



سعادت آباد - بلوار دریا - روبروی خیابان صرافها - پلاک 54 - واحد 10



1.

$$(a^2 - 4, 12 - b^2) = (12, 8)$$

$$a, b \in \mathbb{Z}^+$$

$$a+b = ?$$

- A) 4 B) 6 C) 8 D) 10 E) 12

2.

$$\frac{6! - 4!}{3!} = ?$$

- A) 720 B) 696 C) 116
D) 20 E) 16

3.

$$\frac{0,\bar{3} + 0,\bar{7} + 0,\bar{1}}{0,\bar{6} - 1,\bar{3} + 0,\bar{5}} = ?$$

- A) -11 B) -9 C) $\frac{11}{9}$
D) 9 E) 11

4.

$$\sqrt[3]{x-2} + \sqrt[3]{8x-16} = 6$$

$$x = ?$$

- A) 6 B) 8 C) 10 D) 12 E) 14

5.

$$\sqrt{\frac{27}{4}} + \sqrt{\frac{3}{4}} - \sqrt{\frac{75}{4}} = ?$$

- A) $\frac{9\sqrt{3}}{2}$ B) $\frac{3\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{2}$
D) $-\frac{\sqrt{3}}{2}$ E) $-\frac{5\sqrt{3}}{2}$

6.

$$\frac{2^{2002} + 2^{2001} + 2^{2000}}{2^{-2004} + 2^{-2003} + 2^{-2002}} = ?$$

- A) 2^{2000} B) 2^{2001} C) 2^{2002}
D) 2^{2003} E) 2^{4004}

7.

$$\frac{x^2-2x-3}{6x^2+7x-3} : \frac{x^2-x-2}{2x^2-x-6} = ?$$

A) $\frac{x+2}{x-3}$ B) $\frac{x+3}{3x-1}$ C) $\frac{x-2}{3x+1}$

D) $\frac{x-3}{3x-1}$ E) $\frac{x-1}{3x-1}$

8.

$$2x(x-y) + y(y-x) = ?$$

A) $(x-y)(2x-y)$

B) $(y-x)(2x-y)$

C) $(x-y)(2y-x)$

D) $(y-x)(x-y)$

E) $(y-x)(2y-x)$

9.

$$A = 3x^3 + 2x^2 + ax - 1$$

$$B = 2x^3 - (2a+1)x^2 + 4x + 1$$

$$A.B = \dots + 2x^4 + \dots$$

$$a = ?$$

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

10.

$$\frac{2-5x}{3} = 4 - 2x \quad x = ?$$

A) 4

B) 6

C) 10

D) 12

E) 14



11.

$$2(x-1)-3=4-3(2-3x)$$

$$x=?$$

- A) -1 B) $-\frac{7}{11}$ C) $-\frac{3}{7}$
D) $-\frac{3}{11}$ E) 1

12.

$$f(x) = mx^2 + 6x - n$$

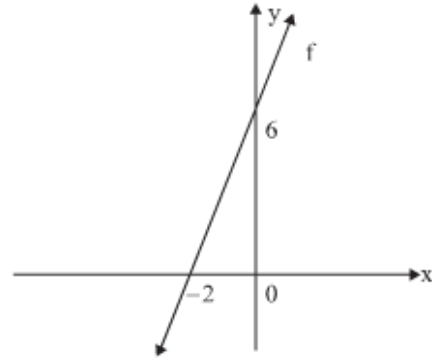
$$f(x_1) = f(x_2) = 0$$

$$x_1 = x_2$$

$$m.n=?$$

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

13.



$$f(-2) = 0$$

$$f(0) = 6$$

$$f(4) = ?$$

- A) 14 B) 16 C) 18
D) 21 E) 24

14.

$$f(2x+a) = \frac{x+6}{x+4}$$

$$f(3) = 3$$

$$a = ?$$

- A) 9 B) 5 C) 3
D) -1 E) -3



15.

$$\log_x 2 = \log_{2x} 8$$

$$x = ?$$

A) $\frac{1}{\sqrt{2}}$ B) $\sqrt{2}$ C) 2

D) $2\sqrt{2}$ E) 4

16.

$$\frac{2}{\log_3 45} + \frac{1}{\log_5 45} = ?$$

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

D) 2 E) $\frac{5}{2}$

17.

$$f(x) = \begin{cases} 3x-2 & , x < 1 \\ 4x+1 & , 1 < x < 4 \\ 3x-2 & , x > 4 \end{cases}$$

$$\lim_{x \rightarrow 1^+} f(x) + \lim_{x \rightarrow 4^-} f(x) = ?$$

A) 22 B) 24 C) 26

D) 28 E) 30

18.

$$\lim_{x \rightarrow 0^+} \left(\left(\frac{7}{2} \right)^x + \left(\frac{9}{10} \right)^{\frac{1}{x}} + 2 \right) = ?$$

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

19.

$$\frac{d^2}{dx^2}[5x^2 - 2x + 3] = ?$$

- A) $2x$ B) $3x$ C) 4
D) 5 E) 10

20.

$$3z + 2i = \bar{z} - 3 \Rightarrow |z| = ?$$

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

21.

$$f(x) = e^{\sin x} \tan x$$

$$f'(x) = ?$$

- A) $f'(x) = e^{\sin x} (\sin x + \tan^2 x)$
B) $f'(x) = e^{\sin x} (\sin x + \sec^2 x)$
C) $f'(x) = e^{\sin x} (\sin x + \operatorname{cosec}^2 x)$
D) $f'(x) = e^{\sin x} (\sin x - \sec^2 x)$
E) $f'(x) = e^{\sin x} (\sin x - \tan^2 x)$

22.

$$f(x) = [2 + (x^2 - x - 1)^3]^2$$

$$f'(2) = ?$$

- A) 60 B) 54 C) 48
D) 42 E) 36

23.

