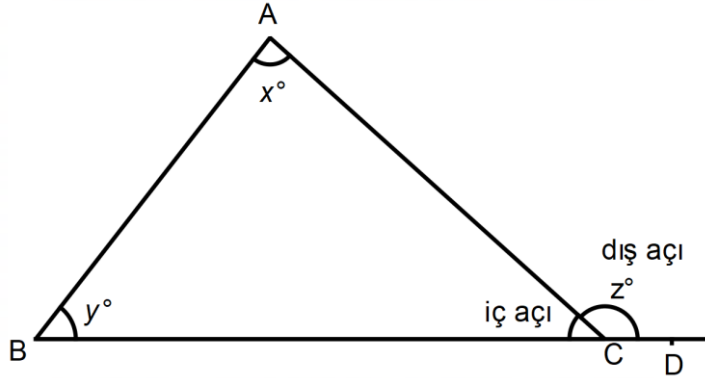




1- Bir Üçgende İki İç Açının Toplamı Üçüncü Açının Dış Açısına Eşittir.

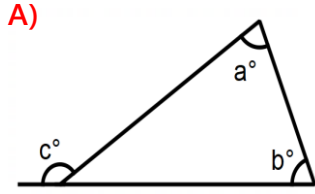


$$m(\widehat{BAC}) + m(\widehat{ABC}) = m(\widehat{ACD})$$

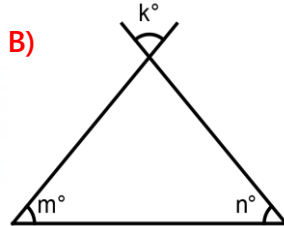
$$x^\circ + y^\circ = z^\circ$$

Örnekler :

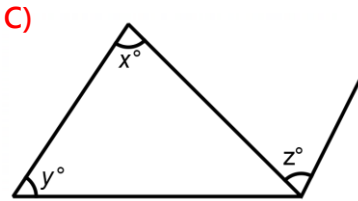
1. Aşağıdakilerden hangisi veya hangileri doğrudur?



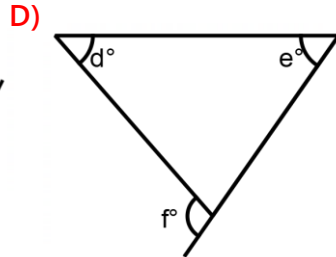
$$a^\circ + b^\circ = c^\circ$$



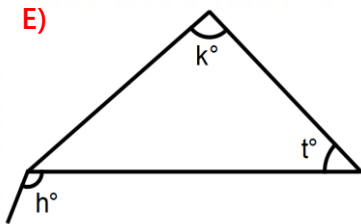
$$m^\circ + n^\circ = k^\circ$$



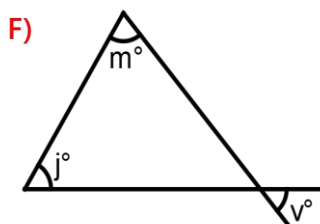
$$x^\circ + y^\circ = z^\circ$$



$$d^\circ + e^\circ = f^\circ$$

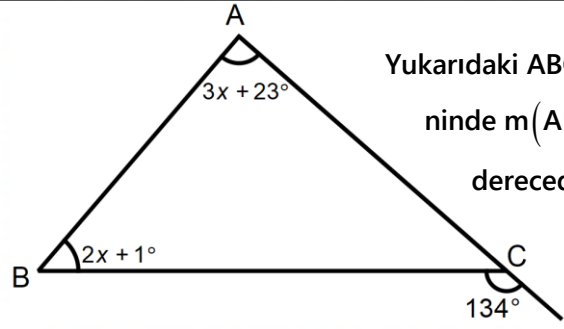


$$k^\circ + t^\circ = h^\circ$$



$$j^\circ + m^\circ = v^\circ$$

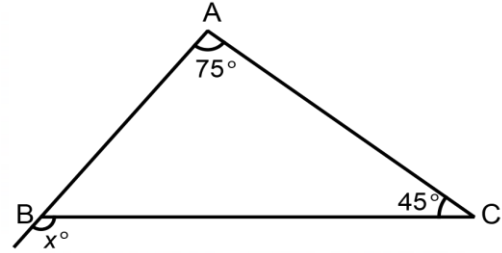
2.



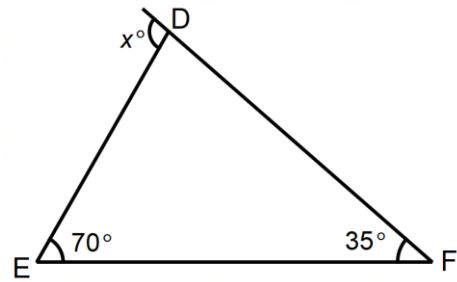
Yukarıdaki ABC üçgeninde $m(\widehat{ABC})$ kaç derecedir?

3. Aşağıdaki üçgenlerde x açısını bulun.

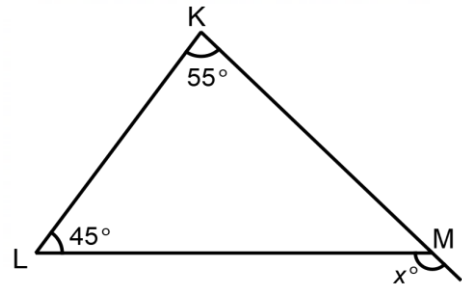
A)



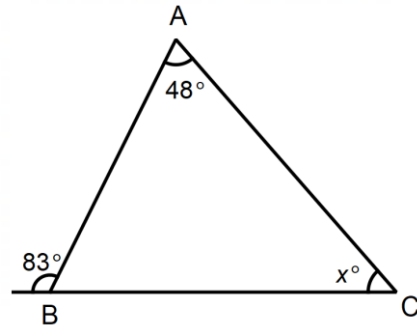
B)



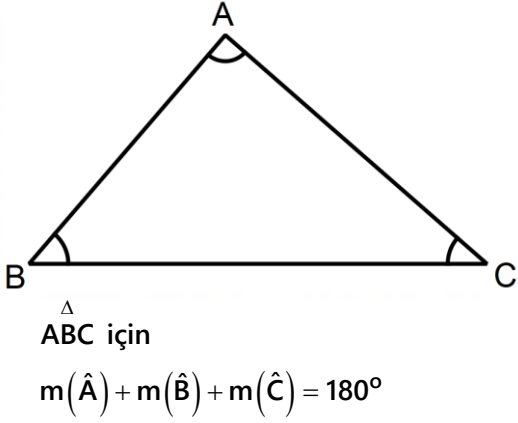
C)



D)

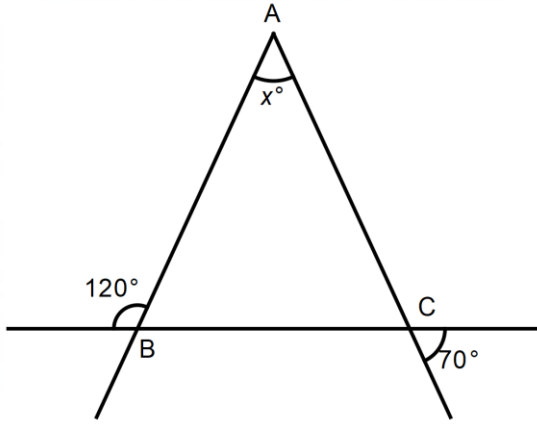


2 - Üçgenin İç Açıları Toplamı 180 derecedir.



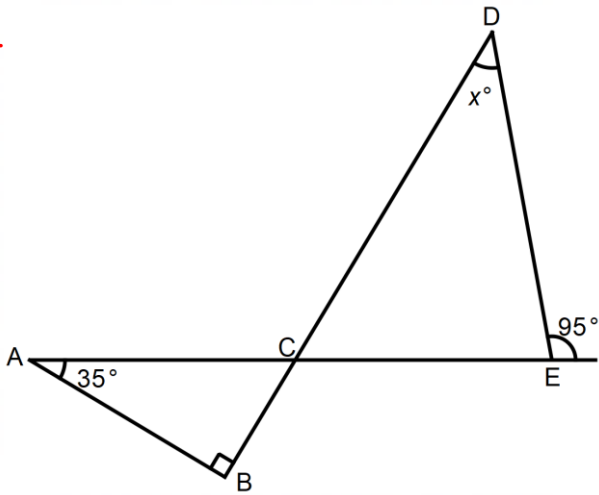
Örnekler :

1.



Yukarıda ki şekile göre x kaç derecedir?

2.

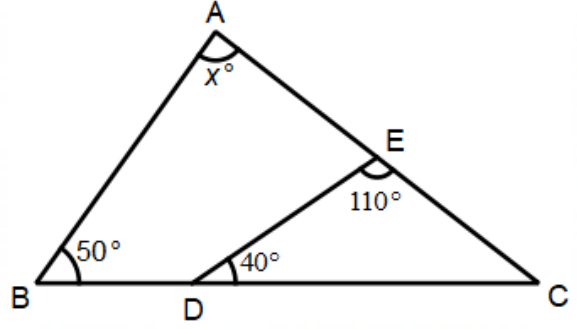


Yukarıda ki şekilde

$$|AB| \perp |BD|$$

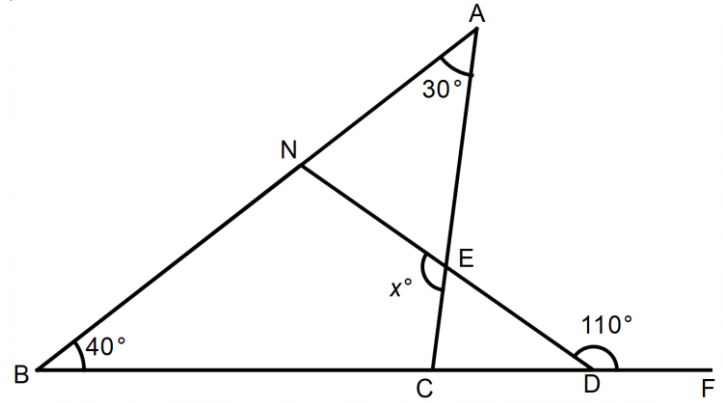
Buna göre x kaç derecedir?

3.



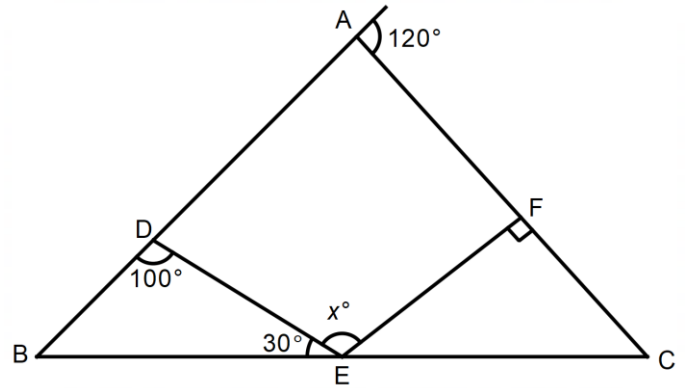
ABC ve DEC birer üçgen olmak üzere,
 x açısı kaç derecedir?

4.



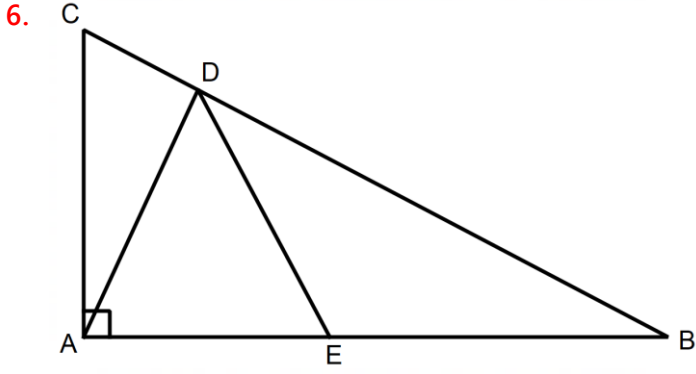
ABC ve BDN birer üçgen olmak üzere,
 x kaç derecedir?

5.



Yukarıda ki ABC üçgeninde,
 $|EF| \perp |AC|$ ise $m(\hat{D\hat{E}F})$ kaç derecedir?



