



5.  $\frac{bc}{a}=1, \frac{ac}{b}=3, \frac{ab}{c}=4 \Rightarrow a^2+b^2+c^2=?$

- A) 9      B) 12      C) 15      D) 19      E) 22

7.  $x^2-3x-3=0 \Rightarrow x^2+\frac{9}{x^2}=?$

- A) 12      B) 15      C) 3      D) 9      E) 6

6.  $521 \cdot 523 - 517 \cdot 522 - 9 = ?$

- A) 2600      B) 2620      C) 2640      D) 2660      E) 2680

8.  $x^3 < x < x^2$  ve  $y^2 < y$  ise aşağıdakilerden hangisi daima doğrudur?

*If  $x^3 < x < x^2$  and  $y^2 < y$  then which of the following is always true?*

- A)  $x+y>1$       B)  $x \cdot y < -2$       C)  $x \cdot y > 0$   
D)  $\frac{x}{y} + \frac{y}{x} < 0$       E)  $y > x^2$

9. Aşağıdaki eşitsizliği sağlayan farklı  $x$  tam sayılarının toplamı nedir?

What is the sum of different integers  $x$ 's satisfying the following inequality?

$$\frac{x^2 - 8x}{\sqrt{2} - \sqrt{17}} < \sqrt{2} + \sqrt{17}$$

- A) -9    B) -10    C) -6    D) -15    E) -12

10. 
$$\left. \begin{array}{l} 3y + 4z = 3 \\ x + 2y - z = 6 \\ -2x - 4y + 3z = 9 \end{array} \right\} \Rightarrow \frac{x}{y} + z = ?$$

- A) 12    B) 15    C) 18    D) 21    E) 24

11.  $x < y < z < 0 \Rightarrow$

$$\sqrt{x^2 - 2xy + y^2} - \sqrt[3]{y^3 - 3y^2z + 3yz^2 - z^3} - |z - x| = ?$$

- A)  $2x$     B)  $2y$     C)  $0$     D)  $2z$     E)  $2z - 2x$

12. 
$$\frac{\left(\frac{2}{9} - A\right) : \frac{17}{3}}{\left(1 - \frac{2}{3}\right) : \frac{1}{4}} = -\frac{1}{2} \Rightarrow A = ?$$

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

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13.  $s(A \cup B) = 16$ ,  $s(A^C) + s(B^C) = 14$ ,  $s(E) = 18$   
 $\Rightarrow s(A \cap B) = ?$

$E$  evrensel küme /  $E$  is universal set  $A^C = E - A$

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

14.  $(g \circ f)(x) = 12x + 13$   
 $g(x) = 4x + 5$  }  $\Rightarrow f(x) = ?$

- A)  $f(x) = 2x - 1$       B)  $f(x) = 3x - 2$       C)  $f(x) = 3x + 2$   
 D)  $f(x) = 2x + 1$       E)  $f(x) = 4x + 5$

15.  $C$  çift tamsayılar kümesi olsun.  $A = [-\frac{\sqrt{17}}{2}, \sqrt[3]{63})$

ve  $B = [-\sqrt{10}, \sqrt[4]{82})$  aralıklar olmak üzere

$(A \cup B) \cap C$  kümesinin eleman sayısı kaçtır?

Let  $C$  be set of even integers. What is the number of elements of the set  $(A \cup B) \cap C$ , where  $A = [-\frac{\sqrt{17}}{2}, \sqrt[3]{63})$  and  $B = [-\sqrt{10}, \sqrt[4]{82})$  are intervals.

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

16.  $x^2 + |3x - 22| + 4 = 0$

Denkleminin çözüm kümesi aşağıdakilerden hangisidir?

What is the set of solution of the above equation?