$$\int_2^{10} |2x - 8| dx = ?$$

- A) 0 B) 20 C) 40
D) 45 E) 60

24.

$$-3 \int \cos^2 x \sin x dx = ?$$

- A) $\cos^3 x + c$ B) $\sin^3 x + c$
C) $\cos^2 x + c$ D) $\sin^2 x + c$
E) $\sin^3 x \cos^3 x + c$

25.

$$\int \frac{-\tan x dx}{\ln(\cos x)} = ?$$

- A) $\ln|\ln(\cot x)| + c$ B) $\ln|\ln(\tan x)| + c$
C) $\ln|\ln(\sin x)| + c$ D) $\ln|\ln(\cos x)| + c$
E) $\ln|\ln(\sec x)| + c$

26.

$$\prod_{k=4}^{12} \left(\frac{k-3}{k-2} \right) = ?$$

- A) $\frac{1}{8}$ B) $\frac{1}{9}$ C) $\frac{1}{10}$
D) $\frac{1}{11}$ E) $\frac{1}{12}$

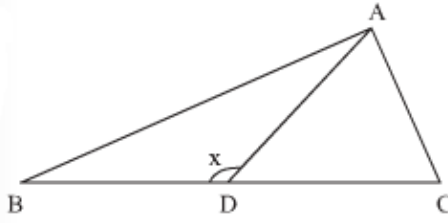
27.

$$\pi < x < \frac{3\pi}{2}, \sin 2x + \sin x = 0$$

$$x = ?$$

- A) $\frac{7\pi}{6}$ B) $\frac{5\pi}{4}$ C) $\frac{4\pi}{3}$
D) $\frac{7\pi}{5}$ E) $\frac{8\pi}{5}$

28.



$$|AC| = |DC| = 5$$

$$|AD| = 6$$

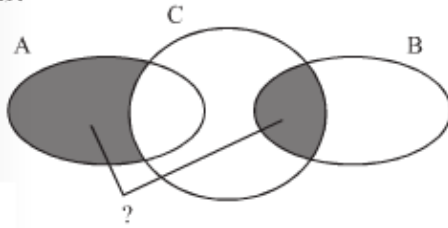
$$m(\widehat{ADB}) = x$$

$$\sin x = ?$$

A) $-\frac{4}{5}$ B) $-\frac{3}{5}$ C) $\frac{1}{5}$

D) $\frac{3}{5}$ E) $\frac{4}{5}$

29.

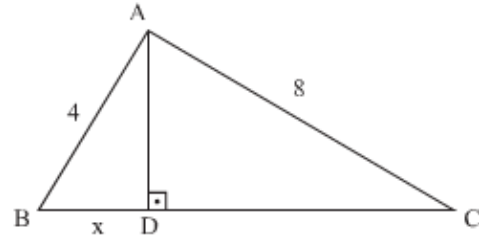


A) $(A \cup B) \cap C'$ B) $A \setminus (C \setminus B)$

C) $(A \setminus C) \cup (C \cap B)$ D) $A \setminus (B \cap C)$

E) $(A \setminus B) \cup C$

30.



$$m(\widehat{ADC}) = 90^\circ$$

$$|AC| = 8$$

$$|AB| = 4$$

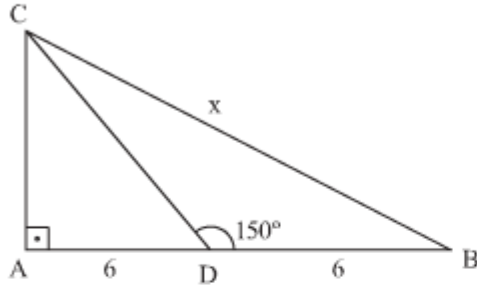
$$|BC| = 10$$

$$|BD| = x = ?$$

A) $\frac{5}{4}$ B) $\frac{11}{7}$ C) 2

D) $\frac{13}{5}$ E) 7

31.



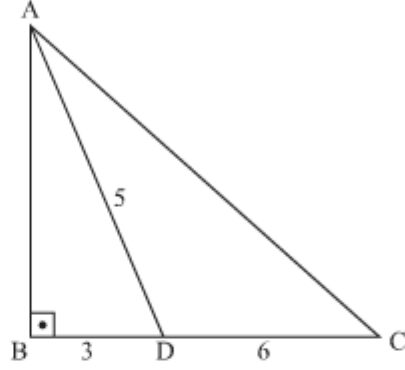
$$|AD| = |DB| = 6, \quad m(\widehat{A}) = 90^\circ,$$

$$m(\widehat{CDB}) = 150^\circ, \quad |BC| = x = ?$$

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

D) $2\sqrt{39}$ E) $12\sqrt{3}$

32.



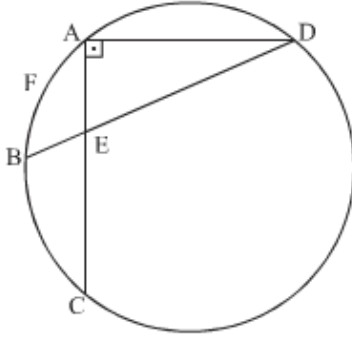
$$|AD| = 5$$

$$|BD| = 3 \quad A(\widehat{ADC}) = ?$$

$$|DC| = 6$$

A) 6 B) 12 C) 15 D) 18 E) 30

33.



$$m(\widehat{AFB}) = 60^\circ$$

$$m(\widehat{CAD}) = 90^\circ$$

$$|EC| = 12$$

$$|AC| = |BD|$$

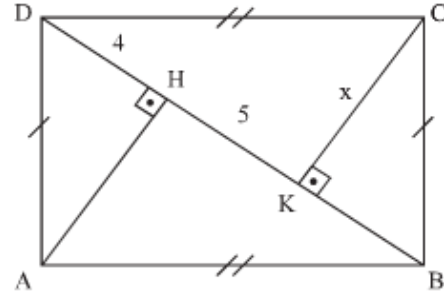
$$|AD| = ?$$

A) 5

B) 6

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

34.