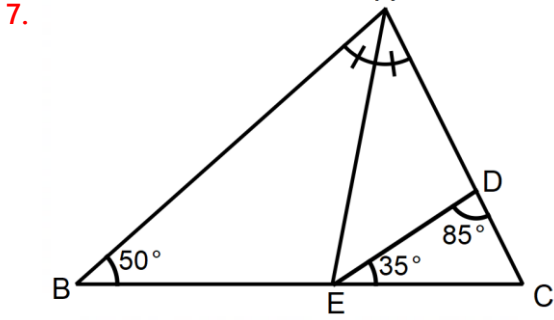


Yukarıdaki ABC dik üçgeninde

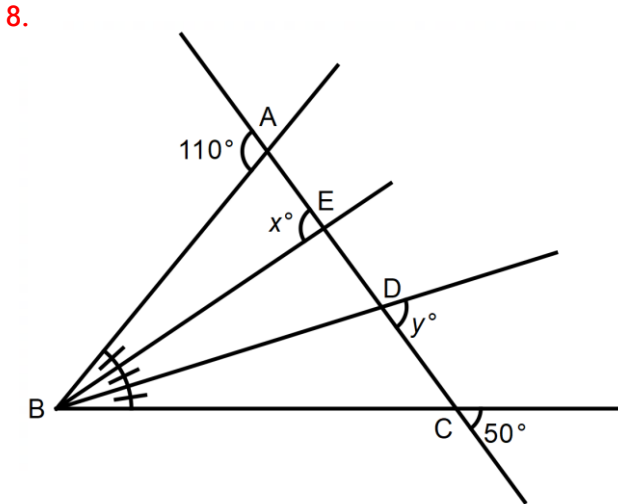
$$m(\widehat{CAD}) = m(\widehat{CBA}) = 20^\circ$$

$$m(\widehat{DEB}) = 100^\circ$$

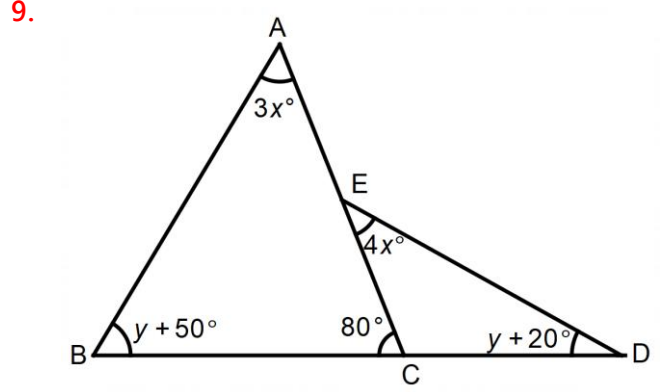
Buna göre $m(\widehat{ADE})$ kaç derecedir?



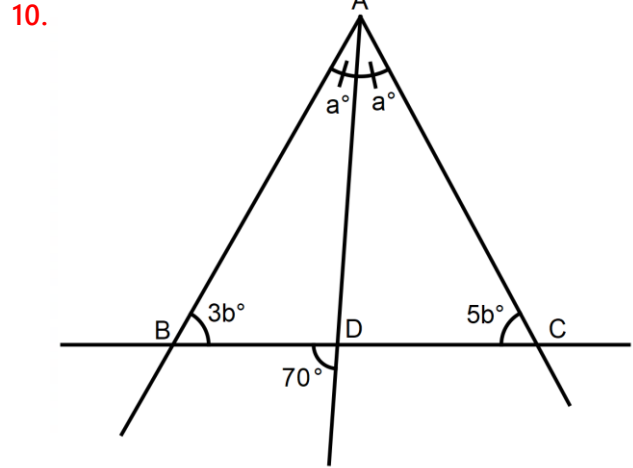
Yukarıdaki ABC üçgeninde $[AE]$ açıortay ise $m(\widehat{BAE})$ kaç derecedir?



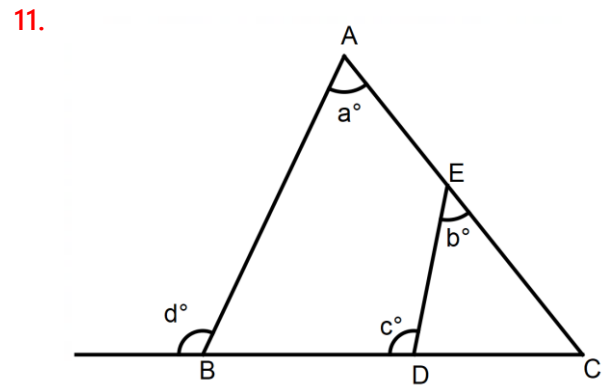
Yukarıda ki şekile göre $x+y$ kaç derecedir?



Yukarıdaki şekilde $m(\widehat{CED})$ kaç derecedir?



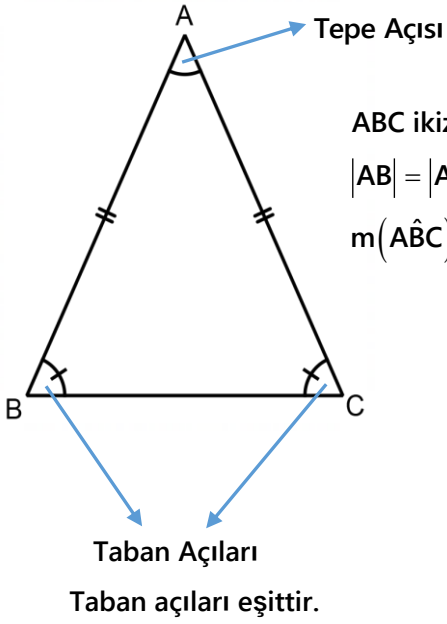
Yukarıdaki ABC üçgeninde $|AD|$ açıortaydır. Buna göre $m(\widehat{BAC})$ kaç derecedir?



Yukarıdaki ABC üçgeninde d'nin a, b, c cinsinden değeri nedir?



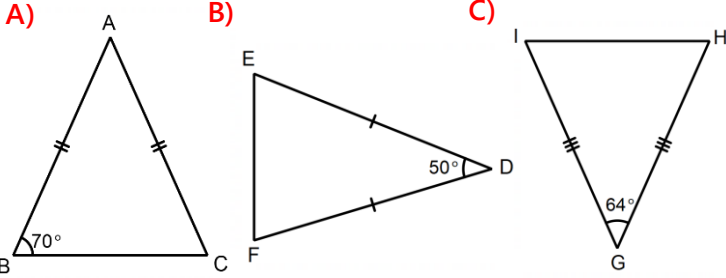
3- İkizkenar Üçgende Açı :



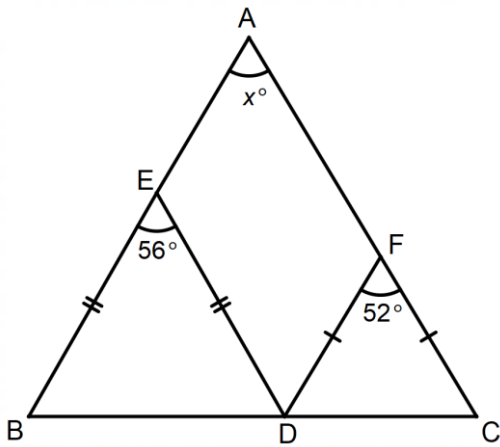
ABC ikizkenar üçgeninde,
 $|AB| = |AC|$ ise
 $m(\hat{ABC}) = m(\hat{ACB})$

Örnekler :

1. Aşağıdaki ikizkenar üçgenlerden hangisinin veya hangilerinin tepe açısı taban açılarından büyüktür?

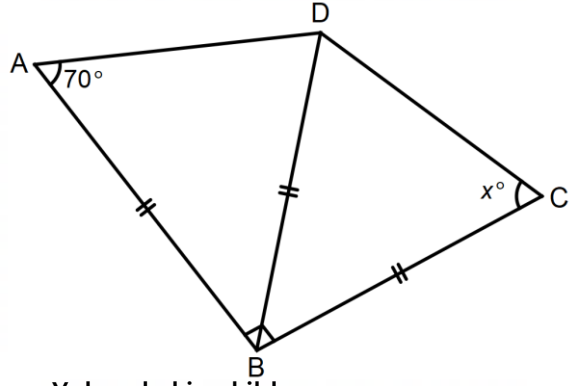


2.



ABC üçgen, $|EB| = |ED|$, $|FD| = |FC|$
 $m(\hat{BED}) = 56^\circ$ $m(\hat{DFC}) = 52^\circ$
 Buna göre $m(\hat{BAC})$ kaç derecedir?

3.



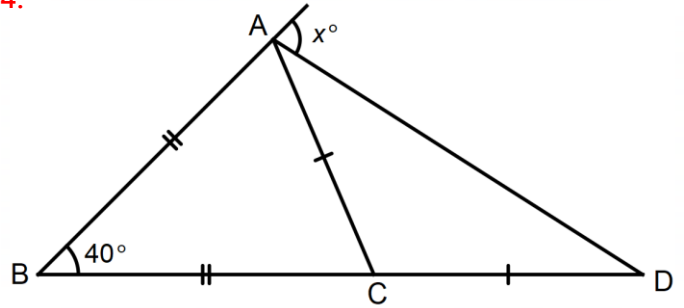
Yukarıda ki şekilde,

$$|BA| = |BD| = |BC|$$

$$|BA| \perp |BC|$$

Buna göre x açısı kaç derecedir?

4.

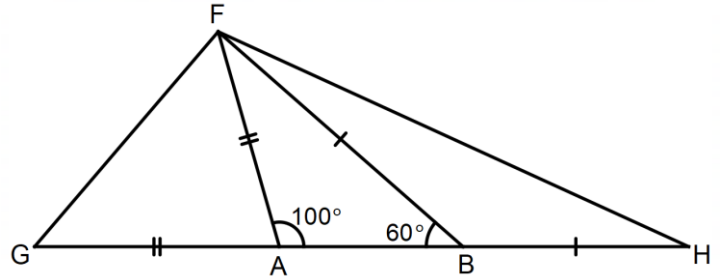


ABD üçgeninde,

$$|BA| = |BC| \text{ , } |CA| = |CD|$$

Buna göre x açısı kaç derecedir?

5.



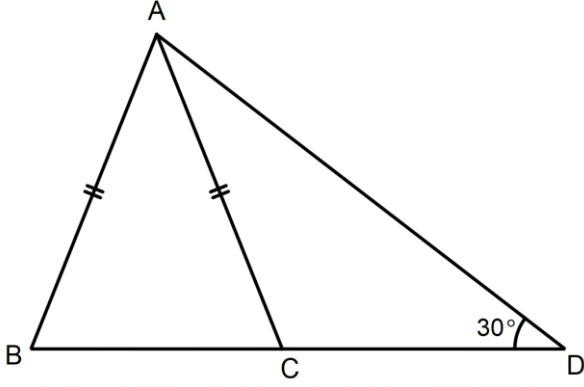
FGH üçgeninde,

$$|GA| = |AF| \text{ , } |FB| = |BH|$$

$$m(\hat{FAH}) = 100^\circ \quad m(\hat{FBG}) = 60^\circ$$

Buna göre $m(\hat{GFH})$ kaç derecedir?

6.

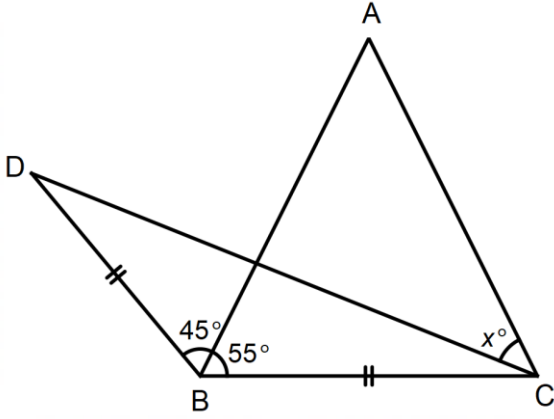


ABD ikizkenar üçgeninde

$$|DA| = |DB| \quad |AB| = |AC|$$

Buna göre $m(\widehat{CAD})$ kaç derecedir?

7.

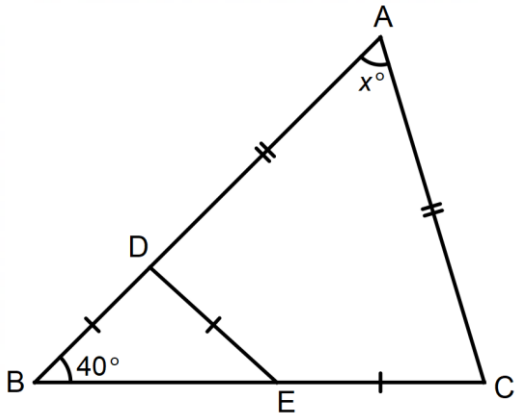


ABC ikizkenar üçgeninde $|AB| = |AC|$

DBC ikizkenar üçgeninde $|BC| = |BD|$

Buna göre x açısı kaç derecedir?

8.

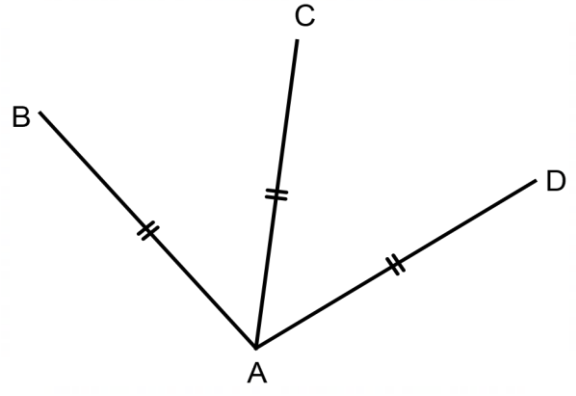


Yukarıdaki ABC üçgeninde,

$$|BD| = |DE| = |EC| \quad |AD| = |AC| \quad m(\widehat{ABC}) = 40^\circ$$

Buna göre x kaç derecedir?

