



METROPOL
متروپل وزرا

سؤالات آزمون یوس

دانشگاه گلیشیم

۲۰۱۹



**GELİŞİM
ÜNİVERSİTESİ
YÖS SORULARI
2019**

1. Bu testte 80 soru vardır.

This test contains 80 questions.

2. Cevaplarınızı, cevap kâğıdının YÖS Testi için ayrılan kısmına işaretleyiniz.
Mark your answers on YÖS exam part of the Answer Sheet.

1. $\left[5 + \left(3 - \frac{1}{3}\right) : \left(1 - \frac{1}{3}\right)\right] : \left[\frac{1}{5} - 2\right] = ?$

A) $-\frac{9}{5}$

D) -5

B) $-\frac{3}{5}$

E) -6

C) $-\frac{1}{5}$

2. $\left(1 - \frac{1}{6}\right) \cdot \left(1 - \frac{1}{7}\right) \cdot \left(1 - \frac{1}{8}\right) \cdot \dots \cdot \left(1 - \frac{1}{a}\right) = \frac{1}{7}$
 $\Rightarrow a = ?$

A) 25

D) 40

B) 30

E) 45

C) 35

3. $\frac{7}{x^y - 1} + \frac{7^{xy}}{x^{-y} - 1} = ?$
 $\frac{7 + 7^{xy}}{x^y - 1}$

A) -14

D) 7

B) -7

E) 14

C) -1

4. $\left(\frac{0,036}{0,009}\right)^{x+1} = \left(\frac{1}{64}\right)^{x-1}$
 $\Rightarrow x = ?$
 $\frac{4^{x+1}}{4^{3x-1}} = 4^{-3x}$

A) $-\frac{1}{4}$

B) 1

C) $\frac{1}{2}$

D) $\frac{3}{2}$

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

5. $\left[\frac{\left(\frac{1}{3}\right)^{-5} : \left(\frac{1}{3}\right)^2}{\left(\frac{1}{3}\right)^3}\right]^{\frac{1}{2}} = ?$

A) 3^5

B) 3^6

C) 3^7

D) 3^8

E) 3^{10}

6. $\sqrt{5^{8-3x} + \frac{11}{125^{x-2}}} = 30$
 $\Rightarrow x = ?$
 $5^{8-3x} + \frac{11}{5^{3x-6}} = 30$

A) $\frac{1}{3}$

B) $\frac{2}{3}$

C) $\frac{4}{3}$

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

E) $\frac{7}{3}$

7. $\frac{1}{\sqrt{3}-2} + \frac{1}{\sqrt{3}+2} = ?$

A) $-3\sqrt{3}$

D) $2\sqrt{3}$

B) $-2\sqrt{3}$

E) $3\sqrt{3}$

C) -2

8. $\frac{a}{b} = \frac{c}{d} = 3$
 $3a + 6c = 90 \Rightarrow$
 $b + 2d = ?$

A) 10

B) 15

C) 20

D) 25

E) 30

9. $x, y \in \mathbb{Z}^+$

$$\frac{x}{5} = \frac{y}{3}$$

$$\Rightarrow \frac{\sqrt{5x} + \sqrt{12y}}{\sqrt{27y} - \sqrt{20x}} = ?$$

- A) 1 B) 0 C) -5
D) -7 E) -11

10. $n! = 1 \cdot 2 \cdot 3 \cdot \dots \cdot n$

$$\left[\frac{n! - 2 \cdot (n-2)!}{(n+1)! - 3(n!)} \right] \cdot (n-1) = ?$$

- A) $\frac{n}{n-1}$ B) $\frac{n-1}{n}$ C) $\frac{n+1}{n}$
D) $\frac{n}{n+1}$ E) $\frac{n+1}{n-1}$

11.

$$\frac{K}{5} \frac{L}{4} - \frac{L}{2} \frac{M}{5}$$

$$= \frac{K+L+M-15}{2M} = ?$$

- A) 13 B) 12 C) 10 D) 9 E) 8

12. $a \in \mathbb{Z}^+$

$$2x + (a-3)y + 4 = 0$$

$$ax + 5y - 4 = 0$$

$$\text{Ç.K} = \emptyset \Rightarrow a = ?$$

- A) 0 B) 1 C) 2 D) 3 E) 5

13. $\frac{(x+y)^2 - xy}{x^3 - y^3} \cdot \frac{x^2 + xy}{x^2 - y^2} = ?$

- A) $x+y$ B) $\frac{1}{x}$ C) $\frac{1}{x-y}$
D) x E) y

14. $y - x = 5$

$$x + 3z = 2$$

$$\Rightarrow x^2 - 3yz - xy + 3xz = ?$$

- A) -10 B) -5 C) 7
D) 10 E) 25

15. $f: \mathbb{R} \rightarrow \mathbb{R}$

$$f(x) = 3x - 2 \Rightarrow$$

$$f(a+1) - f(a) - 4 = f(4) + f(a)$$

$$\Rightarrow a = ?$$

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

16. $f: \mathbb{R} \rightarrow \mathbb{R}$

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

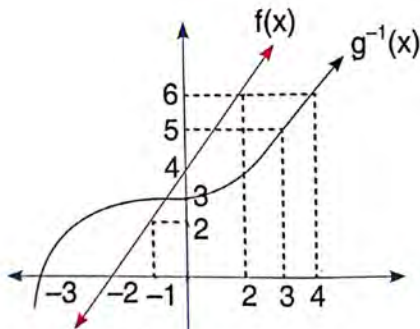
$$f(x) = ax + b,$$

$$f(x) + (f \circ f)(x) = 6x - 11$$

$$\Rightarrow f(-4) = ?$$

- A) 17 B) 19 C) 21 D) 23 E) 25

17.



