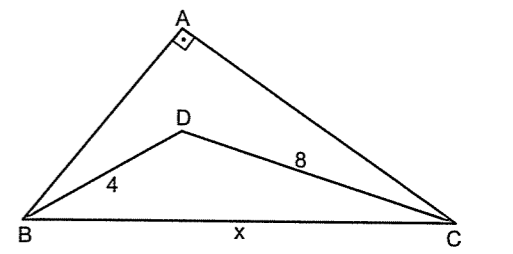
 Bu tip sorularda \hat{B} açısı 6 ile 10 arasında olmadığından 90° gibi düşünerek işlem yaparsanız hata yapabilirsiniz. Peki ne yapacağız?
 $\hat{B} < 90^\circ$ ise $|6-x| < 10 < \sqrt{6^2+x^2}$ eşitsizliğini düzenleyerek x'in aralığını bulun.

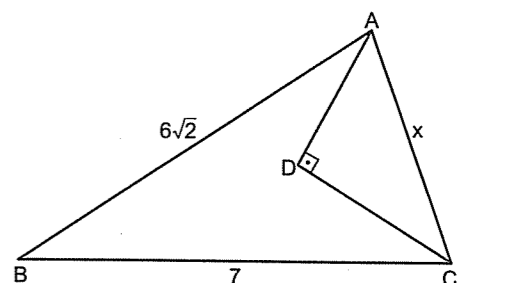
1.  $\hat{B} > 90^\circ$
x'in en büyük tamsayı değeri kaçtır?
A) 7 B) 8 C) 9 D) 10 E) 11

2.  $\hat{C} > 90^\circ$
x'in alacağı tamsayı değerleri toplamı kaçtır?
A) 16 B) 18 C) 20 D) 22 E) 25

3.  $\hat{A} < 90^\circ$
x'in alacağı kaç tamsayı değeri vardır?
A) 3 B) 5 C) 7 D) 9 E) 11

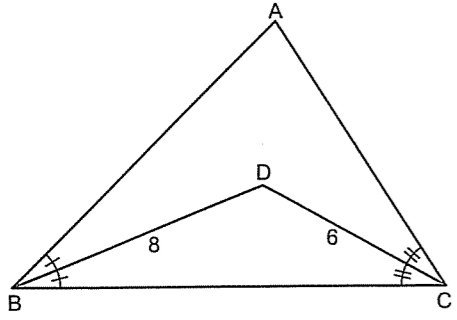
4.  $\hat{A} < 90^\circ$
x'in en büyük tamsayı değeri kaçtır?
A) 11 B) 10 C) 9 D) 8 E) 7

5.  $\hat{A} = 90^\circ$
x'in en küçük tamsayı değeri kaçtır?
A) 5 B) 6 C) 7 D) 8 E) 9

6.  $\hat{D} = 90^\circ$
x'in en büyük tamsayı değeri kaçtır?
A) 7 B) 8 C) 9 D) 10 E) 11

Şu soruda, üçgende açılardan $\hat{D} = 90 + \frac{\hat{A}}{2}$ olduğunu yani, $\hat{D} > 90^\circ$ olduğunu görmek lâzım.

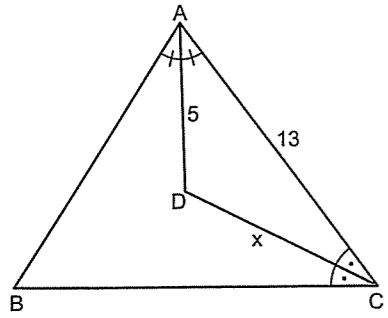
7.



x'in en küçük tamsayı değeri kaçtır?

- A) 10 B) 11 C) 12 D) 13 E) 14

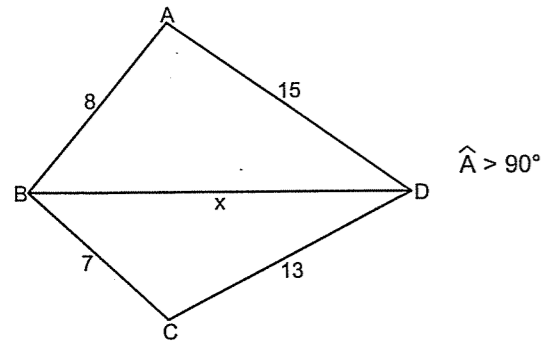
8.



x'in en büyük tamsayı değeri kaçtır?

- A) 9 B) 10 C) 11 D) 12 E) 13

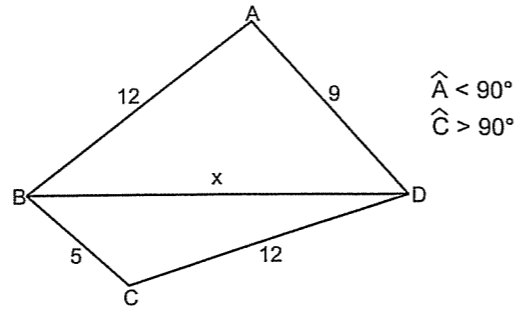
9.



x'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 37 B) 36 C) 35 D) 34 E) 32

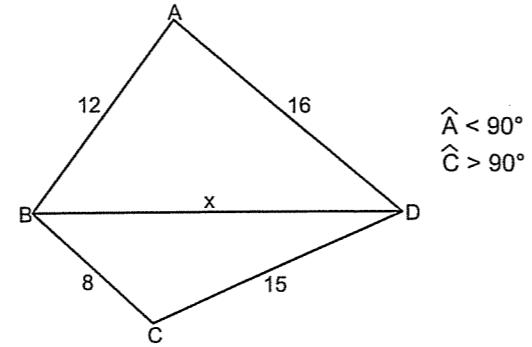
10.



x'in alacağı kaç tamsayı değeri vardır?

- A) 1 B) 2 C) 3 D) 4 E) 5

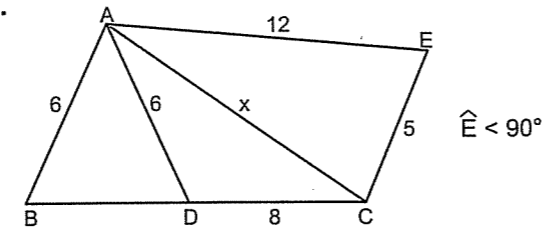
11.



x'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 39 B) 37 C) 36 D) 34 E) 32

12.



x'in alacağı tamsayı değerleri toplamı kaçtır?

- A) 19 B) 21 C) 23 D) 24 E) 25