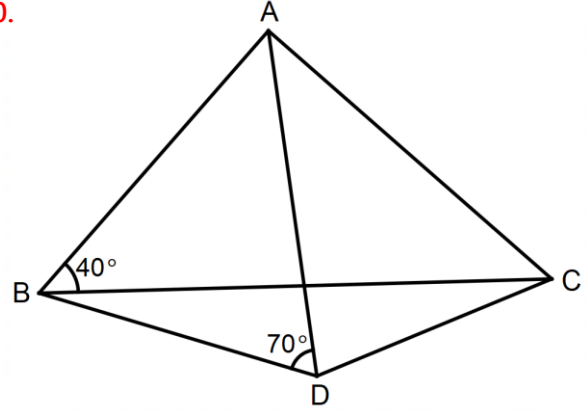
9.



Yukarıdaki şekilde $|AB| = |AC| = |AD|$

Buna göre B, C, D noktalarının tümünü çizgi çekerek birleştirirsek kaç tane ikizkenar üçgen oluşur?

10.

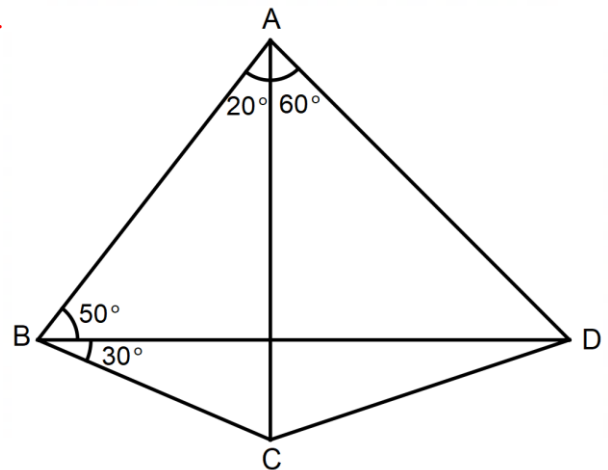


ABCD dörtgeninde,

$$|AB| = |AD| = |AC| \quad m(\widehat{ABC}) = 40^\circ \quad m(\widehat{ADB}) = 70^\circ$$

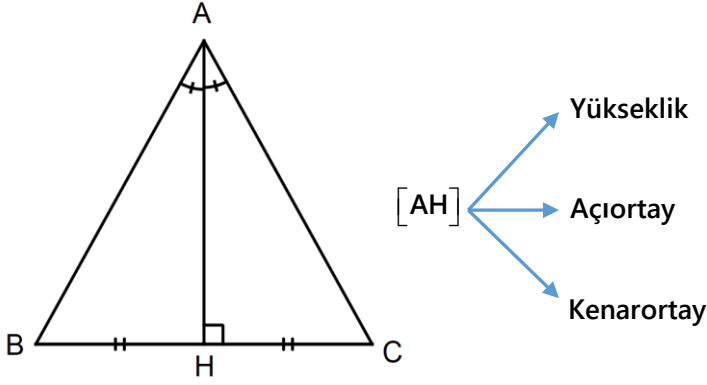
$m(\widehat{BCD})$ kaç derecedir?

11.



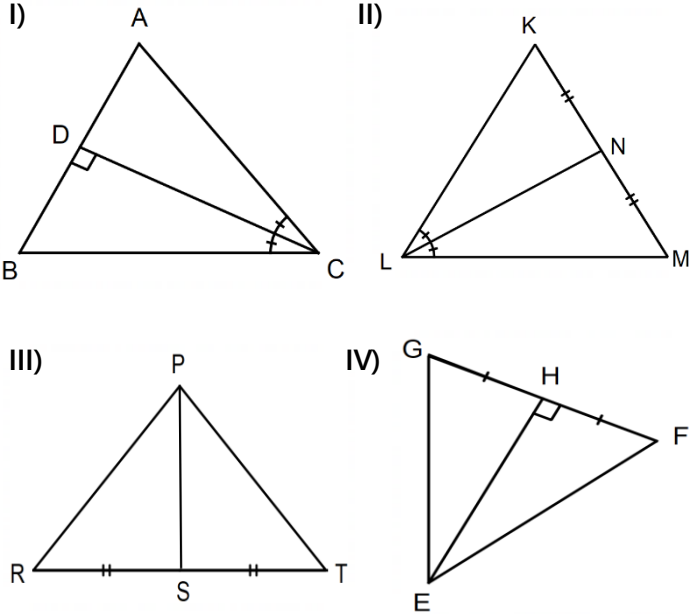
Yukarıdaki ABCD dörtgeninde $m(\widehat{BDC})$ kaç derecedir?

İkizkenar Üçgeni Farketme

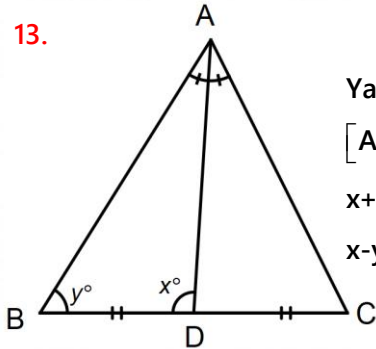


Örnekler :

12. Aşağıdaki üçgenlerden hangisi veya hangileri kesinlikle ikizkenar üçgendir?

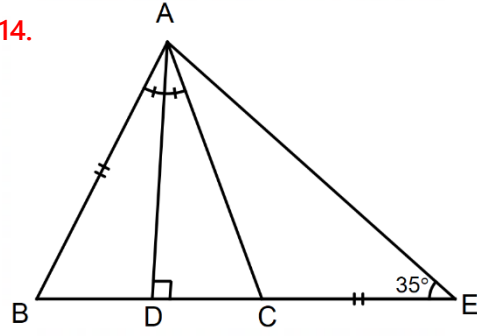


13.



Yandaki ABC üçgeninde
 $[AD]$ açıortay, $[BD] = [DC]$
 $x + y = 170^\circ$ ise
 $x - y$ kaç derecedir?

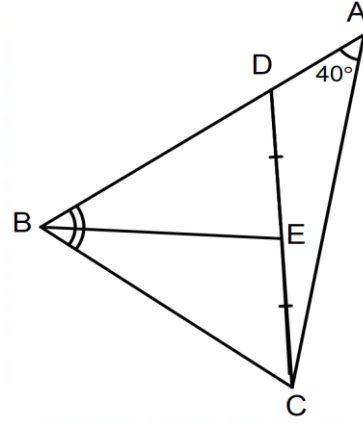
14.



Buna göre $m(\hat{B}AD)$ kaç derecedir?

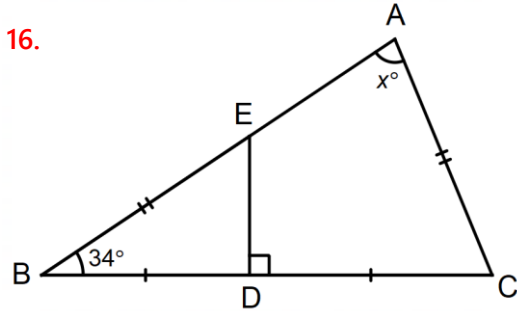
Yandaki şekilde
 $[AD]$ açıortay,
 $[AD] \perp [BE]$
 $[AB] = [CE]$
 $m(\hat{B}EA) = 35^\circ$

15.



Yandaki şekilde
 $[BE]$ açıortay
 $[DE] = [EC]$
 $[AB] = [AC]$
 $m(\hat{C}AB) = 40^\circ$
 $m(\hat{A}BC)$ kaç derecedir?

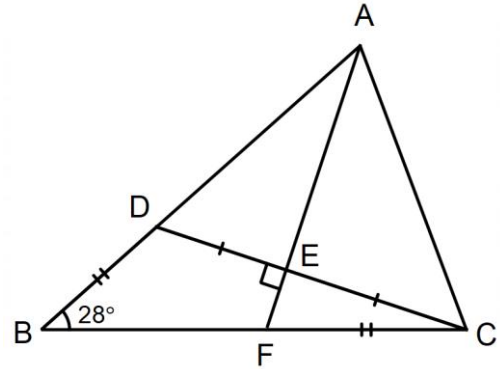
16.



Buna göre x kaç derecedir?

Yandaki şekilde
 $[ED] \perp [BC]$
 $[BD] = [DC]$
 $[AC] = [BE]$
 $m(\hat{A}BC) = 34^\circ$

17.

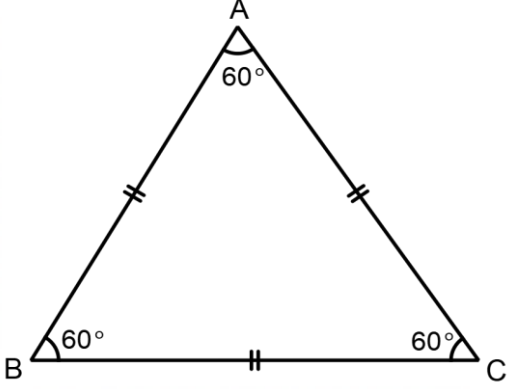


ABC üçgeninde $[AF] \perp [DC]$
 $[DE] = [EC]$, $[BD] = [FC]$
 $m(\hat{A}BC) = 28^\circ$ ise $m(\hat{B}AC)$ kaç derecedir?

4 - Eşkenar Üçgende Açı :

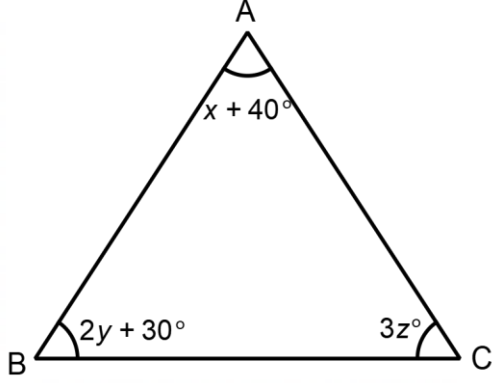


- * Tüm kenarları eşit uzunluktadır.
- * Tüm açıları 60 derecedir.



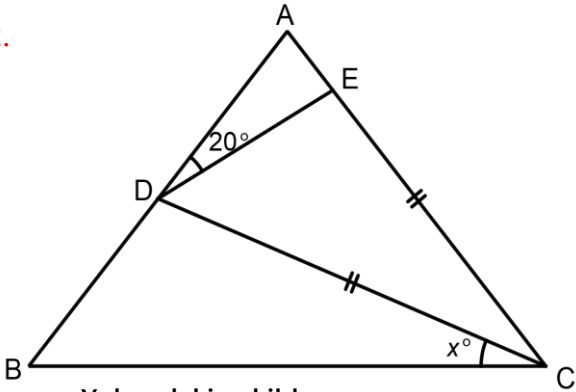
Örnekler :

1.



ABC eşkenar üçgen ise $x+y+z$ toplamı kaç derecedir?

2.



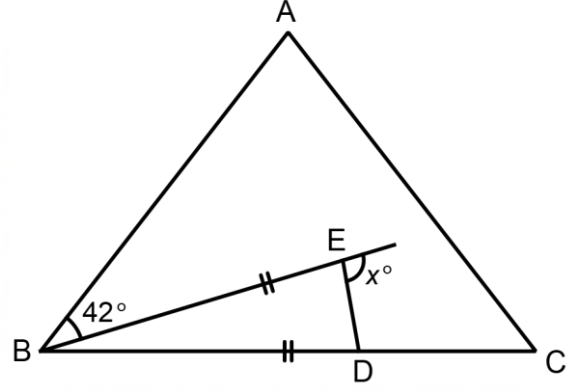
Yukarıdaki şekilde,

ABC eşkenar üçgen,

$$|CD| = |CE|$$

Buna göre x açısı kaç derecedir?

3.

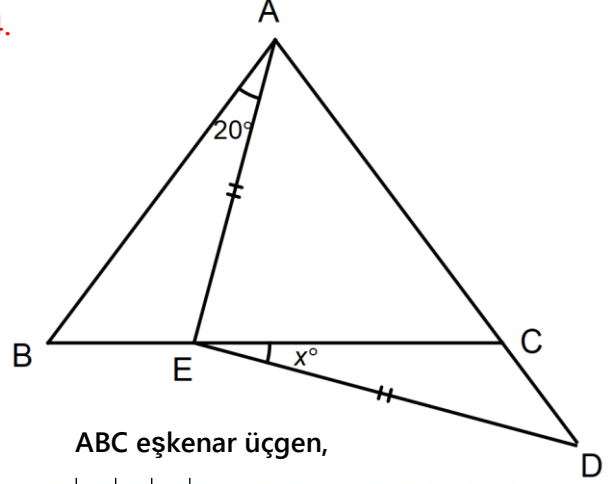


ABC eşkenar üçgen,

$$|BE| = |BD| \text{ ve } m(\widehat{ABE}) = 42^\circ \text{ ise}$$

x açısı kaç derecedir?