$$m(\widehat{A}) = m(\widehat{B}) = m(\widehat{C}) = m(\widehat{D}) = 90^\circ$$

$$|DH| = 4$$

$$|HK| = 5$$

$$|CK| = x = ?$$

A) 4

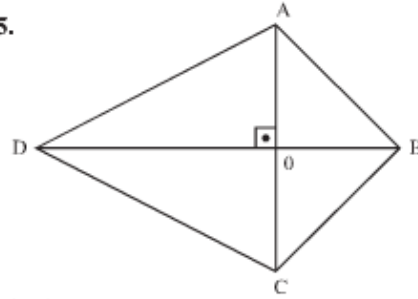
B) 5

C) 6

D) 7

E) 8

35.



$$|AD| = 12$$

$$|BC| = 4$$

$$|DC| = 2|AB|$$

$$AC \perp BD \Rightarrow |AB| = ?$$

A) $2\sqrt{2}$

B) 4

C) $4\sqrt{2}$

D) 6

E) $8\sqrt{2}$

36. ve 37. sorularda, I. gruptaki kümelerin şekilleri birer rakamla gösterilerek II. gruptaki sayılar elde edilmiştir. Soru işaretiyle belirtilen kümenin hangi sayıyla gösterildiğini bulunuz.

In questions 36 and 37, the numbers in group II stand for the sets of figures in group I, when each figure has been coded with a specific numeral. Find the number which corresponds to the set of the figures indicated by the question mark.

36.

I.	II.
$\otimes$ Δ Ω θ	$\left\{ \begin{array}{lll} 1234 & 2436 & 3651 \\ 4512 & 6145 & \end{array} \right.$
Ψ $\circ$ Δ Ω	
Ω θ Ψ $\otimes$	
$\circ$ Ω $\otimes$ Δ	
θ $\otimes$ Ψ $\circ$	

$$\Psi \theta \Omega \Delta = ?$$

- A) 1235 B) 2346 C) 3215
D) 4521 E) 6132

37.

I.	II.
$\oplus$ Δ $\emptyset$ $\ominus$	$\left\{ \begin{array}{lll} 1987 & 3189 & 7392 \\ 8723 & 9231 & \end{array} \right.$
Γ Φ Δ $\emptyset$	
$\emptyset$ $\ominus$ Γ $\oplus$	
Φ $\emptyset$ $\oplus$ Δ	
$\ominus$ $\oplus$ Γ Φ	

$$\ominus \Phi \oplus \Delta = ?$$

- A) 1279 B) 1792 C) 2197
D) 7139 E) 9721

38. ve 39. sorularda, I. gruptaki sözcüklerin harfleri birer rakamla gösterilerek II. gruptaki sayılar elde edilmiştir. Soru işaretiyle belirtilen sözcüğün hangi sayıyla gösterildiğini bulunuz.

In questions 38 and 39, the numbers in group II stand for the words in group I, when each letter has been coded with a specific numeral. Find the number which corresponds to the word indicated by the question mark.

38.

I.	II.
SOPA	$\left\{ \begin{array}{ll} 6785 & 7458 & 7694 \\ 8549 & 9456 \end{array} \right.$
KASO	
EPOS	
KOPE	
AKEP	

SEKO=?

- A) 4895 B) 5874 C) 6985
- D) 7694 E) 9874

39.

I.	II.
Pİ DE	$\left\{ \begin{array}{lll} 1235 & 2364 & 3546 \\ 4612 & 5462 \end{array} \right.$
DEAH	
İ DEH	
AHPİ	
HPED	

APDİ=?

- A) 1345 B) 1435 C) 3546
- D) 4365 E) 5346

40.

Δ	a	b	c	d	e
a	b	c	d	e	a
b	c	d	e	a	b
c	d	e	a	b	c
d	e	a	b	c	d
e	a	b	c	d	e

$$(x^{-1} \Delta c) \Delta (b^{-1} \Delta a) = d$$

$$x = ?$$

- A) a B) b C) c D) d E) e

41. ve 42. soruları aşağıdaki tabloya göre cevaplayınız.

Answer the questions 41 and 42 according to the table below.

Tabloda $\diamond$ işleminin görevi belirlenmiştir.
The function of $\diamond$ in the table is defined.

$\diamond$	1	2	3	4	5
1	1	2	3	4	5
2	2	1	4	3	5
3	3	4	1	2	5
4	4	3	2	1	5
5	5	5	5	5	5

Örnekler:
Examples:

$$2 \diamond 3 = 4$$

$$1 \diamond 2 = 2$$

41.

$$(3 \diamond 2) \diamond (4 \diamond 3) = ?$$

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

42.

$$(x \diamond 2) \diamond 2 = 3 \Rightarrow x = ?$$

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

43.

+	a	b	c
a			
b		$6-c$	
c		5	$2a-8$

Yukarıdaki toplama tablosunda a, b ve c harfleri birer sayının yerine kullanılmıştır. Buna göre, a kaçtır?

In the addition table above, the letters a, b and c each stand for a number. Accordingly, what is the value of a?

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

44.

+	a	b
a		4
b		

Yukarıdaki çarpma ve toplama tablolarında a ve b harfleri pozitif birer sayının yerine kullanılmıştır. Buna göre, $(a - b)^2$ kaçtır?

In the addition table above, the letters a and b each stand for a number. Accordingly, what is the value of $(a - b)^2$?

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

45.

X	a	b	c
a		$4c$	
b			$9a$
c			

Yukarıdaki toplama tablosunda a, b ve c harfleri pozitif birer sayının yerine kullanılmıştır. Buna göre, b kaçtır?

In the addition table above, the letters a, b and c each stand for a number. Accordingly, what is the value of b?

- A) 4 B) 6 C) 8 D) 9 E) 12



46.