- A)  $\{-6, 3\}$       B)  $\{-3, 6\}$       C)  $\emptyset$       D)  $\{-6\}$       E)  $\{3\}$



17.  $3f^{-1}(x) = f^{-1}(x - 2)$ ,  $f(6) = 1 \Rightarrow f(2) = ?$

$f^{-1}$  :  $f$  nin ters fonksiyonu

$f^{-1}$  : inverse function of  $f$

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

19.  $f(4 + \sqrt[5]{2x-5}) = 5 - 3x$ ,  $g(4x^2 + 6x - 3) = x^2 + \frac{3}{2}x - 2$

$\Rightarrow f(3) + g(13) = ?$

- A) 8      B) 6      C) 5      D) -1      E) 1

18.  $\binom{x}{2} = 3 - x \Rightarrow x = ?$ ,  $C(n, r) = \binom{n}{r}$

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

20. 2030402 sayısının rakamları ile kaç farklı 7 basamaklı sayı yazılabilir?

*How many different 7-digit numbers can be written with the digits of the number 2030402 ?*

- A) 160      B) 200      C) 240      D) 280      E) 300

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21. 8 kitabın 2'si Ahmet'e, 6'sı Ayşe'ye kaç farklı şekilde verilebilir?

*How many different ways can be given 2 of 8 books to Ahmet and 6 of 8 books to Ayşe?*

- A) 12    B) 14    C) 21    D) 28    E) 132

23. İki zar birlikte havaya atılıyor. Üst yüzlere gelen sayıların toplamının 8 olma olasılığı kaçtır?

*The two dice are thrown into the air together. What is the probability that the sum of the numbers on the top faces is 8?*

- A)  $\frac{1}{6}$     B)  $\frac{2}{9}$     C)  $\frac{5}{36}$     D)  $\frac{7}{36}$     E)  $\frac{1}{3}$

22.  $\left(x - \frac{1}{x}\right)^8$  ifadesinin açılımındaki sabit terim aşağıdakilerden hangisidir?

*Which of the following is the constant term in the expansion?*

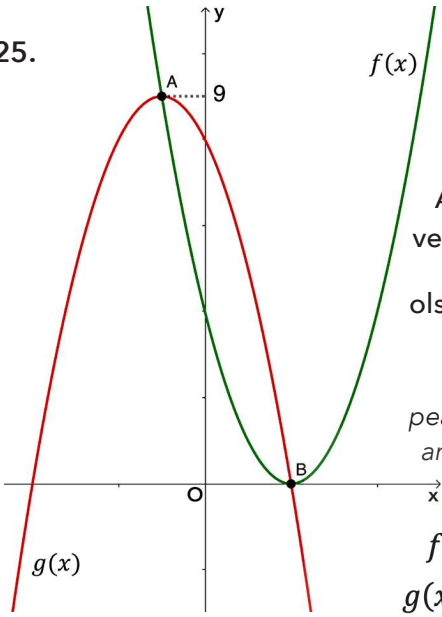
- A) 40    B) 70    C) 60    D) 80    E) 120

24. 1 ile 100 arasından seçilen iki tam sayıdan birinin diğerinin üç katı olma olasılığı nedir?

*What is the probability that one of the two integers chosen from 1 to 100 is three times the other?*

- A)  $\frac{1}{150}$     B)  $\frac{1}{99}$     C)  $\frac{1}{100}$     D)  $\frac{1}{120}$     E)  $\frac{1}{33}$

25.



A ve B sırasıyla  $g(x)$  ve  $f(x)$  parabolünün tepe noktaları olsunlar. Bu durumda  $b=?$

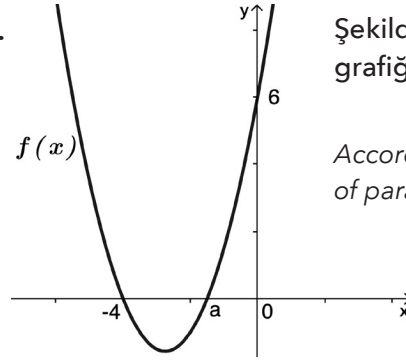
Let A and B be the peaks of parabolas  $f(x)$  and  $g(x)$ , respectively. Then,  $b=?$

$$f(x) = x^2 - 4x + 4$$

$$g(x) = -x^2 + bx + c$$

- A) -8    B) -2    C) 0    D) 2    E) 8

27.