$$\frac{f(2) + g(3) + g^{-1}(4)}{f(-1) + f^{-1}(0)} = ?$$

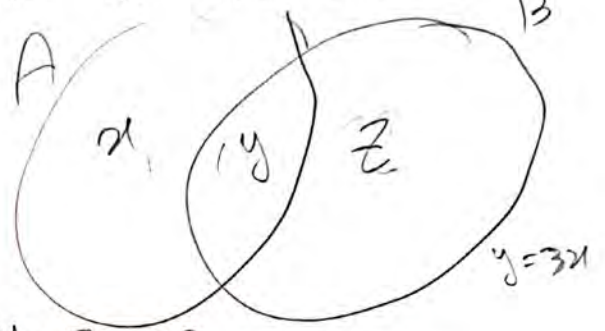
- A) 5 B) 4 C) 3 D) 2 E) 1

18. $A \neq \emptyset$ $B \neq \emptyset$

$$s(A \cup B) = 4, s(A \cap B) = 3s(A)$$

$$s(B) = 22 \Rightarrow s(B \setminus A) = ?$$

- A) 3 B) 8 C) 16 D) 18 E) 20



$$y + z = 22$$

$$x + y + z = 3x + 3y = 4y$$

$$z = 2x + 2y$$

19. $(-i) + (-i)^2 + (-i)^3 + (-i)^4 + \dots + (-i)^{98} = ?$

A) $-i + 1$

B) $i - 1$

C) 0

D) $1 - i$

E) $1 + i$

Handwritten: $y = 6$
 $x = 2$

$$z = 2x + 2y = 22 - y$$

$$2x + 6x = 22 - 3x$$

$$8x$$

20. $d[P(x) \cdot Q(x^2)] = 9$

$$d\left[\frac{Q(x)}{P^2(x)}\right] = -3$$

$$\Rightarrow d[P(x) \cdot Q(x)] = ?$$

- A) 3 B) 4 C) 6 D) 7 E) 8

$$21. \frac{x^5 - 3x^4 + 2x^2 + x + 5}{ax + b} \Big| \frac{x^2 - x}{Q(x)}$$

$$\Rightarrow ax + b = ?$$

- A) $5(x + 1)$ B) $3(x + 1)$ C) $x + 5$
D) $(x + 3) \cdot 3$ E) $3x + 5$

$$22. \log_2 31! = m \Rightarrow \log_2 32! = ?$$

- A) $32m$ B) $32 + m$ C) $5 \cdot m$
D) $m - 5$ E) $5 + m$

$$23. a = \log_3 60 \quad b = \log_2 22 \quad c = \log_5 100$$

$$|a - b| + |a - c| - |b - c| = ?$$

- A) $2a$ B) 0
C) $2a + 2c$ D) $2b + 2c$
E) $2c$

$$24. \lim_{x \rightarrow 2} (\log_9 81^{x^2 + ax}) = 32$$

$$\Rightarrow a = ?$$

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

$$25. \lim_{x \rightarrow 4} f(x) = 7 \Rightarrow \lim_{x \rightarrow 4} 3^{\sqrt{2f(x)+2}+1} = ?$$

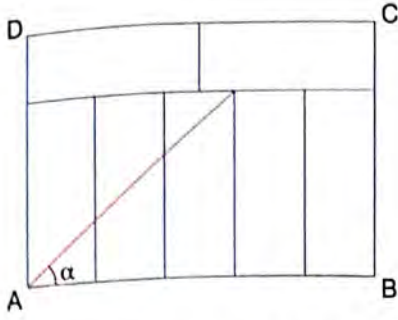
- A) 243 B) 81 C) 64 D) 27 E) 16

$$26. f(x) = \begin{cases} x^2 - ax + 6, & x \geq 2 \\ x^3 - 5x + 8, & x < 2 \end{cases}$$

$$\lim_{x \rightarrow 2} f(x) = b \Rightarrow a + b = ?$$

- A) 2 B) 6 C) 8 D) 10 E) 12

27.



ABCD dikdörtgeni boyutları eşit 7 dikdörtgenden oluşmuştur.

Buna göre $\tan \alpha = ?$

ABCD is a rectangle that is consist of 7 equal size of rectangle. What is $\tan \alpha$?

- A) $\frac{1}{3}$ B) $\frac{3}{5}$ C) $\frac{3}{7}$ D) $\frac{6}{7}$ E) $\frac{5}{6}$

28.

$$\int_2^5 (f(x) - 3) \cdot dx = 7 \Rightarrow$$

$$\int_0^3 (2x - f(x+2)) dx = ?$$

- A) -7 B) -5 C) -4 D) 0 E) 6

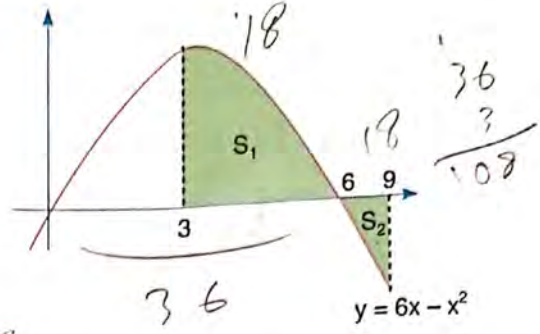
29.

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

$$\Rightarrow \int_1^6 f(x) dx = ?$$

- A) 67 B) 60 C) 70 D) 79 E) 81

30.



$$\Rightarrow S_1 + S_2 = ?$$

- A) 44 B) 48 C) 54 D) 63 E) 72

31. $n \in \mathbb{N}$ (\mathbb{N} is set of natural numbers)

$$3^{4n+3} + 12^{43} + 4 = ? \pmod{5}$$

- A) 0 B) 1 C) 2 D) 3 E) 4

32. $x + y = 5 \pmod{7}$

$$3x - y = 3 \pmod{7}$$

$$x - y = ? \pmod{7}$$

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

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33. $z \cdot |\operatorname{Re}(z)| = -25 + 60i$