△	★	∩	△	□	∩	★
∩	□	△	•	∩	⊕	★
★	△	⊕	•	□	•	△
∩	⊕	★	△	⊕	★	∩
□	□	∩	□	•	△	⊕
★	•	□	∩	★	△	∩
•	★	⊕	□	∩	⊕	△

I.

K	L
L	K

K = ∩ L = □

II.

M	L
N	K

M = ? N = ?

I ve II yukarıdaki tablonun farklı birer parçasıdır. Buna göre, II'deki M ve N'nin yerine aşağıdakilerden hangisi gelmelidir?

I and II are different pieces of the given table above. According to this, which of the following should be put instead of M and N in II?

- | | M | N |
|----|---|---|
| A) | ⊕ | • |
| B) | • | △ |
| C) | • | ⊕ |
| D) | ⊕ | △ |
| E) | △ | • |

47.

+	X	∨	□	+	•	□
∨	△	•	∨	△	X	+
□	•	△	•	∨	+	∨
□	∨	+	□	X	X	•
•	△	△	•	+	∨	∨
∨	X	∨	X	△	+	•
•	+	+	△	X	□	△

I.

K	K
X	L

K = △ L = ∨

II.

M	L	K	N
---	---	---	---

M = ? N = ?

I ve II yukarıdaki tablonun farklı birer parçasıdır. Buna göre, II'deki M ve N'nin yerine aşağıdakilerden hangisi gelmelidir?

I and II are different pieces of the given table above. According to this, which of the following should be put instead of M and N in II?

- | | M | N |
|----|---|---|
| A) | □ | • |
| B) | X | □ |
| C) | + | • |
| D) | • | X |
| E) | • | + |

48.

+	△	□	△	□	■	+
△	⊕	+	■	△	⊕	△
■	•	□	+	⊕	□	•
□	△	⊕	•	□	•	+
+	□	+	⊕	■	□	⊕
⊕	■	□	+	■	⊕	△
+	⊕	△	■	+	•	⊕

I.

K	L
K	L

II.

L	M
N	K

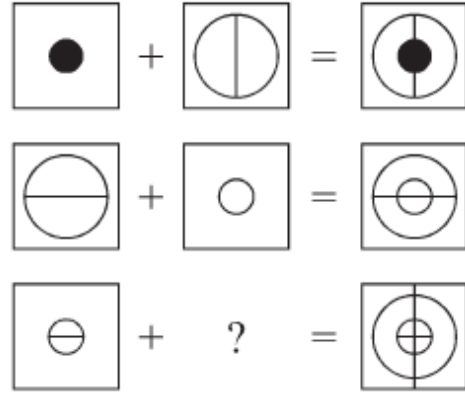
K = □ L = + M = ? N = ?

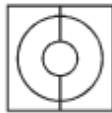
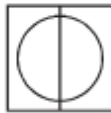
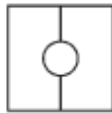
I ve II yukarıdaki tablonun farklı birer parçasıdır. Buna göre, II'deki M ve N'nin yerine aşağıdakilerden hangisi gelmelidir?

I and II are different pieces of the given table above. According to this, which of the following should be put instead of M and N in II?

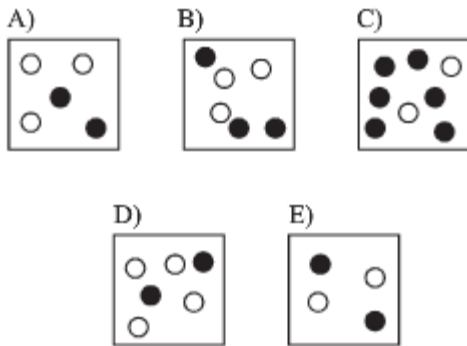
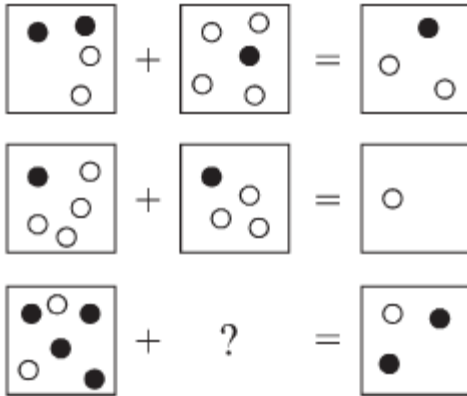
- | | M | N |
|----|---|---|
| A) | ⊕ | ■ |
| B) | ⊕ | • |
| C) | • | ⊕ |
| D) | ⊕ | ■ |
| E) | △ | ⊕ |

49.

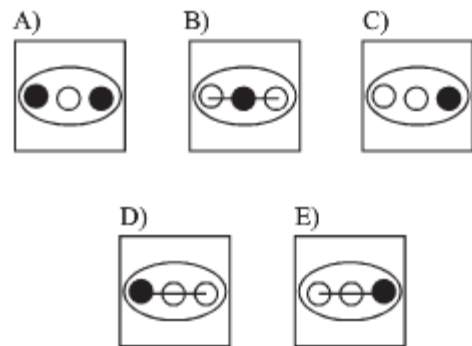
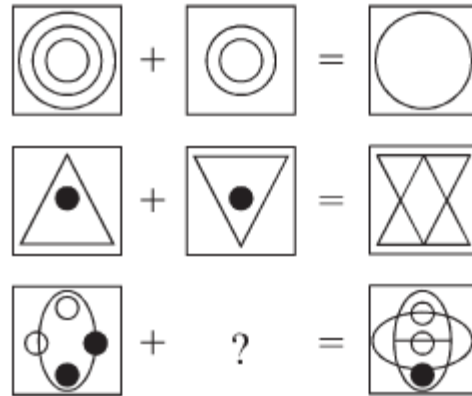


- A)  B)  C) 
- D)  E) 

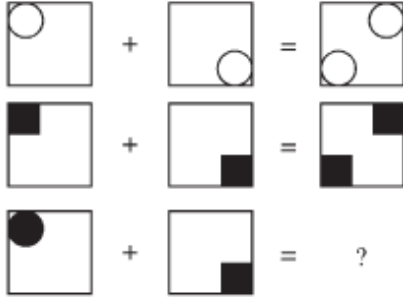
50.