4.

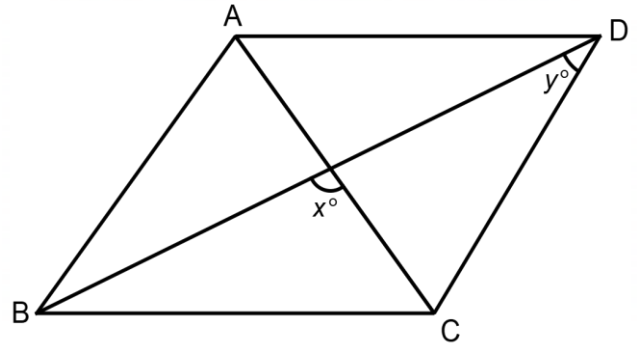


ABC eşkenar üçgen,

$$|AE| = |ED|$$

Buna göre $m(\widehat{DEC})$ kaç derecedir?

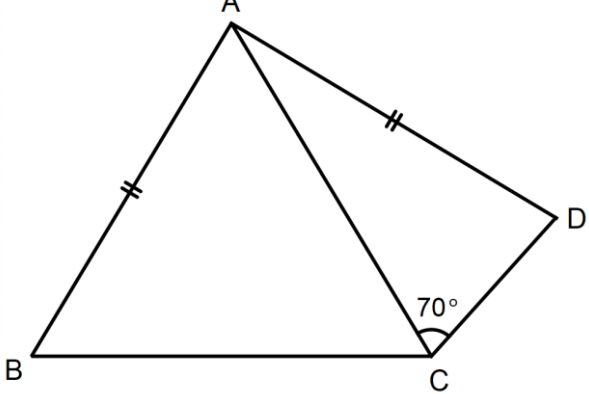
5.

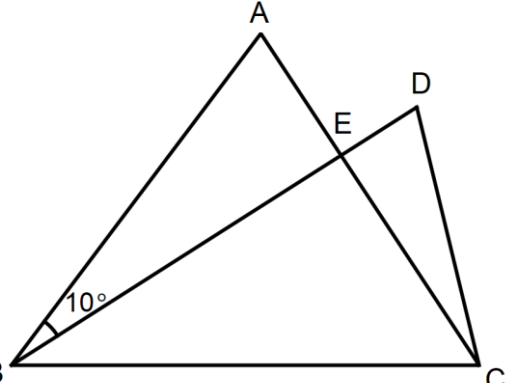


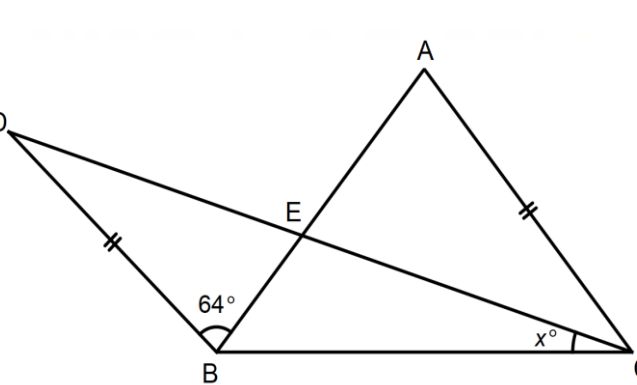
Yukarıdaki şekilde,

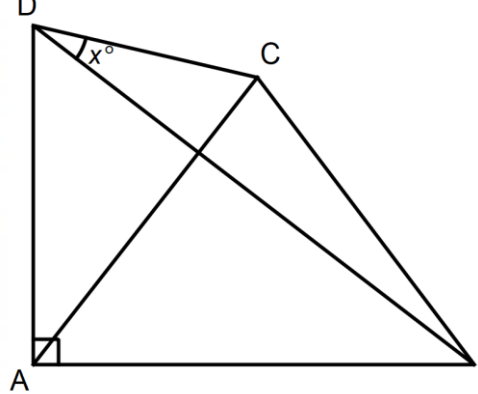
ABC ve ACD eşkenar üçgen,

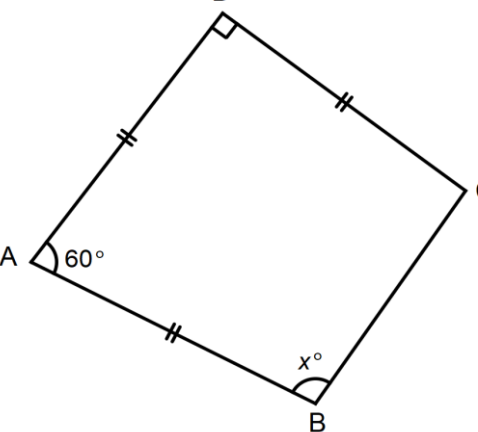
Buna göre $x + y$ toplamı kaç derecedir?

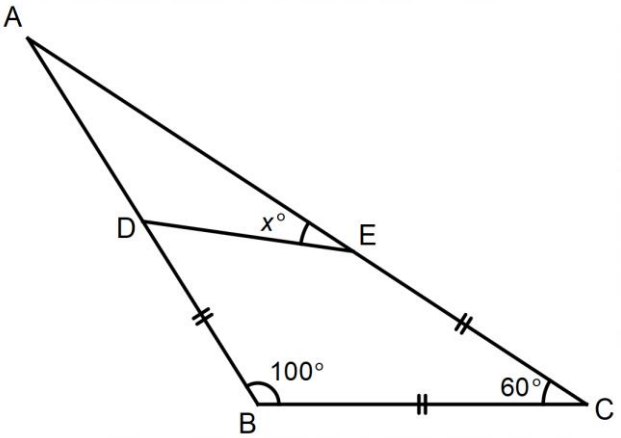
6. 
- ABC eşkenar üçgen,
 $|AB| = |AD|$ $m(\angle ACD) = 70^\circ$ ise $m(\angle B\hat{A}D)$ kaç derecedir?

7. 
- Yukarıdaki şekilde ABC eşkenar üçgen,
 $|BD| = |AC|$ ise $m(\angle A\hat{C}D)$ kaç derecedir?

8. 
- Yukarıdaki şekilde ABC eşkenar üçgen,
 $|BD| = |AB|$ ise $m(\angle B\hat{C}D)$ kaç derecedir?

9. 
- Yukarıdaki şekilde,
 DAB ikizkenar dik üçgen, ABC eşkenar üçgendir.
 Buna göre x kaç derecedir?

10. 
- Yukarıdaki ABCD dörtgeninde,
 $|BA| = |AD| = |DC|$ $m(\angle D\hat{A}B) = 60^\circ$ $m(\angle A\hat{D}C) = 90^\circ$
 Buna göre x kaç derecedir?

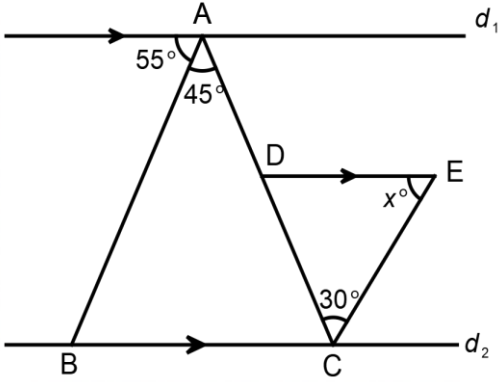
11. 
- ABC üçgeninde,
 $|DB| = |BC| = |CE|$ $m(\angle A\hat{B}C) = 100^\circ$ $m(\angle B\hat{C}A) = 60^\circ$
 $m(\angle D\hat{E}A)$ kaç derecedir?



5- Paralellik Olan Sorular :

Örnekler :

1.

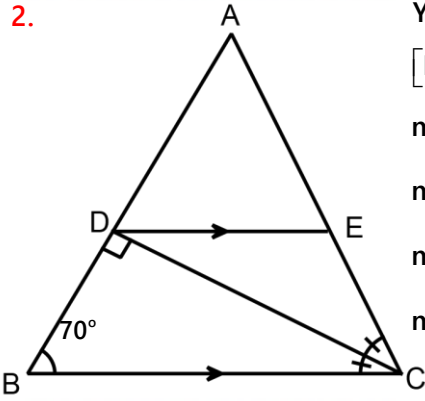


Yukarıdaki şekilde

$$d_1 \parallel [DE] \parallel d_2$$

Buna göre x kaç derecedir?

2.



Yandaki şekilde

$$[DE] \parallel [BC]$$

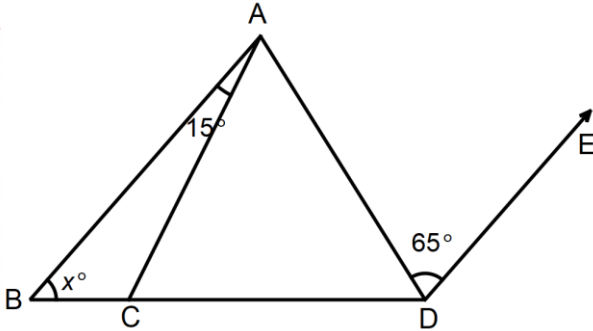
$$m(\hat{A}BC) = 70^\circ$$

$$m(\hat{B}DC) = 90^\circ$$

$$m(\hat{B}CD) = m(\hat{A}CD)$$

$$m(\hat{A}ED) \text{ kaç derecedir?}$$

3.

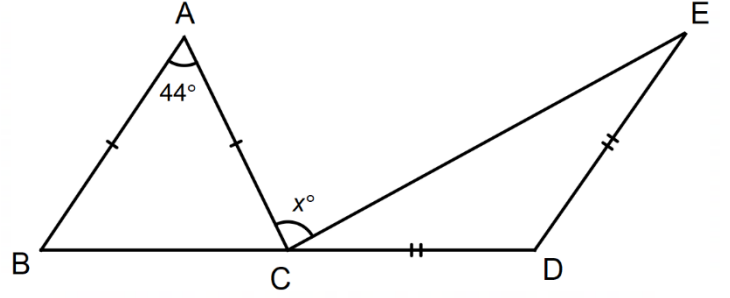


$$[AB] \parallel [DE] \text{ ve } |AC| = |AD|$$

$$m(\hat{B}AC) = 15^\circ \quad m(\hat{A}DE) = 65^\circ \text{ ise}$$

$$m(\hat{A}BC) \text{ kaç derecedir?}$$

4.



ABC ve CDE üçgenlerinde,

$$m(\hat{B}AC) = 44^\circ$$

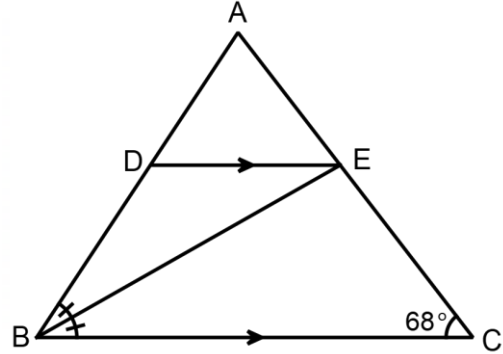
$$|AB| = |AC|$$

$$|DE| = |DC|$$

$$[AB] \parallel [DE]$$

Buna göre x açısı kaç derecedir?

5.



Yandaki şekilde,

$$m(\hat{B}CA) = 68^\circ$$

$$|DA| = |DE|$$

$$[DE] \parallel [BC]$$

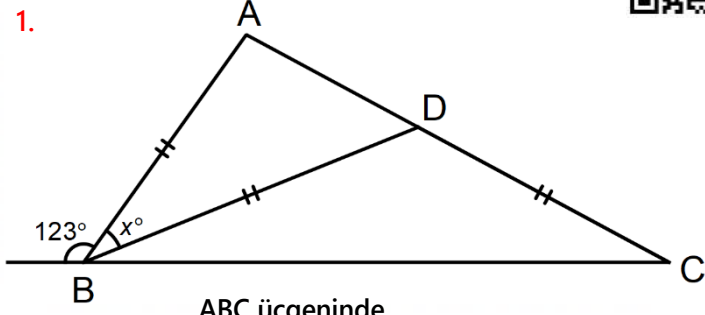
$$[BE] \text{ açıortay}$$

$$m(\hat{D}EB) \text{ kaç derecedir?}$$

6. Harf Vererek Çözmeye Başlanan Açı Soruları :

Örnekler :

1.