$\Rightarrow |z| = ?$

- A) 14 B) 13 C) 12 D) 10 E) 9

34. $x^2 + (a-5)x + b = 0$ S-S = $\{x_1, -2\}$

$x^2 - (b+2)x + c = 0$ S-S = $\{x_1, -3\}$

$\Rightarrow a + b = ?$

- A) 2 B) 1 C) 0 D) -1 E) -2

35. $\sin x + \sin y = \sqrt{3}$

$\cos x + \cos y = 1$

$\Rightarrow \cos(x-y) = ?$ *cos 0 = 1 + \sqrt{3}*

- A) -1 B) 0 C) $\frac{1}{3}$ D) $\frac{1}{2}$ E) 1

36. $x \in [0, 3\pi]$

$2\cos^2 x + \cos x - 3 = 0$

$\Rightarrow S \cdot S = ?$

A) $\left[0, \frac{\pi}{2}\right]$

B) $(0, 2\pi)$

C) $\left[\frac{\pi}{2}, \frac{3\pi}{4}\right]$

D) $\left[\frac{\pi}{3}, \frac{4\pi}{3}\right]$

E) $\{2\pi\}$

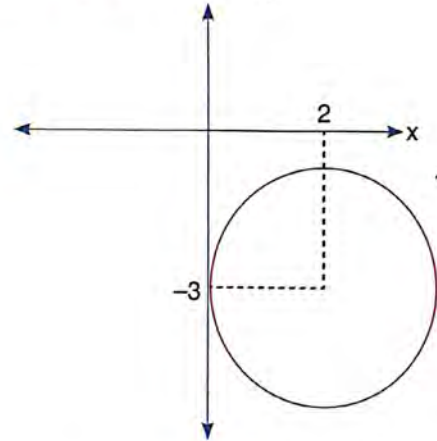
$2x^2 + x - 3 = 0$

$2x \quad -3$

$x \quad -1$

$(2x+3)(x-1) = 0$

37. $2x = -3 \Rightarrow x = -\frac{3}{2}$



Şekilde verilen karmaşık sayı aşağıda verilen denklemlerden hangisinin çözüm kümesidir?

Which of the following is a solution set of complex numbers shown on the figure?

A) $|z + 1 - 3i| = 2$

B) $|z - 1 + 2i| = 2$

C) $|z + 2 - 3i| = 2$

D) $|z - 2 + 3i| = 2$

E) $|z - 3 - 2i| = 2$

38. $A = \begin{bmatrix} 4 & 7 \\ 3 & 5 \end{bmatrix} \Rightarrow A + A^{-1} = ?$

A) $\begin{bmatrix} 5 & 7 \\ 3 & 4 \end{bmatrix}$

B) $\begin{bmatrix} -1 & 14 \\ 6 & 1 \end{bmatrix}$

C) $\begin{bmatrix} 9 & 0 \\ 0 & 9 \end{bmatrix}$

D) $\begin{bmatrix} 1 & 6 \\ 14 & -1 \end{bmatrix}$

E) $\begin{bmatrix} 2 & 6 \\ 0 & 1 \end{bmatrix}$

39. $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 2 & 1 \\ 5 & 0 & 2 \end{bmatrix} \times \begin{bmatrix} 3 & -2 & -3 \\ 2 & 3 & 0 \\ 1 & 1 & 2 \end{bmatrix} = \begin{bmatrix} x & \cdot & \cdot \\ \cdot & \cdot & y \\ \cdot & \cdot & \cdot \end{bmatrix}$

$x + y = ?$

A) -10

B) -6

C) 0

D) 10

E) 20

40. $\{0, 1, 2, 3, 4, 5\}$ kümesinin elemanları kullanılarak üç basamaklı, rakamları farklı kaç çift doğal sayı yazılabilir?

How many different 3 digit numbers can be written by using the elements of set $\{0, 1, 2, 3, 4, 5\}$ providing that the numbers are even natural numbers and different from each other?

A) 48

B) 52

C) 60

D) 64

E) 68

41. ve 42. sorularda I. gruptaki sözlüklerin harfleri birer rakamla gösterilmiş II. gruptaki sayılar elde edilmiştir. Soru işareti ile belirtilen sözcüğün hangi sayıyla gösterildiğini bulunuz.

In questions 41 and 42 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.

41.

I.
KARE
ASIR
KATI
MAYA
YARE

II.

$\left\{ \begin{array}{ll} 1256 & 3289 \\ 7212 & 2495 \\ & 3256 \end{array} \right.$

ASIR = ?

A) 1256

B) 2495

C) 3256

D) 3289

E) 7212

42.

I.
ORUÇ
PİKO
PUMA
KORU
ÇAPA

II.

$\left\{ \begin{array}{ll} 2756 & 8626 \\ 9137 & 1378 \\ & 2491 \end{array} \right.$

KORU = ?

A) 1378

B) 2481

C) 2756

D) 8626

E) 9137

43 ve 44. sorularda 1. gruptaki kümelerin şekilleri birer rakamla gösterilerek II. gruptaki sayılar elde edilmiştir. Soru işareti ile belirtilen kümenin hangi sayıyla gösterildiğini bulunuz.

In questions 43 and 44, 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 question mark.

43.

I. $\left. \begin{array}{l} (\quad \bullet \quad \blacksquare \\ + \quad \blacklozenge \quad \text{)} \\ \bullet \quad \blacksquare \quad \text{)} \\ \blacklozenge \quad \bullet \quad (\\ + \quad \blacksquare \quad + \end{array} \right\}$ II. $\left\{ \begin{array}{l} 818 \\ 473 \\ 371 \\ 718 \\ 843 \end{array} \right.$

$\bullet \quad \blacklozenge \quad \blacksquare = ?$

- A) 314 B) 341 C) 731
D) 741 E) 871

44.

I. $\left. \begin{array}{l} \text{u} \\ * \quad \odot \\ \text{v} \\ \text{w} \\ \text{z} \\ \text{u} \\ \text{v} \\ \text{w} \\ \text{z} \end{array} \right\}$ II. $\left\{ \begin{array}{l} 3624 \quad 2436 \\ 4276 \quad 7647 \\ 4372 \end{array} \right.$

$\odot \quad * \quad \text{u} \quad \text{v} = ?$

- A) 2436 B) 3624 C) 4276
D) 4372 E) 7644

45 ve 46. soruları aşağıdaki tabloya göre cevaplayınız.