51.



52.



A)



B)



C)



D)



E)



53.

Aşağıdaki parçalardan hangisi verilen şekli tam bir kare yapar?

Which of the following shapes can make the given shape a whole square?



A)



B)



C)



D)

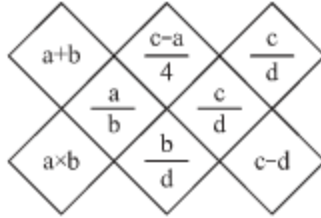


E)



54., 55. ve 56. soruları aşağıdaki şekle göre cevaplayınız.

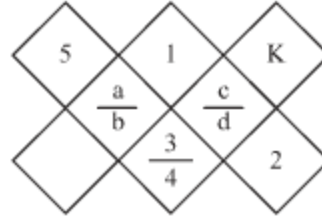
Answer the questions 54, 55 and 56 according to the figure below.



Yukarıdaki şekil a, b, c ve d harfleriyle gösterilen dört pozitif tam sayıyı içeren bazı işlemlere göre düzenlenmiştir. Harflerin gösterdiği sayılar her soruda farklı olabilir fakat bunlarla yapılacak işlemler her soruda aynıdır.

The figure above is arranged according to some operations which include four positive whole numbers indicated by a, b, c and d. The numbers that each letter indicate can be different in each question, but the procedure to be done is the same in all questions.

54.



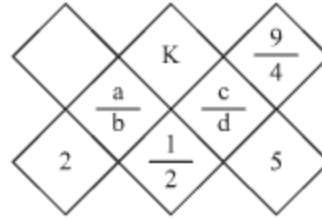
K=?

Yukarıdaki verilen şekle göre, K kaçtır?

According to the given figure above, what is the value of K?

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

55.



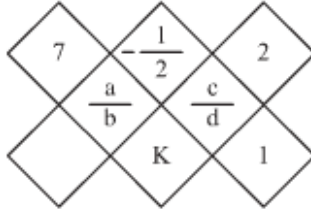
K=?

Yukarıdaki verilen şekle göre, K kaçtır?

According to the given figure above, what is the value of K?

- A) 1 B) 2 C) 4 D) 5 E) 9

56.



K=?

Yukarıdaki verilen şekle göre, K kaçtır?

According to the given figure above, what is the value of K?

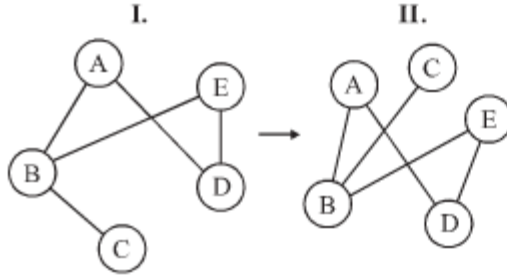
- A) 1 B) 2 C) 3 D) 4 E) 5

57., 58. ve 59. soruları verilen ilişkiye göre cevaplayınız.

Answer the questions 57, 58 and 59 according to the relationship given in the example.

Örnek:

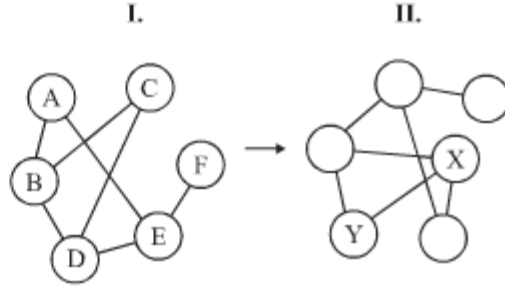
Example:



A, B, C, D ve E harfleri I. şekildeki gibi birbirine bağlanmıştır. I. şekildeki bağlantı sayıları ve birbirine bağlanan harfler değişmemek koşuluyla II. şekil elde edilmiştir.

The letters A, B, C, D and E are connected to each other as it is given in the figure I. Figure II is obtained without changing the number of connections and the letters connected.

57.

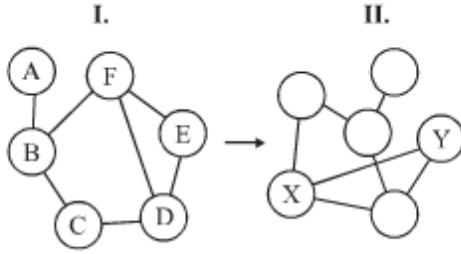


II. şekilde X ve Y'nin yerine gelmesi gereken harfleri bulunuz.

Find the letters that should be put instead of X and Y in the figure II.

	X	Y
A)	B	C
B)	E	C
C)	B	A
D)	D	E
E)	D	C

58.

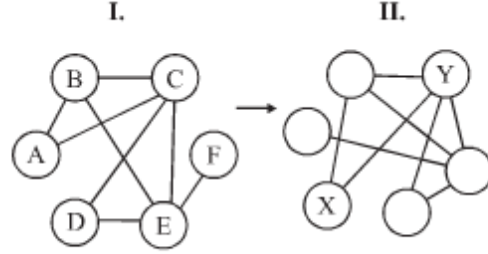


II. şekilde X ve Y'nin yerine gelmesi gereken harfleri bulunuz.

Find the letters that should be put instead of X and Y in the figure II.

	X	Y
A)	C	F
B)	B	F
C)	D	E
D)	F	C
E)	B	E

59.