Şekildeki parabolün grafiğine göre,  $f(a-4) = ?$

According to the graph of parabola,  $f(a-4) = ?$

- A) 3    B) 4    C) 9    D) 8    E) 6

28.  $i^2 = -1$  olmak üzere  $z=3i$  karmaşık sayısının kutupsal gösterimi hangisidir?

What is the polar form of the complex number  $z=3i$ , where  $i^2 = -1$ ?

- A)  $\cos \frac{\pi}{2} + i \sin \frac{\pi}{2}$     B)  $2(\cos \frac{\pi}{2} + i \sin \frac{\pi}{2})$     C)  $\cos \pi + i \sin \pi$   
D)  $3(\cos \pi + i \sin \pi)$     E)  $3(\cos \frac{\pi}{2} + i \sin \frac{\pi}{2})$

26.  $(x+1)P(x) = x^3 + 4x^2 + 2x + n \Rightarrow P(x) = ?$

- A)  $x^2 + 3x - 1$     B)  $x^2 - 2x + 3$     C)  $x^2 + 2x - 1$   
D)  $x^2 + 2x + 2$     E)  $x^2 - 3x + 1$

29.  $4^{x+1} - 2^{x+1} - 6 = 0 \Rightarrow x = ?$

A)  $\log_3 \frac{3}{2}$

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

C)  $\frac{\ln 2 - \ln 3}{\ln 3}$

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

E)  $\log_2 \frac{2}{3}$

31.  $\frac{\cot 45 + \tan 30}{1 - \tan 45 \cdot \sec 60} = ?$

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

B)  $\frac{1}{\sqrt{3}}$

C)  $-\left(\frac{1+\sqrt{3}}{2}\right)$

D)  $\frac{1+\sqrt{3}}{2}$

E)  $-\left(\frac{1+\sqrt{3}}{\sqrt{3}}\right)$

30.  $i^2 = -1, \sum_{k=1}^{2021} i^k = ?$

A) 0

B) 1

C)  $-i$

D)  $i$

E)  $2i$

32.  $\log_2 x + \log_{32} x = 12 \cdot \log_2 x \cdot \log_{32} x \Rightarrow x = ?$

A) 2

B)  $\sqrt{2}$

C) 4

D) 6

E) 8

33.  $f(2x+3) = 3x^4 + 2x^3 - 5x^2 + 4x - 1 \Rightarrow f'(5) = ?$

- A) 6      B) 12      C) 5      D) 11      E) 8

35.  $f(x) = x^3 - 6x + 2 \Rightarrow \lim_{h \rightarrow 0} \frac{f(2h+2) - f(2)}{h} = ?$

- A) 6      B) 10      C) 12      D) 16      E) 20

34.  $x \in \left(\pi, \frac{3\pi}{2}\right), \frac{1 + \tan x}{3 + \tan x} = 2 \cot x \Rightarrow \sin^2 x - \cot x = ?$

- A)
- $\frac{27}{30}$
- B)
- $\frac{37}{30}$
- C)
- $\frac{17}{10}$
- D)
- $\frac{27}{10}$
- E)
- $\frac{17}{30}$

36.  $\int_{-3}^3 |x^2 - 1| dx = ?$

- A) 0      B) 12      C) 14      D)
- $\frac{14}{3}$
- E)
- $\frac{44}{3}$

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$$37. \lim_{x \rightarrow y} \frac{x\sqrt{x} - y\sqrt{y}}{y^2 - x^2} = ?$$

- A)  $\frac{-3}{4\sqrt{y}}$    B)  $\frac{3}{2\sqrt{y}}$    C)  $\frac{-1}{\sqrt{y}}$    D)  $\frac{2}{\sqrt{y}}$    E)  $\frac{-3}{\sqrt{y}}$

$$38. \int (x+3)f(x)dx = \frac{x^4}{4} + 27x + c$$

$$\Rightarrow f(0) + f'(0) = ?$$

- A) 9   B) 6   C) 3   D) -9   E) -6

$$39. f(x) \text{ 2. dereceden bir polinom ve } f(x) - f'(x) = 2x^2 + 3x + 4 \text{ ise } f(1) = ?$$