Answer questions 45 and 46. in accordance with the table given below.

■	A	B	C	D	E
A	C	E	B	A	D
B	E	D	A	C	B
C	B	A	E	D	C
D	A	C	D	B	E
E	D	B	C	E	A

Tabloda ■ işleminin görevi belirlenmiştir.

The operation of ■ is established in the table.

Örnekler (Examples)

$$A \blacksquare B = E$$

$$B \blacksquare C = A$$

45. $(C \blacksquare E) \blacksquare (A \blacksquare D) = ?$

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

46. $(A \blacksquare C) \blacksquare (x \blacksquare E) = B$

$$x = ?$$

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

47. I. $a \heartsuit b = \begin{cases} a^2 - a \cdot b, a \leq b \\ 2a - 3b, a > b \end{cases}$

II. $(-2) \heartsuit (5 \heartsuit 3) = ?$

I. eşitlikte \heartsuit işleminin görevi belirlenmiştir. Buna göre, II. eşitlikte soru işaretinin yerine aşağıdakilerden hangisi gelmelidir?

To equation I, the operation of \heartsuit is established. According to this operation, which of the following does the question mark stand for in equation II.?

- A) 8 B) 6 C) 2 D) -16 E) -34

48. I. $a \heartsuit b = \frac{1}{a} + \frac{1}{b}$

II. $a \star b = ab - b$

III. $(\frac{1}{4} \heartsuit \frac{1}{7}) \star 28 = ?$

I ve II. eşitliklerde \heartsuit ve \star işlemlerinin görevleri belirlenmiştir. Buna göre, III. eşitlikte soru işaretinin yerine aşağıdakilerden hangisi gelmelidir?

In equations I and II the operations of \heartsuit and \star are established. According to these operations, which of the following does the question mark stand for in equation III?

- A) 20 B) 18 C) -17 D) -21 E) -24

49.

+	a	b	c
a			3b
b	19		
c		36	

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 positive number. Accordingly, what is the value of b?

- A) 4 B) 8 C) 11 D) 17 E) 25

$$a + c = 3b$$

$$b + a = 19$$

$$c + b = 36$$

$$4b - c = 19$$

$$c + b = 36$$

$$5b = 55$$

50.

x	a	b	c
a			
b			7b

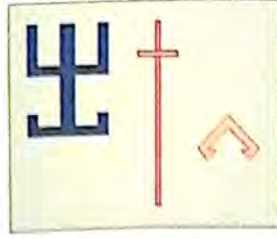
Yandaki çarpma ve toplama tablosunda a, b, c harfleri pozitif birer sayının yerine kullanılmıştır. Buna göre b = ?

+	a	b	c
a		6c+1	
b			$\frac{2a}{3}$

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

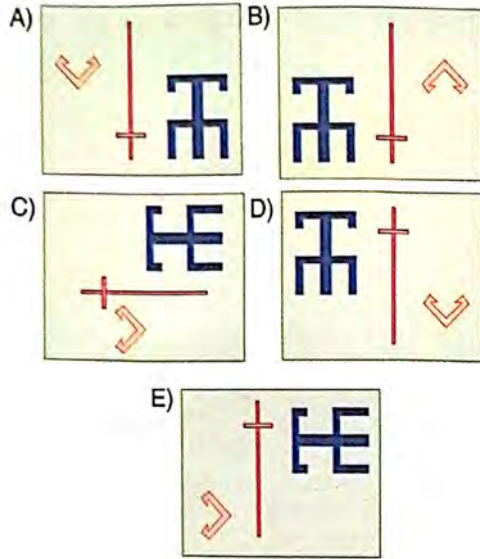
- A) 7 B) 13 C) 18 D) 27 E) 30

51.



Aşağıda verilen şekillerden hangisi şeklin döndürülmüş halidir?

Which is the rotated form of the shape?



52.

4		2
	2	3
	5	6
15		A

Yukarıda verilen şekle göre A kaçtır?

According to the figure above, what is the value of A?

- A) 12 B) 14 C) 16 D) 18 E) 21

$$53. \quad x = 4, \quad y = 7, \quad z = 10$$

$$x = 7, \quad y = 16, \quad z = 16$$

$$x = -2, \quad y = -11, \quad z = -2$$

x ile y, x ile z arasında bir ilişki vardır. Buna göre,

There is a relationship of x with y and x with z so,

$$x = 1 \Rightarrow y + z = ?$$

- A) -6 B) -4 C) 2 D) 6 E) 8

54 - 55. sorularda her harf birbirinden farklı bir şekle karşılık gelmektedir.

In questions 54-55 there is a different symbol to represent each other.

54.

•	•	▲	‡	■	•	•
■	•	•	▲	‡	■	•
▲	‡	‡	■	•	•	▲
•	•	•	▲	‡	‡	•
‡	•	■	•	•	•	▲
•	▲	‡	■	‡	▲	■
‡	■	▲	•	•	■	•

I			II	
K	L	K	K	K
	K		M	N

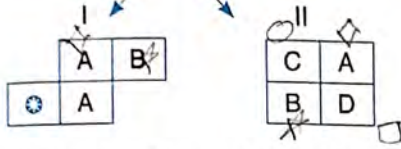
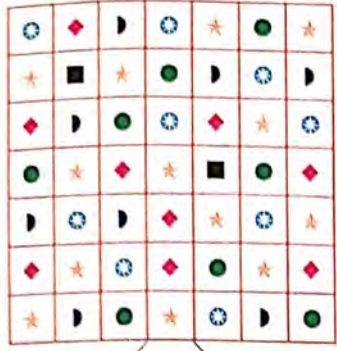
I ve II. yukarıdaki tablonun farklı birer parçasıdır.

Buna göre II deki M ve N nin yerine aşağıdakilerden hangisi gelmelidir?

I and II are different parts of the figure above. Accordingly, which of the following combinations should replace M and N in II?