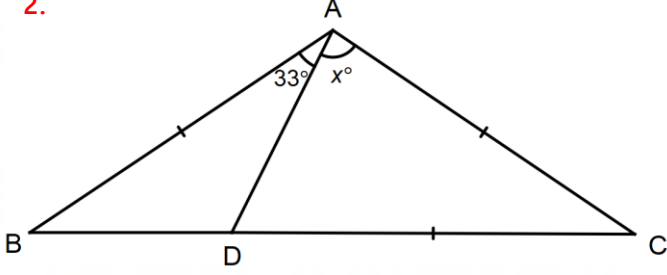
ABC üçgeninde,

$$|AB| = |BD| = |DC|$$

Buna göre x kaç derecedir?



2.

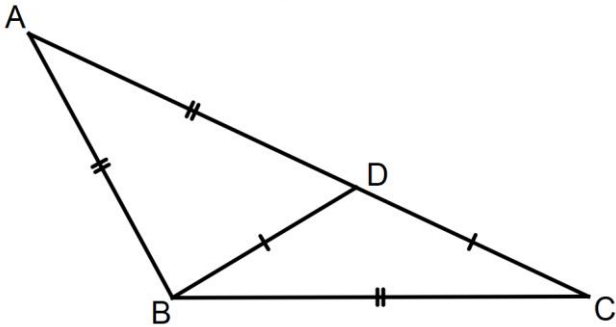


ABC üçgeninde

$$|AB| = |AC| \quad |CD| = |CA|$$

$m(\widehat{BAD}) = 33^\circ$ ise $m(\widehat{DAC})$ kaç derecedir?

3.

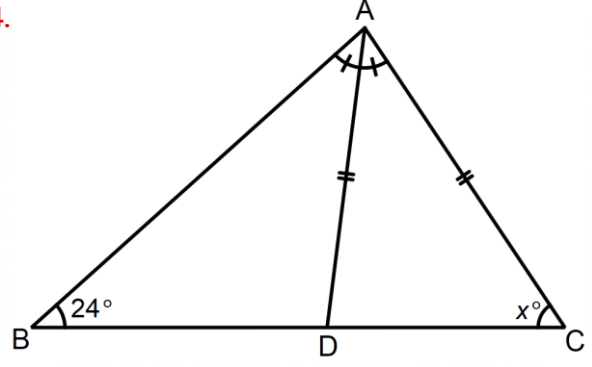


ABC üçgeninde,

$$|AB| = |BC| = |AD| \quad |DC| = |BD|$$

Buna göre $m(\widehat{BAD})$ kaç derecedir?

4.

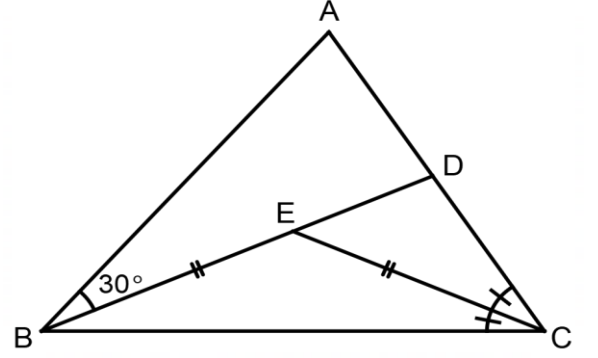


ABC üçgeninde,

$$[AD] \text{ açıortay, } m(\widehat{ABD}) = 24^\circ$$

Buna göre x kaç derecedir?

5.

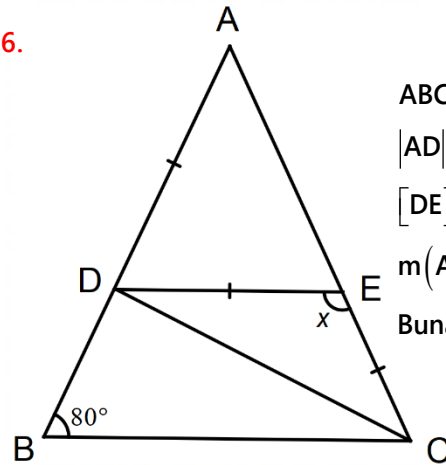


$$|BE| = |EC| \quad |BA| = |BD| \quad m(\widehat{BCE}) = m(\widehat{ECD})$$

$$m(\widehat{ABD}) = 30^\circ$$

Buna göre $m(\widehat{DEC})$ kaç derecedir?

6.



ABC üçgeninde,

$$|AD| = |DE| = |EC|$$

$$[DE] \parallel [BC]$$

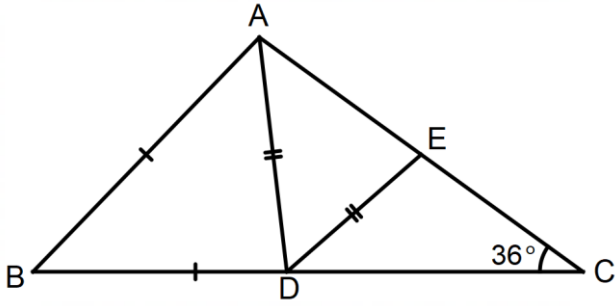
$$m(\widehat{ABC}) = 80^\circ$$

Buna göre x kaç derecedir?





7.



ABC üçgeninde,

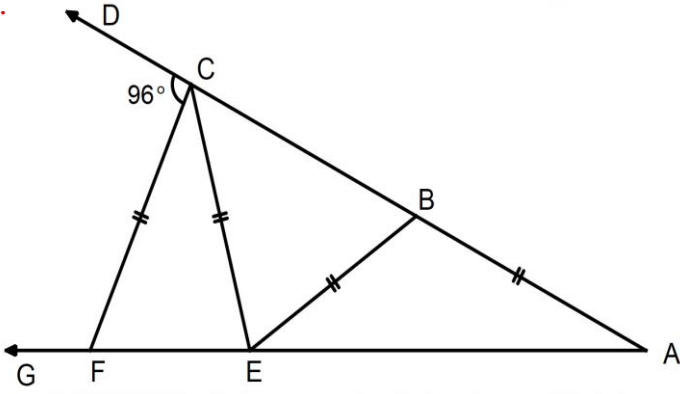
$$|AB| = |BD| \quad |AD| = |DE|$$

$$[AB] \parallel [DE]$$

$$m(\hat{B}CA) = 96^\circ$$

Buna göre $m(\hat{A}BC)$ kaç derecedir?

8.



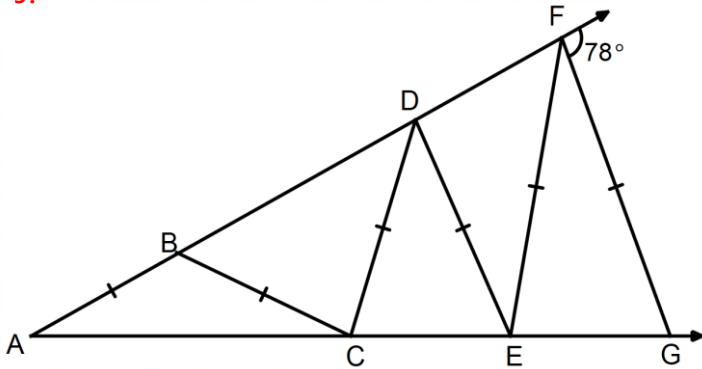
Yukarıdaki şekilde $[AD]$ ve $[AG]$ doğrusaldır.

$$|AB| = |BE| = |EC| = |CF|$$

$$m(\hat{D}CF) = 96^\circ$$

Buna göre $m(\hat{C}FA)$ kaç derecedir?

9.

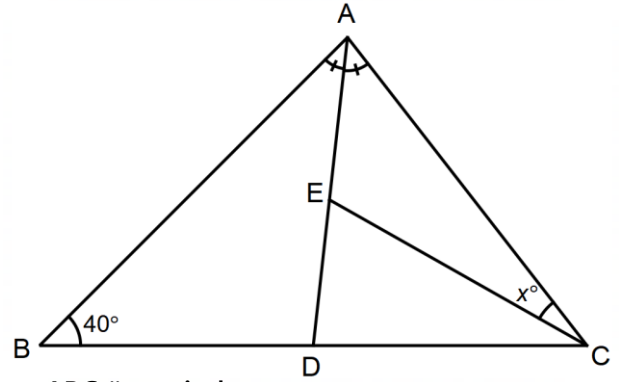


AF ve AG yönlü doğru parçacıkları olmak üzere,

$$|AB| = |BC| = |CD| = |DE| = |EF| = |FG|$$

$m(\hat{A}DC)$ kaç derecedir?

10.



ABC üçgeninde,

$$|CE| = |CD|$$

$$m(\hat{ABC}) = 40^\circ$$

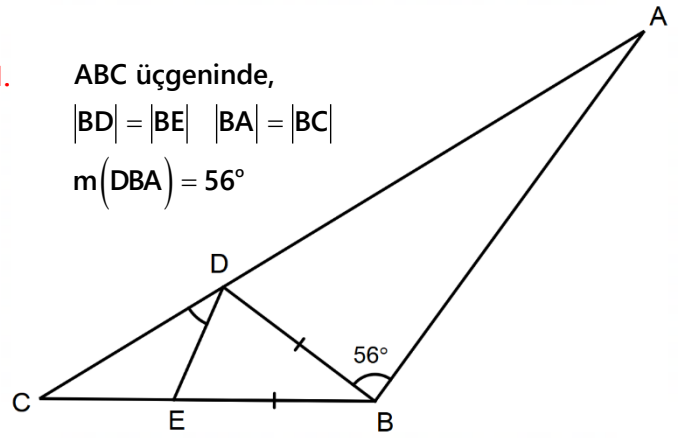
Buna göre $m(\hat{ACE})$ kaç derecedir?

11.

ABC üçgeninde,

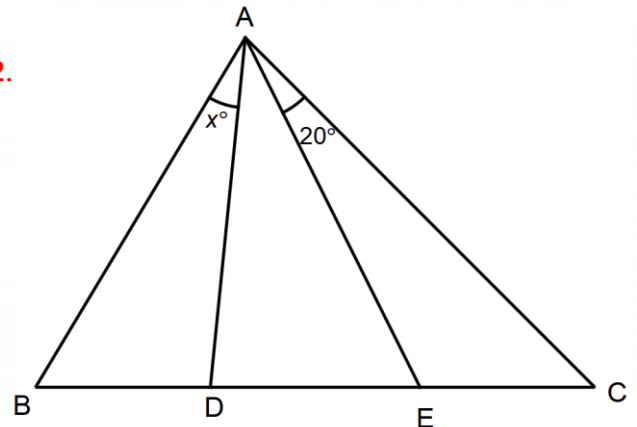
$$|BD| = |BE| \quad |BA| = |BC|$$

$$m(\hat{DBA}) = 56^\circ$$



Buna göre $m(\hat{CDE})$ kaç derecedir?

12.



Yukarıdaki şekilde ABC üçgeninde,

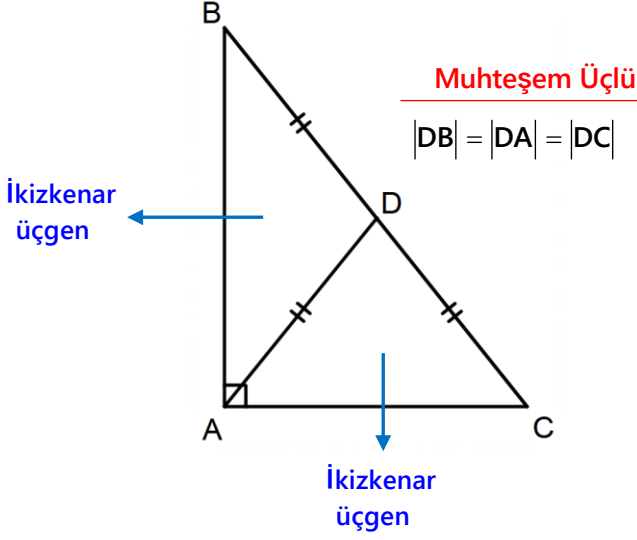
$$|AB| = |BE| \quad |AD| = |DC|$$

$$m(\hat{EAC}) = 20^\circ$$

Buna göre $m(\hat{BAD})$ kaç derecedir?

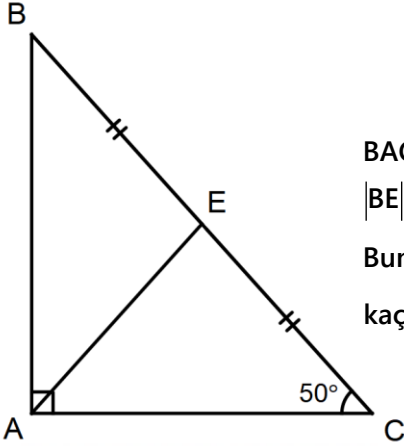
7. Muhteşem Üçlü :

Bir dik üçgende dik açıdan hipotensün ortasına çizilen doğru parçasının uzunluğu hipotenüste ayırdığı parçalarının uzunluğu kadardır.