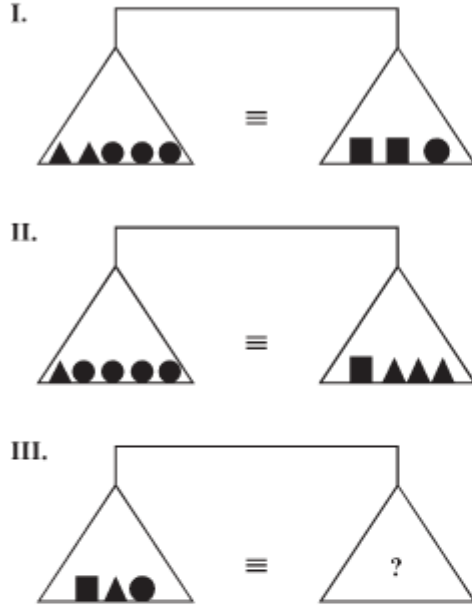


II. şekilde X ve Y'nin yerine gelmesi gereken harfleri bulunuz.

Find the letters that should be put instead of X and Y in the figure II.

	X	Y
A)	A	C
B)	A	B
C)	F	B
D)	D	C
E)	E	F

60.

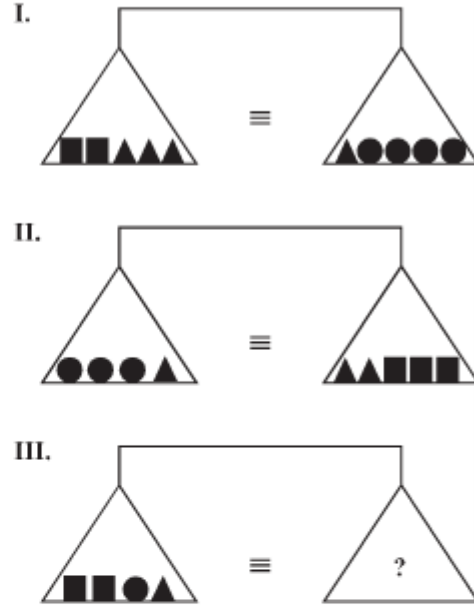


Yukarıdaki terazilerin üçü de dengede olduğuna göre, III. terazide soru işareti aşağıdakilerden hangisini göstermektedir?

All three scales above are in balance. Accordingly, which of the following does the question mark stand for in the third scale?

- A) ●●●■ B) ●▲▲■
C) ▲▲●● D) ■■●▲
E) ■■■■

61.

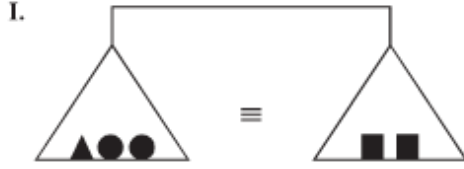


Yukarıdaki terazilerin üçü de dengede olduğuna göre, III. terazide soru işareti aşağıdakilerden hangisini göstermektedir?

All three scales above are in balance. Accordingly, which of the following does the question mark stand for in the third scale?

- A) ■▲▲● B) ■▲●●
C) ■●●● D) ▲●●●
E) ■■■▲●

62.



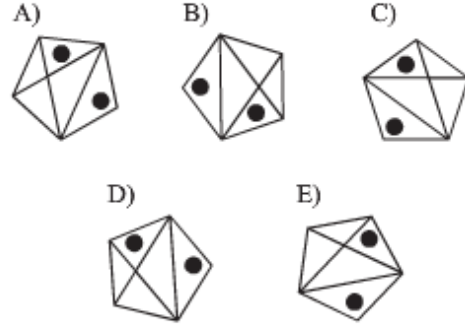
Yukarıdaki terazilerin üçü de dengede olduğuna göre, III. terazide soru işareti aşağıdakilerden hangisini göstermektedir?

All three scales above are in balance. Accordingly, which of the following does the question mark stand for in the third scale?

- A) ● ● ■ B) ● ▲ ▲ ▲
C) ■ ■ D) ▲ ▲ ● ●
E) ■ ▲ ▲ ●

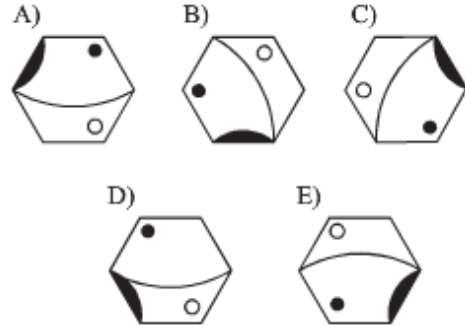
63.

Aşağıdaki şekillerden hangisi farklıdır?
Which of the following figures is different?

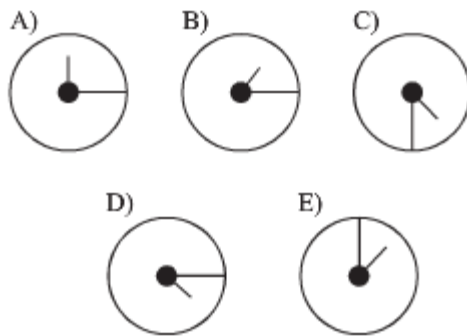
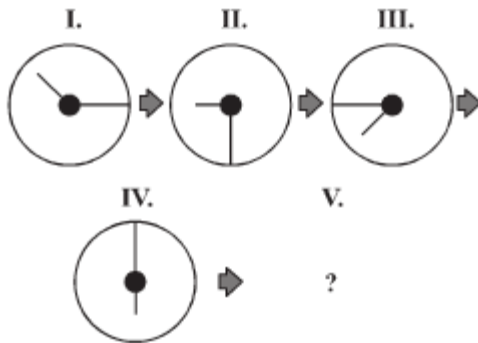


64.