- | | | |
|----|---|---|
| | M | N |
| A) | ‡ | ■ |
| B) | ‡ | • |
| C) | ‡ | ▲ |
| D) | ■ | ▲ |
| E) | ▲ | ‡ |

55.

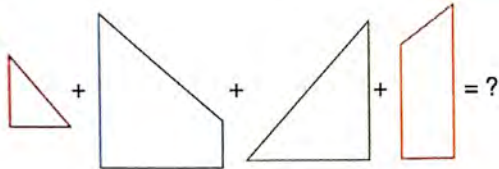


I. ve II. yukarıdaki tablonun farklı birer parçasıdır. Buna göre, II deki C ve D'nin yerine aşağıdakilerden hangisi gelmelidir?

I. and II. are different parts of the above table. Which one of the following must be replaced by C and D in II?

- | | C | D |
|----|---|---|
| A) | ■ | ● |
| B) | ● | ■ |
| C) | ☆ | ☾ |
| D) | ☆ | ■ |
| E) | ☾ | ☆ |

56.



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

57.



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

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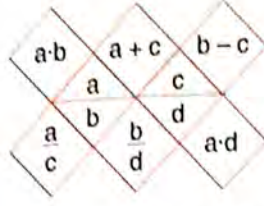
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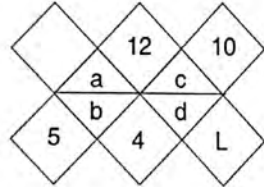
58 - 60. soruları aşağıdaki şekle göre cevaplayınız.



Yukarıdaki şekil a, b, c ve d harfleri ile 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 has been organized according to various operations using four positive integers represented by the letters a, b, c and d. The integers represented by the letters may change from question, but the operations to be done remain the same.

58.



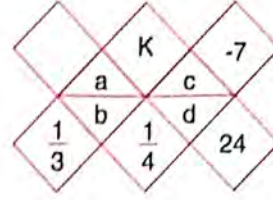
L = ?

Yukarıda verilen şekle göre L = ?

According to the figure above, what is the value of L = ?

- A) 15 B) 18 C) 20 D) 24 E) 30

59.



K = ?

Yukarıda verilen şekle göre K kaçtır?

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

- A) 10 B) 12 C) 14 D) 17 E) 20

$$b - c = -7 \quad K = a + c$$

$$\frac{a}{c} = \frac{1K}{3K} \quad 3a = c = 7 + b$$

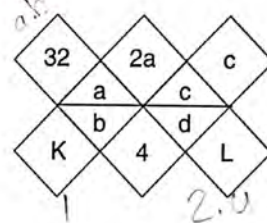
$$\frac{b}{d} = \frac{1K}{4K} \quad u \cdot b = d$$

$$u(3a) = 30 - c = 0$$

$$-c = -7 - b$$

$$c = 7 + b$$

60.



K + L = ?

Yukarıda verilen şekle göre K + L kaçtır?

According to the figure above, what is the value of K + L = ?

- A) 15 B) 14 C) 12 D) 9 E) 8

$$32 = 2a \quad 2a = 32 \quad a = 16$$

$$c = 32 - 2a = 32 - 32 = 0$$

$$K + L = 4$$

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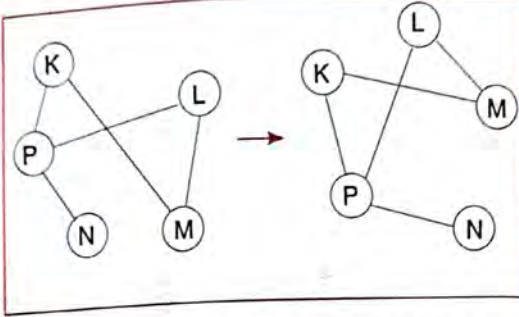
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61 ve 63 soruları örnekte verilen ilişkiye göre cevaplayınız.

In questions 61 - 63. find the correct answer in accordance with the relationship established in the example below.

Örnek:

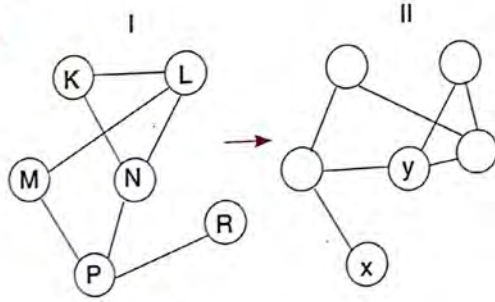
Example:



K, L, M, N ve P harfleri I. şekildeki bağlantı yapıları ve birbirine bağlanan harfler değişmek koşuluyla II. şekil elde edilmiştir.

Letters K, L, M, N and P are linked as in Figure I. Figure II has been constructed so as not to change which letters are linked to which, and the number of links made with each letter, in Figure I.

61.



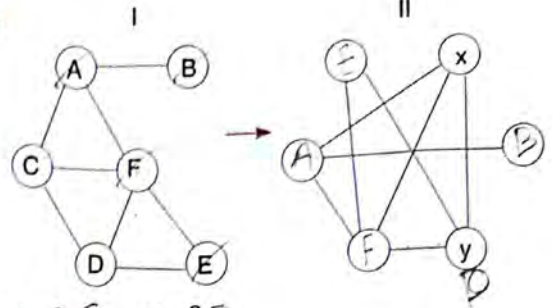
x = ? y = ?

II. şekilde x ve y nin yerine gelmesi gereken harfleri bulunuz.

Find the letters that correspond to x and y in Figure II.

- | | x | y |
|----|---|---|
| A) | L | P |
| B) | K | N |
| C) | N | P |
| D) | K | L |
| E) | R | N |

62.



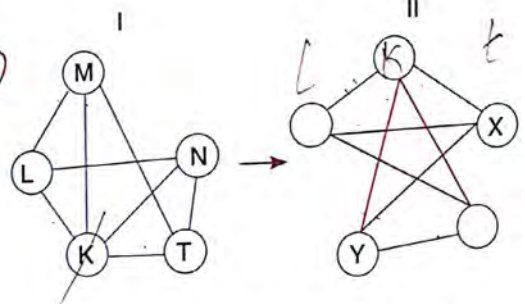
x = ? y = ?