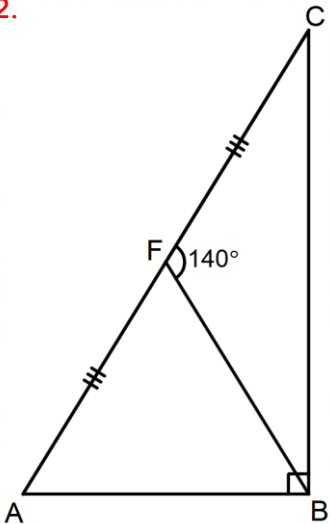
Örnekler :

1.



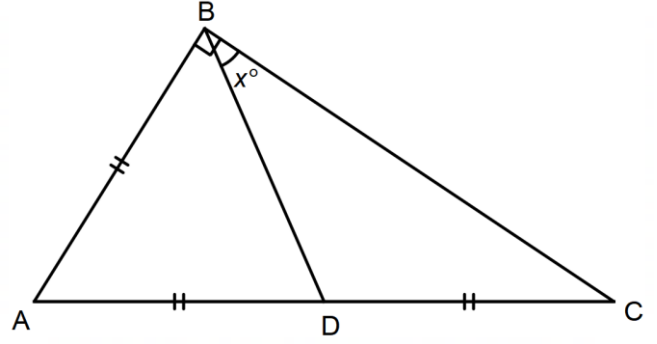
BAC dik üçgeninde,
 $|BE| = |EC|$
 Buna göre $m(\angle BAE)$
 kaç derecedir?

2.



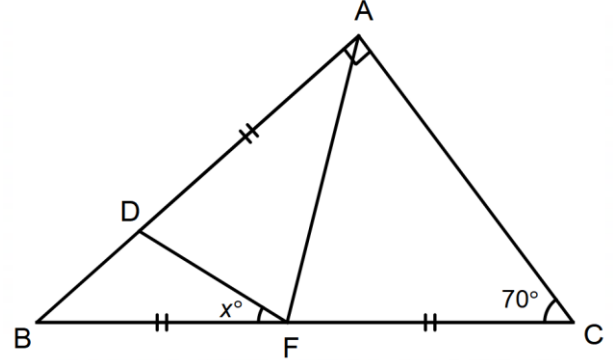
Yandaki ABC dik
 üçgeninde,
 $|FA| = |FC|$
 $m(\angle CFB) = 140^\circ$
 Buna göre $m(\angle CAB)$
 kaç derecedir?

3.



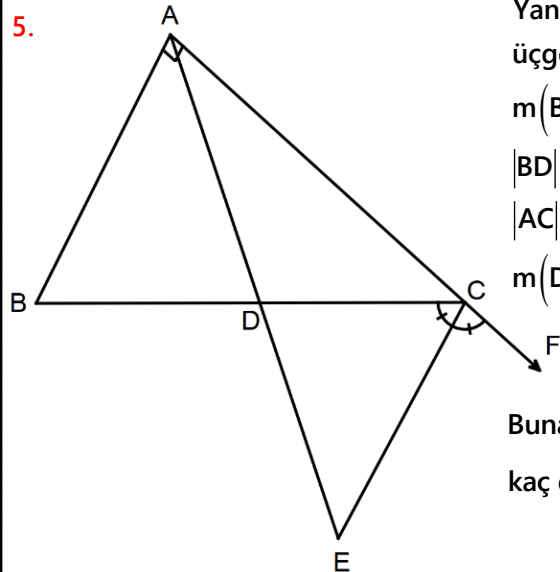
Yukarıda ki ABC dik üçgeninde,
 $|BA| = |AD| = |DC|$
 Buna göre $m(\angle DBC)$ kaç derecedir?

4.



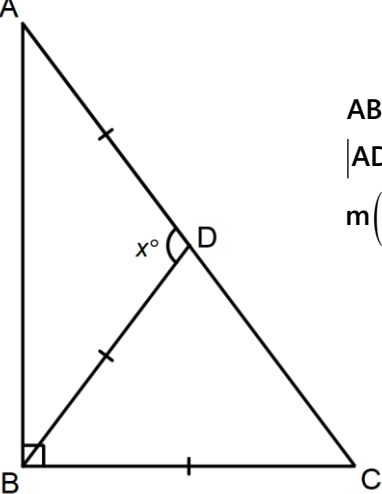
Yukarıda ki BAC dik üçgeninde,
 $|BF| = |AD| = |FC|$
 Buna göre $m(\angle DFB)$ kaç derecedir?

5.

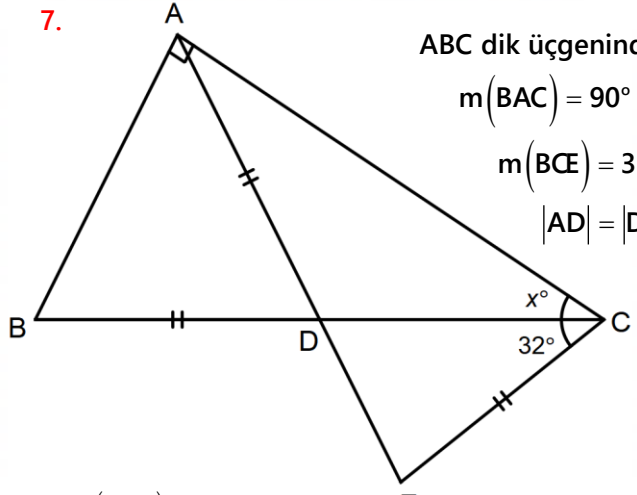


Yandaki ABC dik
 üçgeninde,
 $m(\angle BAC) = 90^\circ$
 $|BD| = |DC|$
 $|AC| = |CE|$
 $m(\angle DCE) = m(\angle ECF)$
 Buna göre $m(\angle BAE)$
 kaç derecedir?



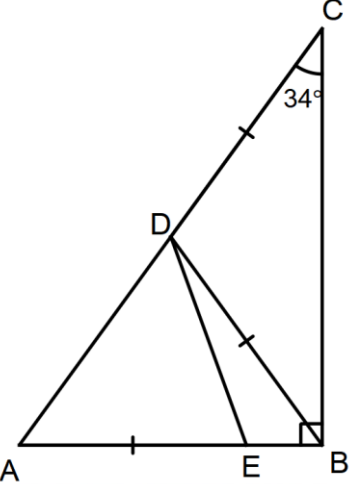
6. 

ABC dik üçgeninde,
 $|AD| = |DB| = |BC|$
 $m(\angle ADB)$ kaç derecedir?

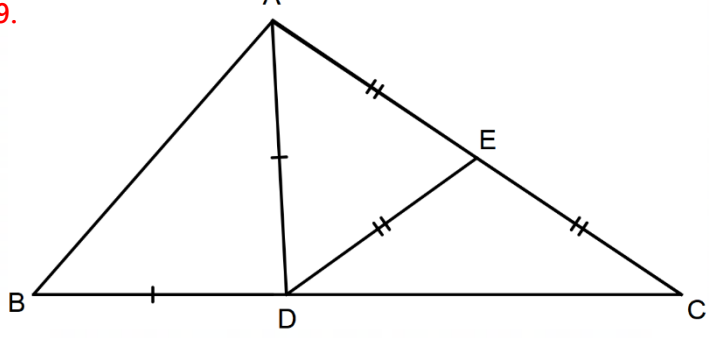
7. 

ABC dik üçgeninde,
 $m(\angle BAC) = 90^\circ$
 $m(\angle BCE) = 32^\circ$
 $|AD| = |DB| = |CE|$

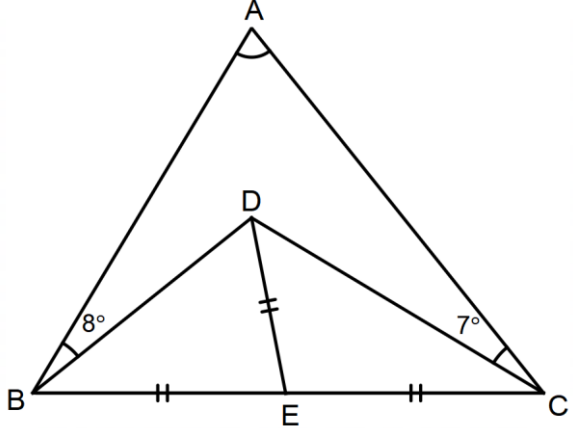
$m(\angle ACB)$ kaç derecedir?

8. 

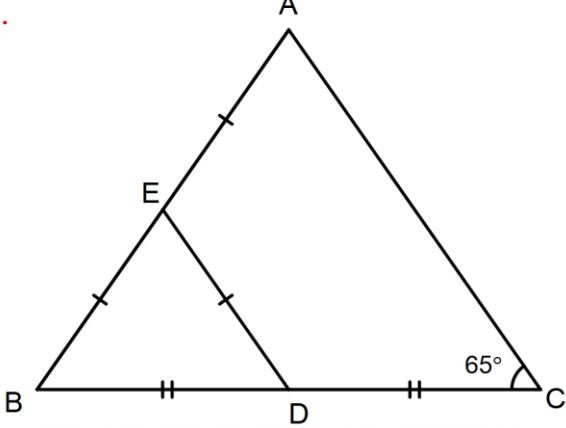
ABC dik üçgeninde,
 $|DB| = |DC| = |AE|$
 $m(\angle ACB) = 34^\circ$
 Buna göre $m(\angle EDB)$ kaç derecedir?

9. 

ABC üçgeninde,
 $|AE| = |EC| = |ED|$ $|BD| = |DA|$
 $m(\angle CBA)$ kaç derecedir?

10. 

ABC üçgeninde,
 $|DE| = |BE| = |EC|$
 $m(\angle ABD) = 8^\circ$ $m(\angle ACD) = 7^\circ$
 $m(\angle BAC)$ kaç derecedir?

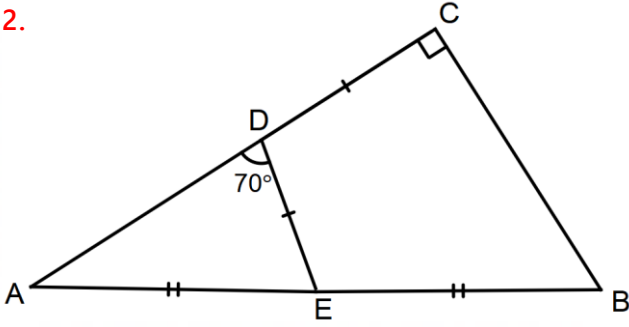
11. 

ABC üçgeninde,
 $|EA| = |EB| = |ED|$ $|BD| = |DC|$
 $m(\angle ACB) = 65^\circ$ ise $m(\angle AED)$ kaç derecedir?



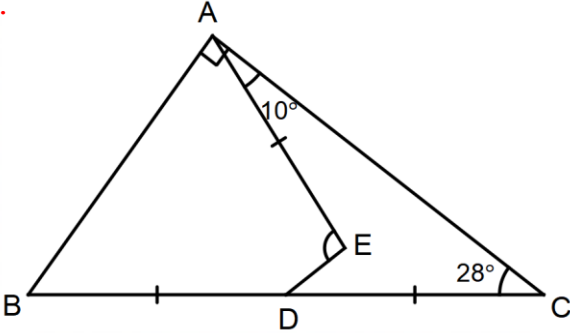


12.



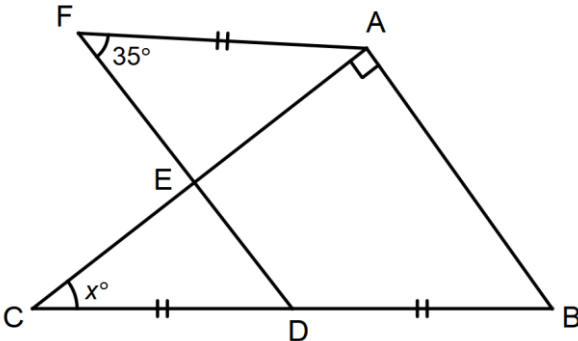
ACB dik üçgeninde,
 $|AE| = |EB|$ $|DC| = |DE|$
 $m(\widehat{ADE}) = 70^\circ$
 $m(\widehat{DEA})$ kaç derecedir?

13.



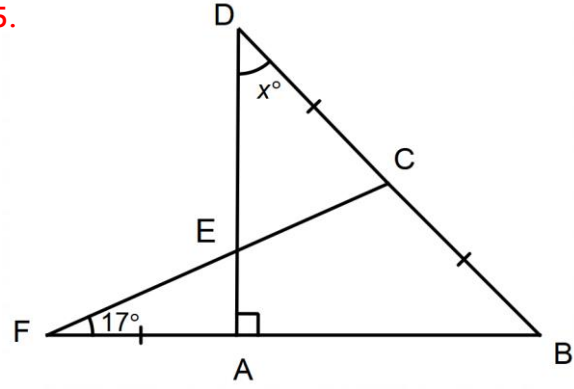
BAC dik üçgeninde,
 $|BD| = |DC| = |AE|$
 $m(\widehat{EAC}) = 10^\circ$ $m(\widehat{ACB}) = 28^\circ$
 $m(\widehat{AED})$ kaç derecedir?