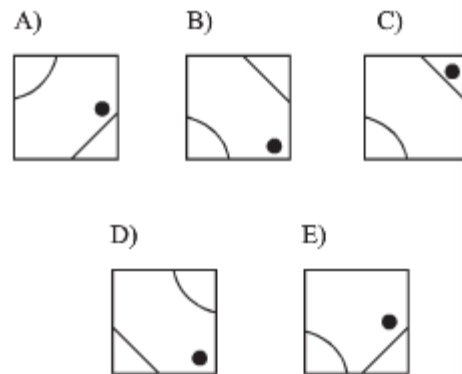
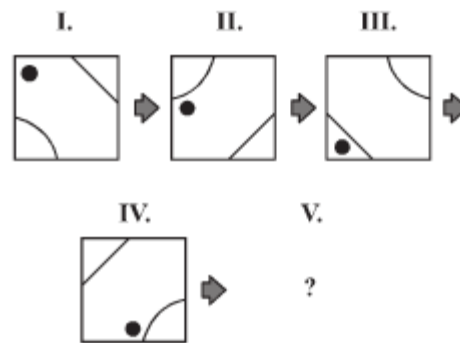
Aşağıdaki şekillerden hangisi farklıdır?
Which of the following figures is different?



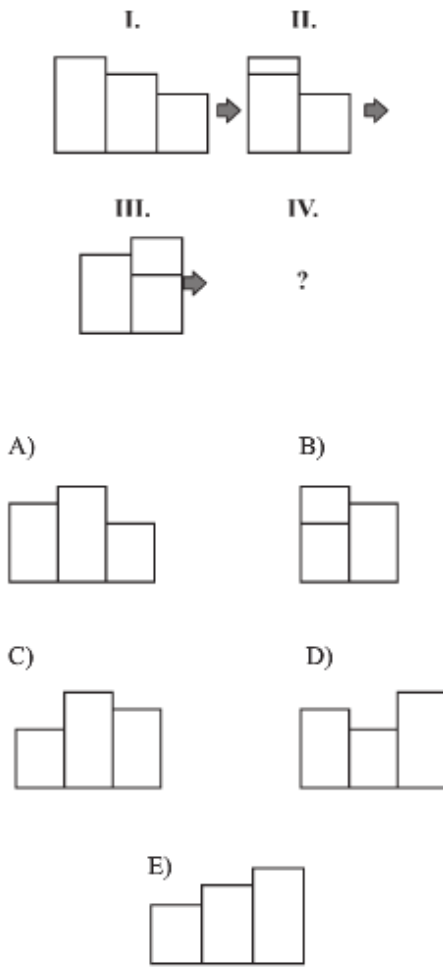
65.



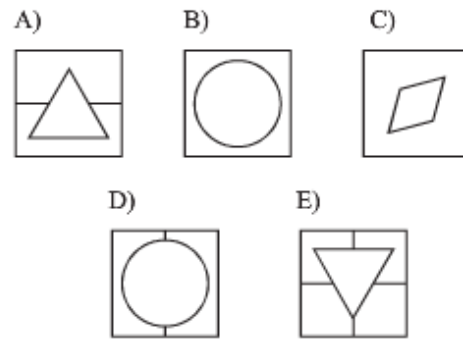
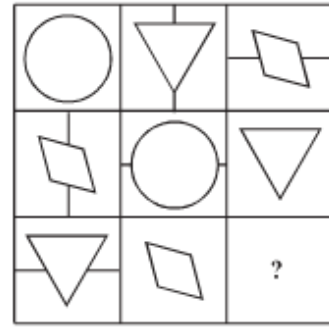
66.



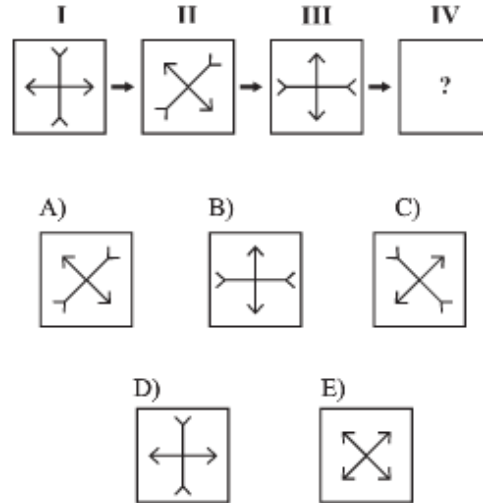
67.



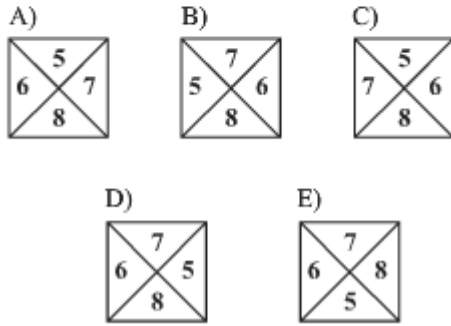
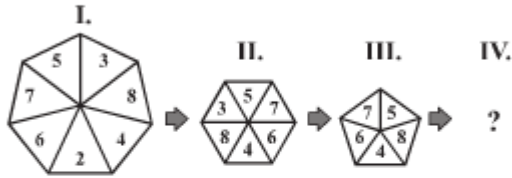
68.



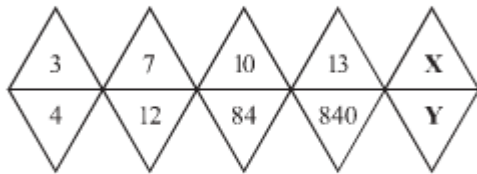
69.



70.



71.



- A) $X=4$, $Y=5460$
B) $X=16$, $Y=10920$
C) $X=32$, $Y=21840$
D) $X=64$, $Y=5460$
E) $X=4$, $Y=10920$

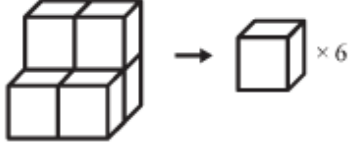
72.

5	2	3	10
6	4	1	11
1	9	?	12
12	?	6	?