II. şekilde x ve y nin yerine gelmesi gereken harfleri bulunuz.

Find the letters that correspond to x and y in Figure II.

- | | x | y |
|----|---|---|
| A) | D | A |
| B) | C | D |
| C) | B | C |
| D) | C | F |
| E) | B | A |

63.



II. şekilde x ve y nin yerine gelmesi gereken harfleri bulunuz.

Find the letters that correspond to x and y in Figure II.

- | | x | y |
|----|---|---|
| A) | N | L |
| B) | N | M |
| C) | L | K |
| D) | K | T |
| E) | T | L |

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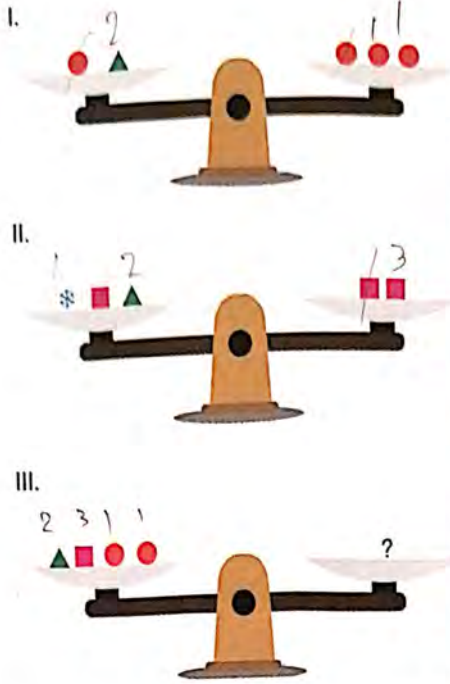
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64.

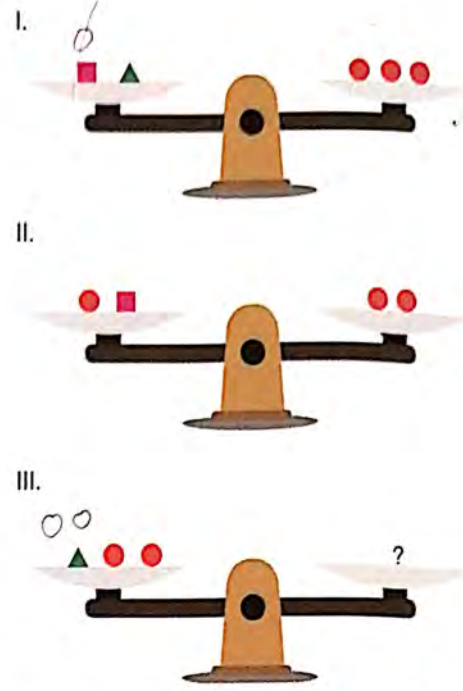


Yukarıdaki terazilerin üçü de dengede olduğuna göre III. terazide soru işareti aşağıdakilerden hangisini göstermektedir.

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

- A) $\triangle \triangle \triangle \bullet$ $\begin{matrix} 2 & 2 & 1 \\ \triangle & \triangle & \bullet \end{matrix}$ B) $\triangle \bullet \ast$ $\begin{matrix} 2 & 3 & 1 \\ \triangle & \bullet & \ast \end{matrix}$ C) $\triangle \triangle \ast$ $\begin{matrix} 2 & 2 & 1 \\ \triangle & \triangle & \ast \end{matrix}$
D) $\triangle \triangle \triangle \ast$ $\begin{matrix} 2 & 2 & 2 & 1 \\ \triangle & \triangle & \triangle & \ast \end{matrix}$ E) $\triangle \triangle \ast \ast$ $\begin{matrix} 2 & 2 & 1 & 1 \\ \triangle & \triangle & \ast & \ast \end{matrix}$

65.



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

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

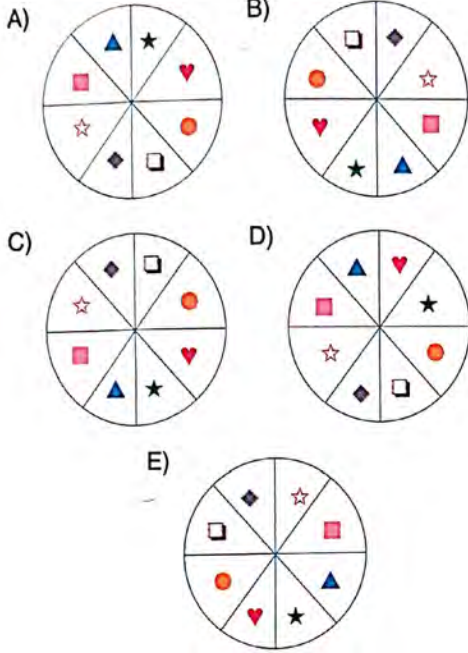
- A) $\bullet \bullet \bullet \bullet$ B) $\triangle \triangle \triangle$ C) $\bullet \bullet \bullet$
D) $\triangle \bullet$ E) $\triangle \triangle \bullet$

66.



Yukarıdaki şekil saat yönünde 270° döndürüldüğünde aşağıdakilerden hangisi elde edilir?

When the shape above is rotated 270° clockwise which shape is obtained?



67.

+	2^a	2^b
2^a	2^b	
2^b		

x	3^a	3^b
3^a		243
3^b		

Yukarıdaki toplama ve çarpma tablosunda a ve b harfleri pozitif birer sayının yerine kullanılmıştır.

Buna göre a = ?

In the addition multiplication tables above, the letters a and b stand for positive numbers. Accordingly what is the value of a?