14.



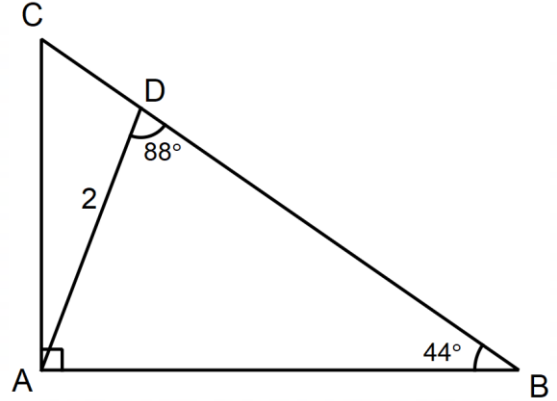
CAB dik üçgeninde,
 $|CD| = |DB| = |FA|$
 $m(\widehat{DFA}) = 35^\circ$ $m(\widehat{FAB}) = 130^\circ$
 $m(\widehat{ACB})$ kaç derecedir?

15.



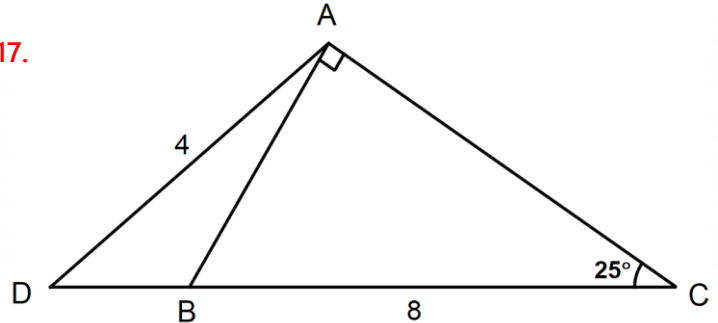
DAB dik üçgeninde,
 $|DC| = |CB| = |FA|$
 $m(\widehat{CFB}) = 17^\circ$
 $m(\widehat{ADB})$ kaç derecedir?

16.



CAB dik üçgeninde,
 $|AD| = 2$ br
 $m(\widehat{ADB}) = 88^\circ$ $m(\widehat{ABC}) = 44^\circ$
 $|CB|$ kaç birimdir?

17.

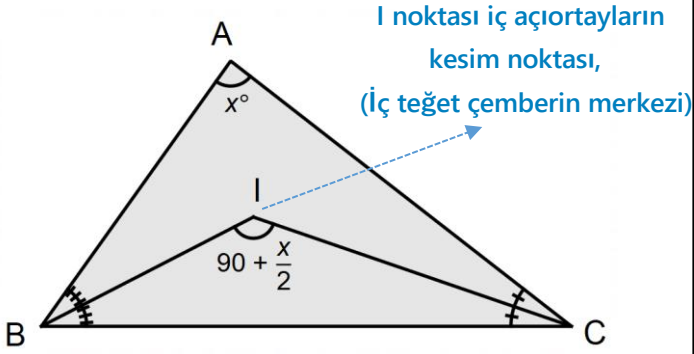


DAC bir üçgen,
 $|AD| = 4$ br $|BC| = 8$ br
 $m(\widehat{BAC}) = 90^\circ$ $m(\widehat{ACD}) = 25^\circ$
 $m(\widehat{DAB})$ kaç derecedir?

8 - Üçgende Açortay Özellikleri :



1) İç Açortayların Kesim Noktası (İç teğet Çemberin merkezi)

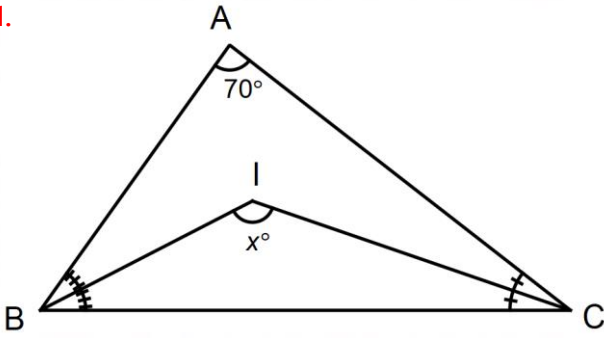


$[BI]$ ve $[CI]$ iç açortaylar,

$$m(\widehat{BIC}) = 90 + \frac{m(\widehat{BAC})}{2}$$

Örnekler :

1.

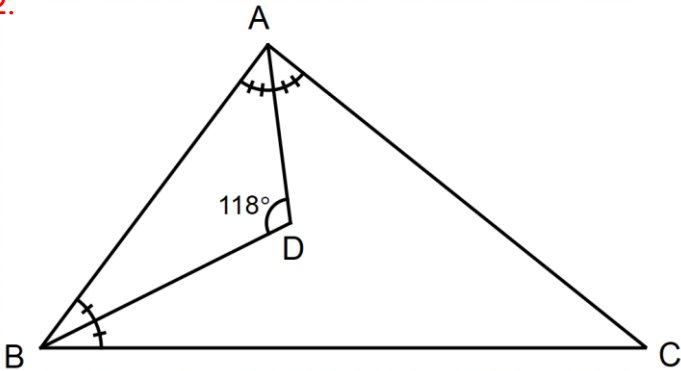


ABC üçgeninde,

$[BI]$ ve $[CI]$ iç açortaylardır.

$m(\widehat{BAC}) = 70^\circ$ ise $m(\widehat{BIC})$ kaç derecedir?

2.

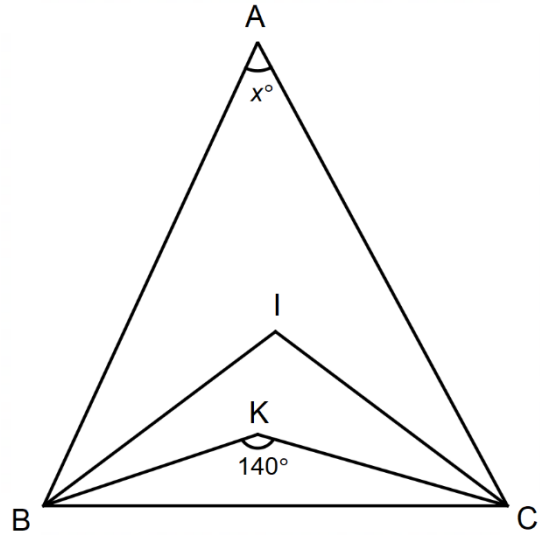


ABC üçgeninde,

D noktası iç teğet çemberin merkezidir.

$m(\widehat{ADB}) = 118^\circ$ ise $m(\widehat{ACB})$ kaç derecedir?

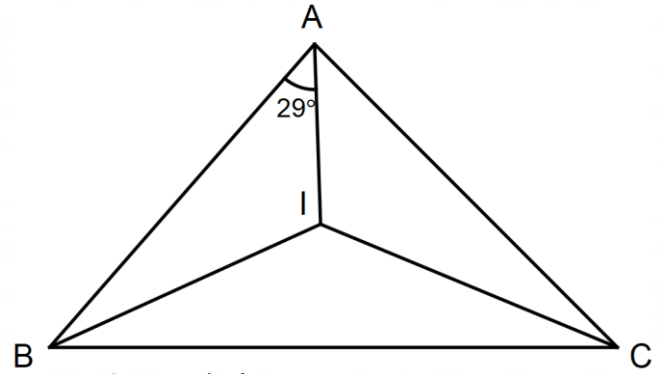
3.



Yukarıdaki şekilde I noktası BAC üçgeninin, K noktası BIC üçgeninin iç teğet çemberinin merkezidir.

Buna göre x kaç derecedir.

4.

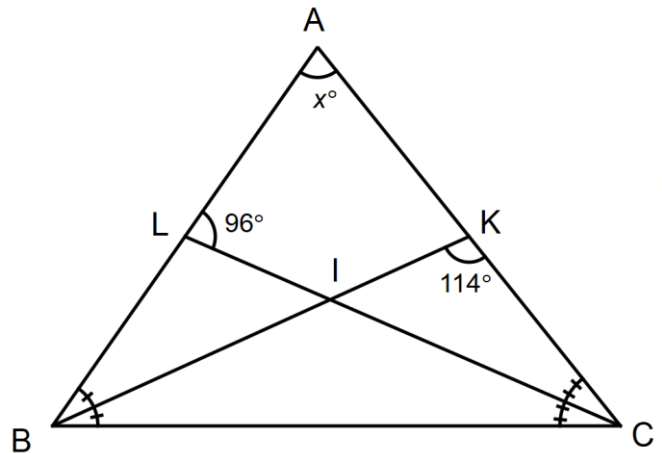


ABC üçgeninde,

I noktası iç teğet çemberin merkezidir.

$m(\widehat{BAI}) = 29^\circ$ ise $m(\widehat{BIC})$ kaç derecedir?

5.



ABC üçgeninde,

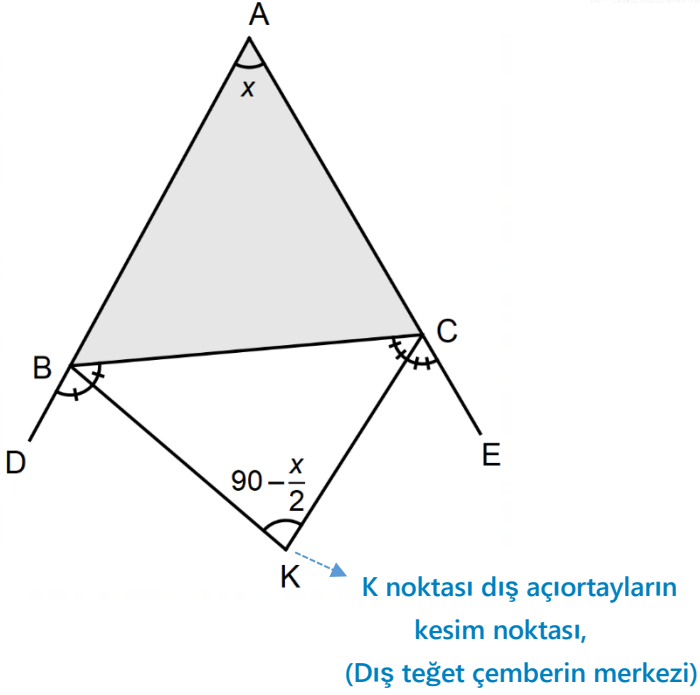
I noktası iç teğet çemberin merkezidir.

Buna göre $m(\widehat{BAC})$ kaç derecedir?



II) Dış Açortayların Kesim Noktası

(Dış teğet çemberin merkezi)

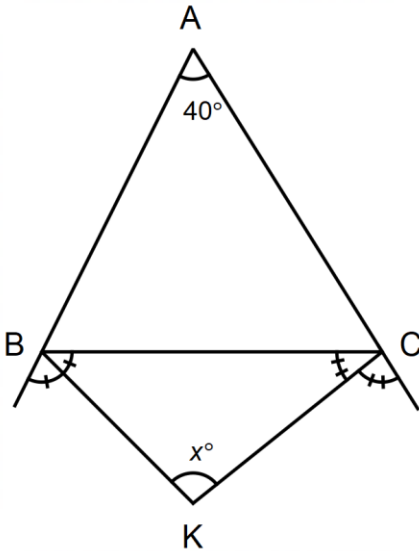


ABC üçgeninde,
[BK] ve [CK] dış açıortaylar,

$$m(\text{BKC}) = 90 - \frac{m(\text{BAC})}{2}$$

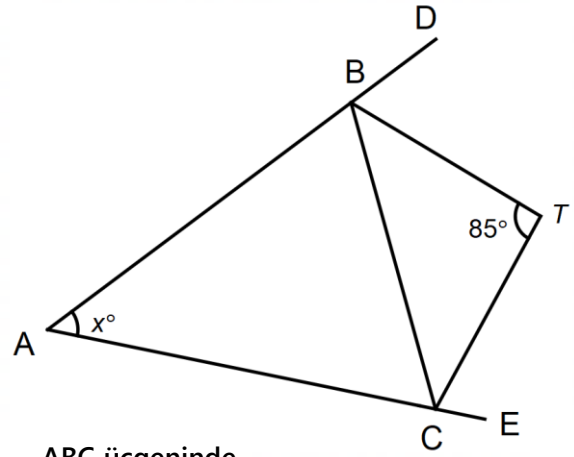
Örnekler :

1.