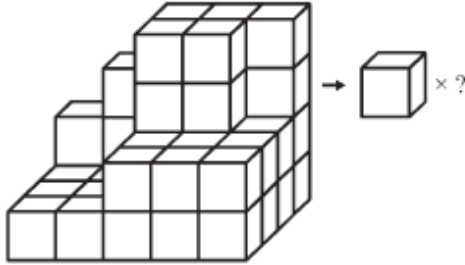
- A) B) C) D) E)
-

73., 74. ve 75. soruları aşağıdaki örneğe göre cevaplayınız.

Answer the questions 73, 74 and 75 according to the given sample.



73.



A) 44

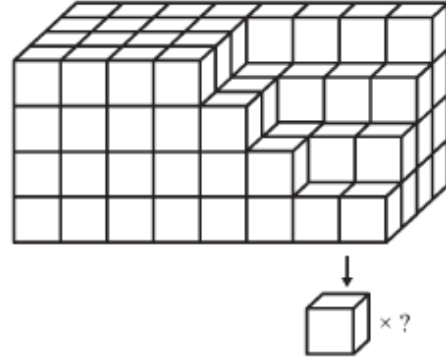
B) 45

C) 46

D) 47

E) 48

74.



A) 100

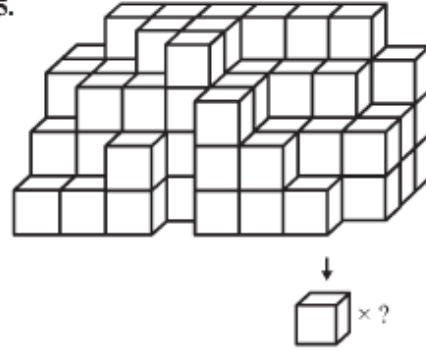
B) 102

C) 104

D) 108

E) 110

75.



A) 80

B) 82

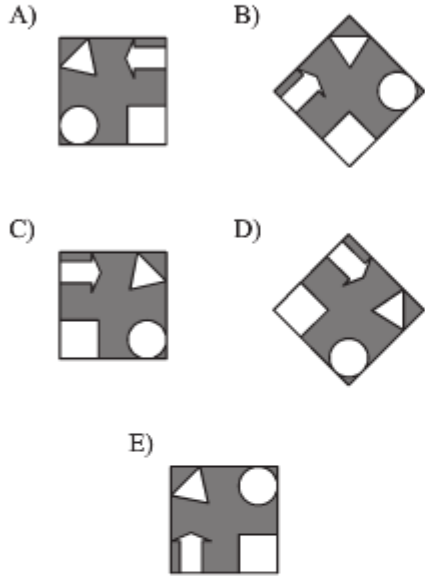
C) 86

D) 90

E) 94

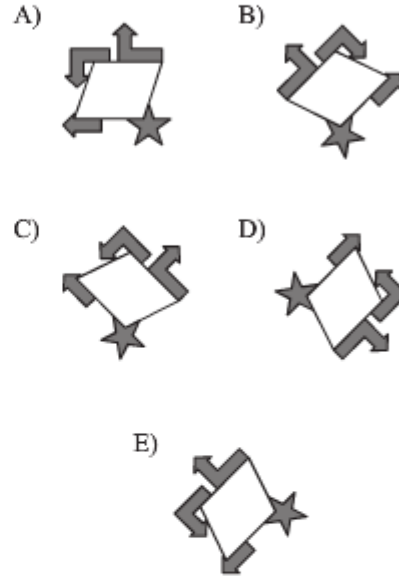
76.

Aşağıdaki şekillerden hangisi farklıdır?
Which of the following figures is different?

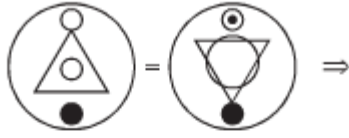


77.

Aşağıdaki şekillerden hangisi farklıdır?
Which of the following figures is different?



78.



A)



B)



C)



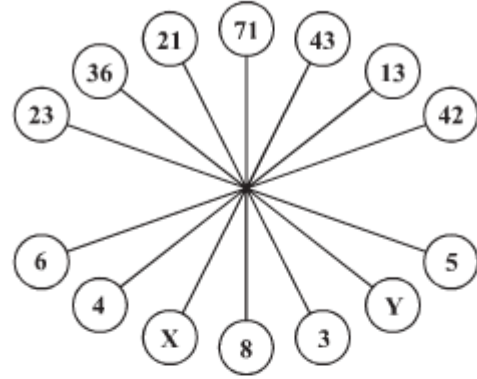
D)



E)



79.

A) $X=7, Y=9$ B) $X=2, Y=5$ C) $X=1, Y=6$ D) $X=8, Y=2$ E) $X=4, Y=1$

80.

3	9	1	2	8	3
9	?	?	2	1	9
1	?	?	3	9	1
2	1	9	3	8	2
8	3	9	1	2	8
3	8	2	1	9	3

A)

8	3
8	2

B)

3	8
2	8

C)

8	2
8	3

D)

2	8
3	8

E)

8	8
3	2

T.C.
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Kitapçık Türü A

1	B
2	C
3	A
4	C
5	D
6	E
7	D
8	A
9	D
10	C
11	C
12	C
13	C
14	A
15	B
16	B
17	A
18	C
19	E
20	D

21	B
22	B
23	C
24	A
25	D
26	C
27	C
28	E
29	C
30	D
31	D
32	B
33	E
34	C
35	C
36	C
37	B
38	E
39	A
40	C

41	C
42	C
43	D
44	E
45	B
46	E
47	D
48	B
49	B
50	A
51	E
52	C
53	B
54	B
55	B
56	C
57	A
58	C
59	A
60	C

61	C
62	A
63	C
64	D
65	D
66	B
67	D
68	D
69	C
70	B
71	B
72	B
73	B
74	D
75	C
76	A
77	B
78	E
79	A
80	B