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

$$2^a + 2^a = 2^b$$

$$a \cdot b = 5$$

$$3^{2a} + 3^{2a} = 3^5$$

$$4a =$$

$$3^2 + 3^2 =$$

68.

x	a	b	c
a			b
b	$81c$		
c		$49a$	

$a, b, c \in \mathbb{Z}^+$
 $\Rightarrow a + b + c = ?$

A) 81 B) 79 C) 63 D) 57 E) 45

$$a^2 \cdot c^2 = b^2$$

$$a \cdot c = b$$

$$a \cdot b = 81c$$

$$c \cdot b = 49a$$

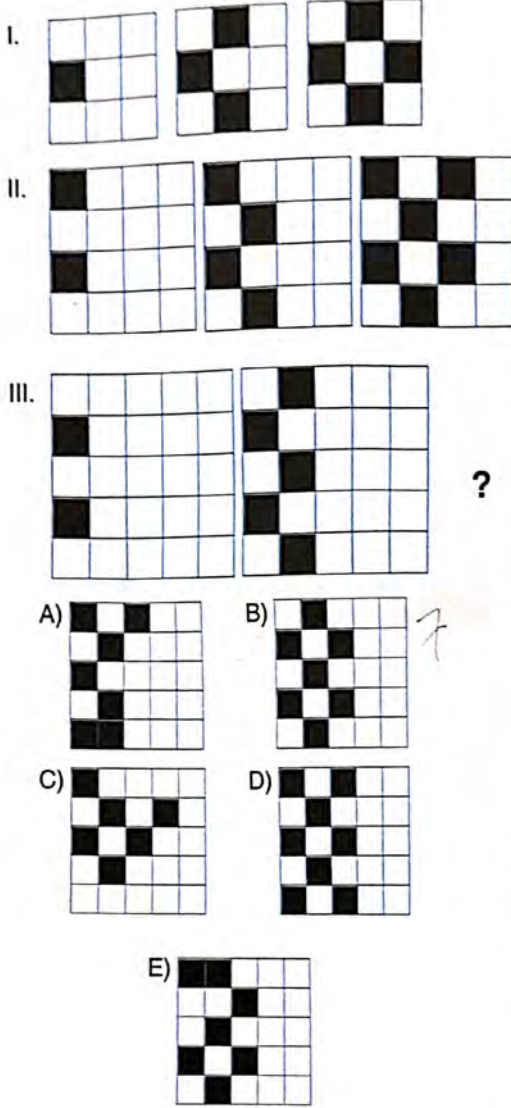
$$b^2 = 49a^2$$

$$81c^2 = 49a^2$$

$$b^2 = 81c^2$$

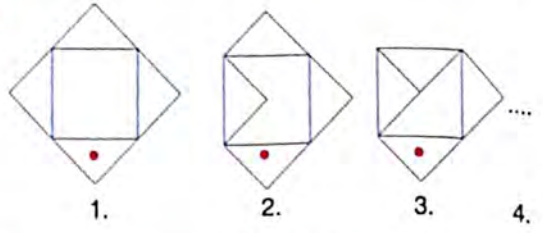
69. I ve II ile verilen ilişkiye göre III. satır hangi şekil tamamlar.

According to the relationship given in I and II which shape completes the row III?



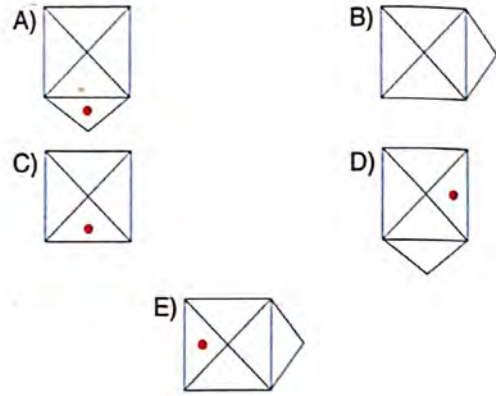
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70.

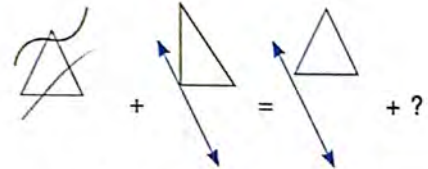


Yukarıdaki şekiller belirli bir kurala göre dizilmiştir. Buna göre 4. şekil aşağıdakilerden hangisidir?

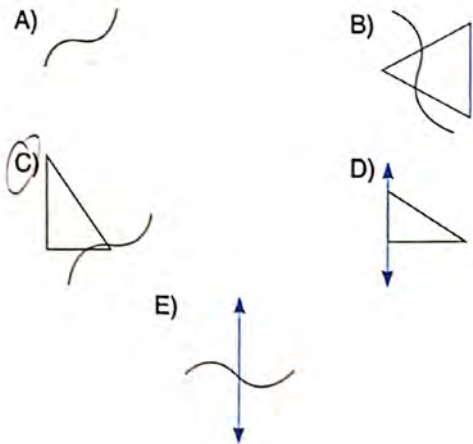
The above figures are arranged according to a certain rule. Which is the 4. figure?



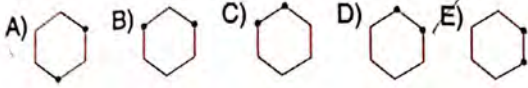
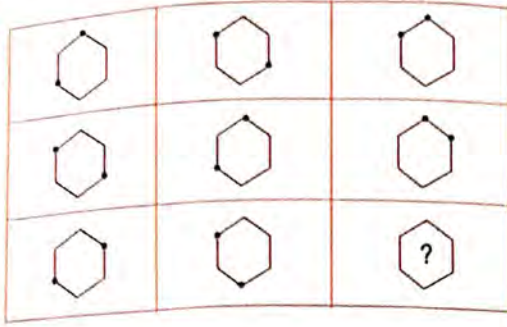
71.



Soru işareti yerine hangi şekil gelmelidir?
Which one should come up instead of the question mark?