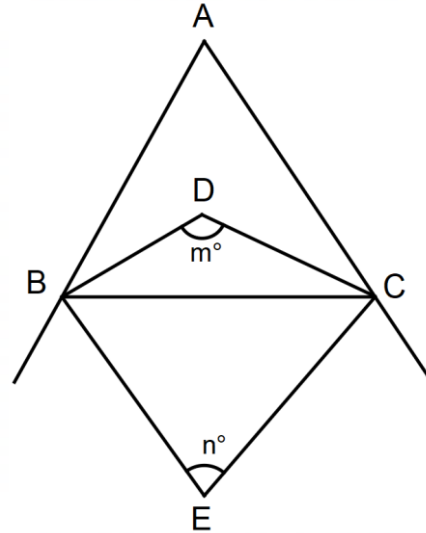
ABC üçgeninde,
[BK] ve [CK] dış açıortaylardır.
(K noktası dış teğet çemberin merkezi)
Buna göre x kaç derecedir?

2.



ABC üçgeninde,
T noktası dış teğet çemberin merkezidir.
Buna göre x kaç derecedir?

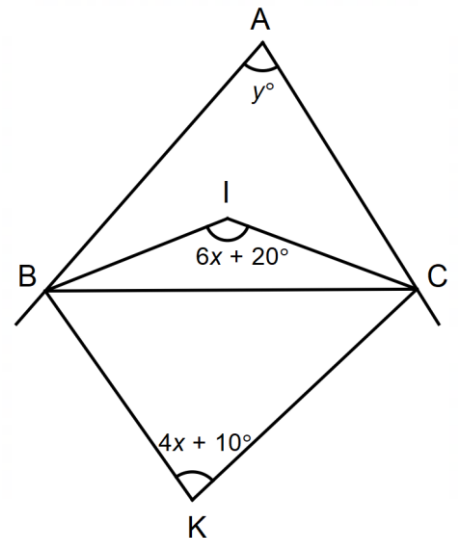
3.



Yandaki şekilde
ABC üçgeninin
iç teğet çemberinin
merkezi D, dış teğet
çemberinin merkezi
E noktasıdır.
m+n kaç derecedir?

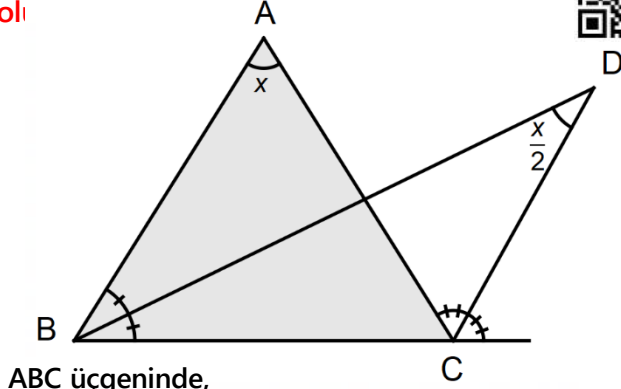
4.

Yandaki şekilde
ABC üçgeninin
iç teğet çemberinin
merkezi I, dış teğet
çemberinin merkezi
K noktasıdır.
x+y kaç derecedir?



III) Bir iç ve bir dış açıortayın kesişimi ile

olı

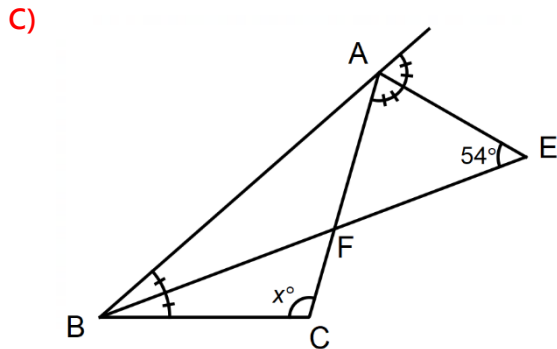
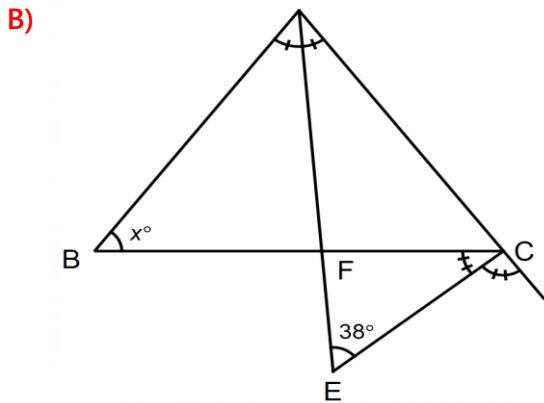
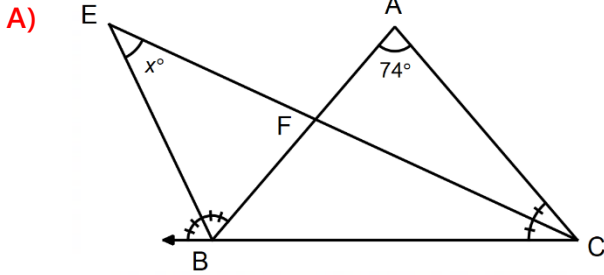


ABC üçgeninde,
[BD] iç açıortay, [CD] dış açıortay

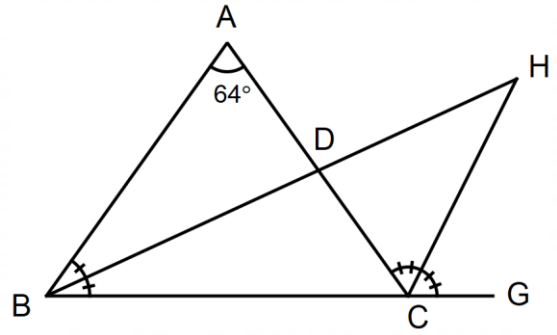
$$m(\angle BDC) = \frac{m(\angle BAC)}{2}$$

Örnekler :

1. Aşağıdaki şıklarda ki x açısı kaç derecedir?

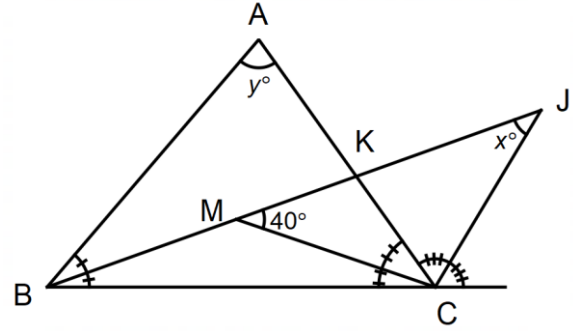


2.



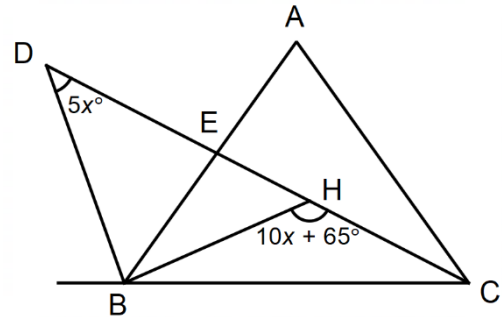
ABC üçgeninde,
[BH] iç açıortay, [CH] dış açıortay
 $|BC| = |CH|$
 $m(\angle BAC) = 64^\circ$ ise $m(\angle ACB)$ kaç derecedir?

3.



ABC üçgeninde iç açıortayların kesim noktası M, dış açıortayların kesim noktası J noktasıdır. Buna göre $x+y$ kaç derecedir?

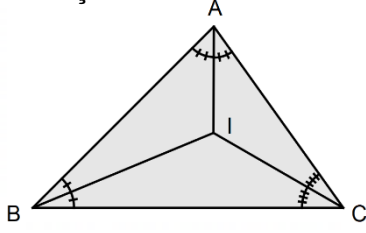
4.



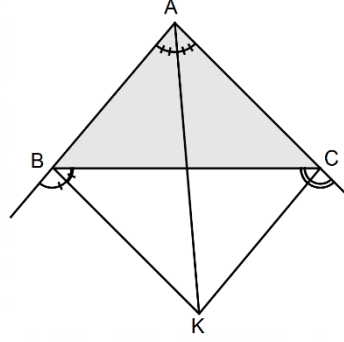
ABC üçgeninde iç teğet çemberin merkezi H, dış teğet çemberin merkezi D noktasıdır. Şekilde verilenlere göre $m(\angle BAC)$ kaç derecedir?

IV) Üç açıortay daima aynı noktada buluşur.

Bir üçgende açıortaylar daima aynı noktada buluşur.



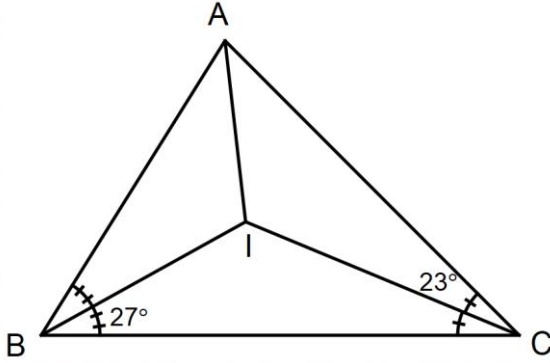
I noktası iç teğet çemberin merkezidir. Üçgenin herhangi bir köşesinden I noktasına gelen çizgi açıortay olmak zorundadır.



K noktası dış teğet çemberin merkezidir. Üçgenin herhangi bir köşesinden K noktasına gelen çizgi açıortay olmak zorundadır.

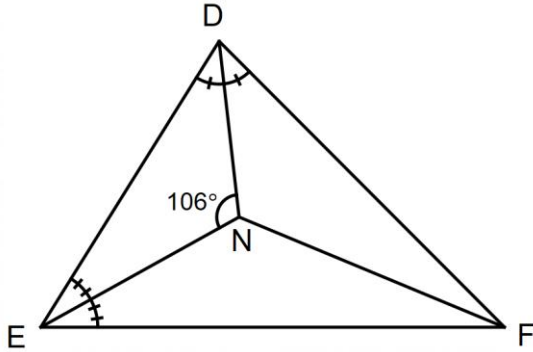
Örnekler :

1.



ABC üçgeninde $[BI]$ ve $[CI]$ açıortaylardır. Buna göre $m(\angle BAI)$ kaç derecedir?

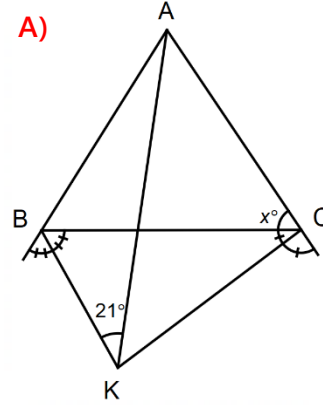
2.



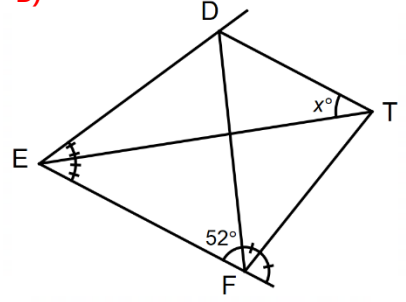
ABC üçgeninde $[EN]$ ve $[DN]$ açıortaylardır. Buna göre $m(\angle ENN)$ kaç derecedir?

3. Aşağıdaki üçgenlerdeki x açılarını bulun.

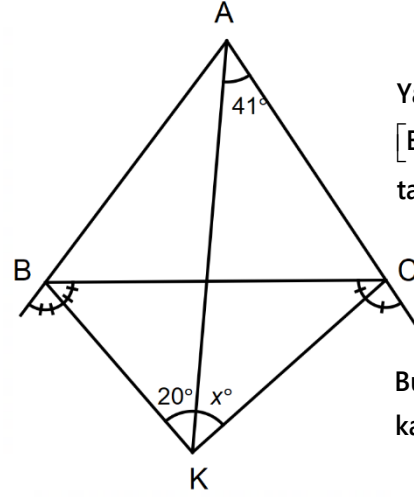
A)



B)



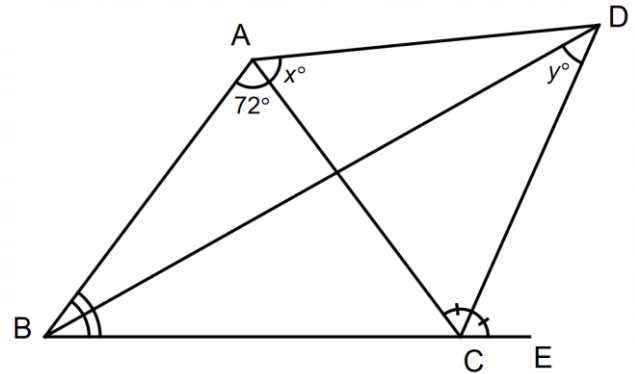
4.



Yandaki ABC üçgeninde $[BK]$ ve $[CK]$ dış açıortaylardır.

Buna göre x açısı kaç derecedir?

5.



Yukarıda ki şekilde

$$m(\angle ABD) = m(\angle DBC) \quad m(\angle ACD) = m(\angle DCE)$$

$$m(\angle BAC) = 72^\circ$$

Buna göre x-y kaç derecedir?