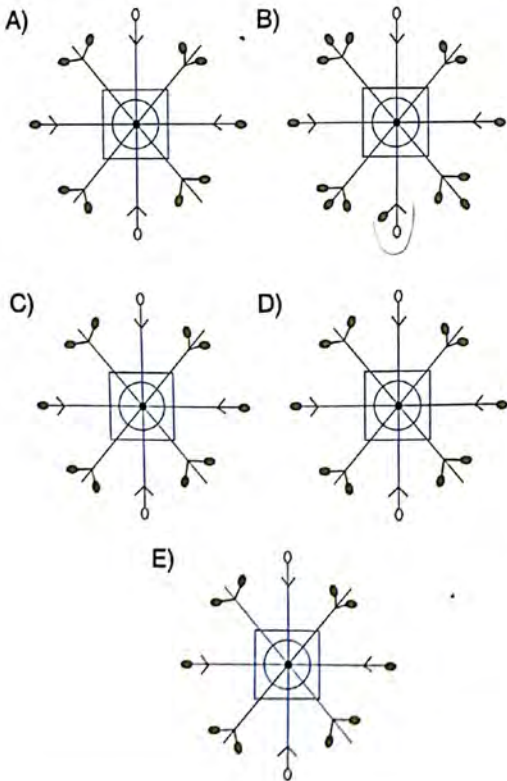


72.

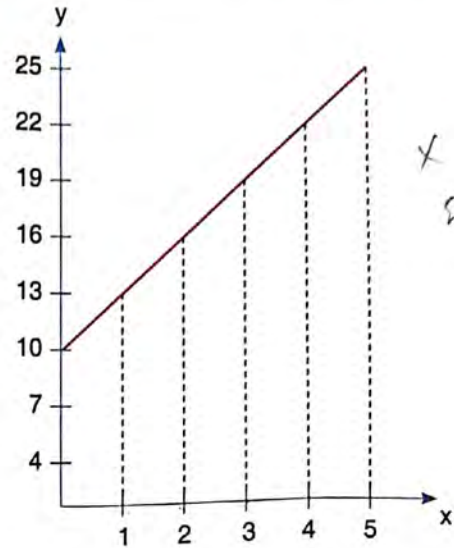


73. Aşağıdakilerden hangisi diğerlerinden farklıdır?

Which of the following is different from the others?



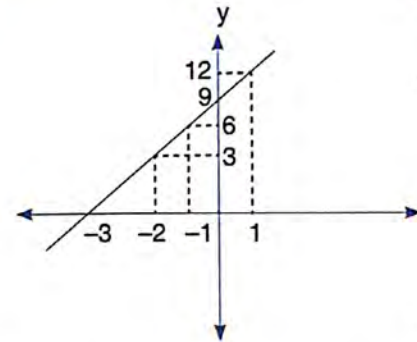
74.



$$x = 21 \Rightarrow y = ?$$

- A) 63 B) 65 C) 68 D) 71 E) 73

75.



$$y = -12$$

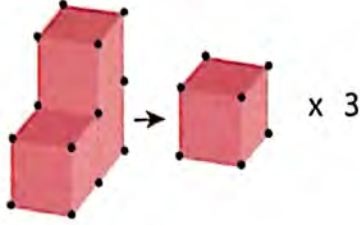
$$x = ?$$

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

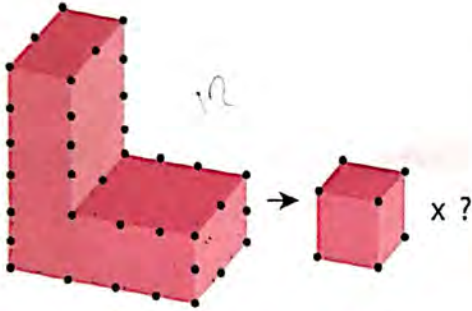
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76 - 77. soruları örnekteki ilişkiye göre cevaplayalım.

Answer questions 76 and 77 according to the relationship in the example

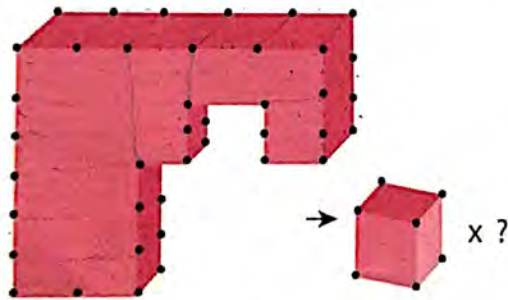


76.



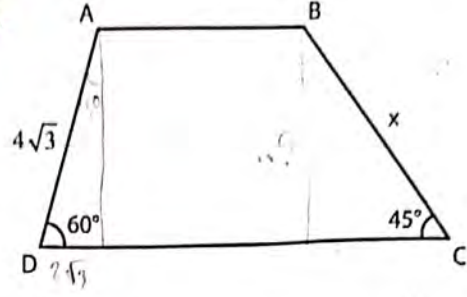
- A) 13 B) 14 C) 15 D) 16 E) 24

77.



- A) 16 B) 17 C) 18 D) 19 E) 20

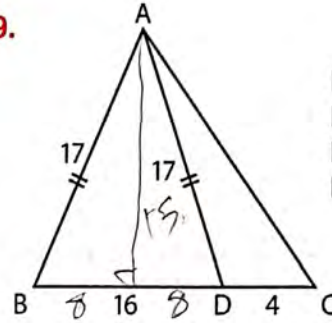
78.



ABCD yamuk,
ABCD trapezoid,
 $s(\widehat{ADC})=60^\circ$ $s(\widehat{BCD})=45^\circ \Rightarrow x=?$

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

79.

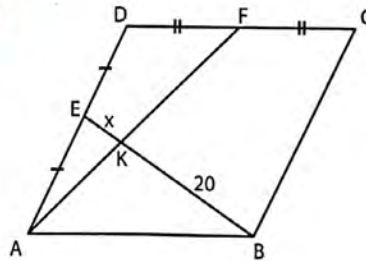


$|AB|=17$ cm
 $|AD|=17$ cm
 $|DC|=4$ cm
 $|BD|=16$ cm

$\Rightarrow A(\widehat{ABC}) = ?$

- A) 100 B) 120 C) 136 D) 144 E) 150

80.



ABCD paralelkenar,
ABCD rhomboid,
 $[BE] \cap [AF] = \{K\}$
 $|BK|=20$ cm
 $\Rightarrow |EK|=x=?$

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