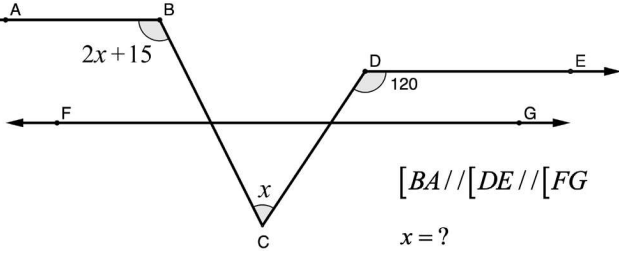
If  $f(x)$  is a second order polynomial and  $f(x) - f'(x) = 2x^2 + 3x + 4$  then  $f(1) = ?$

- A) 21   B) 16   C) 14   D) 18   E) 20

$$40. \int_1^a \frac{x^2 - 1}{x^2} dx = \frac{4}{3} \Rightarrow a = ?$$

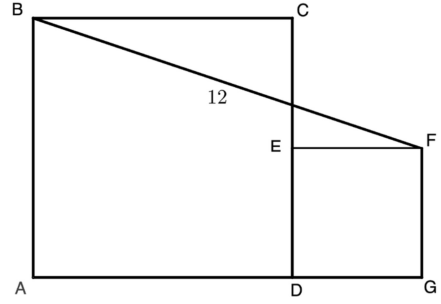
- A) 3   B) 2   C) 1   D) 4   E) 10

41.



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

43.

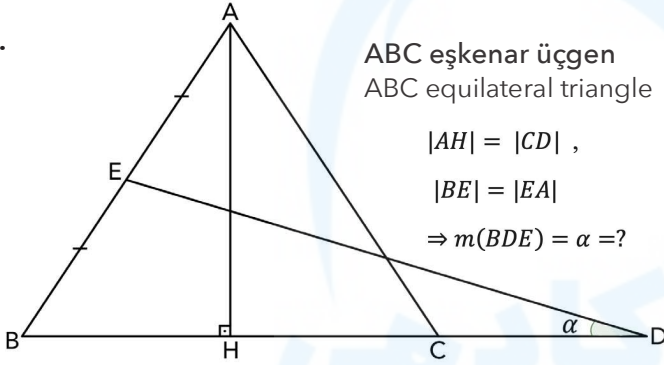


$|BF|=12\text{cm}$ 'dir. ABCD ve DEFG karelerinin alanlarının toplamı kaçtır?

If ABCD and DEFG are squares and  $|BF|=12\text{cm}$ , then what is the sum of the areas of the squares ABCD and DEFG

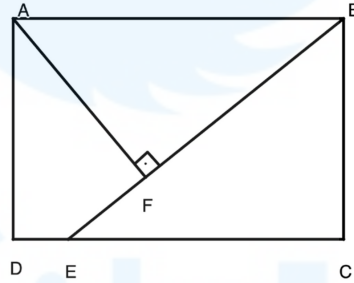
- A) 96    B) 36    C) 72    D) 108    E) 144

42.



- A)  $10^\circ$     B)  $15^\circ$     C)  $20^\circ$     D)  $25^\circ$     E)  $30^\circ$

44.



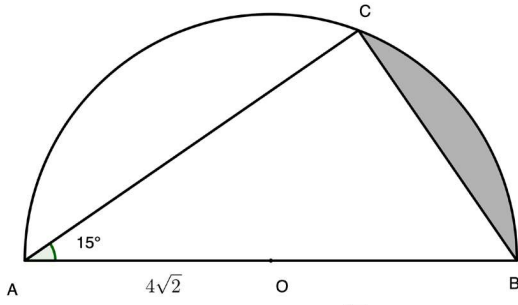
ABCD bir dikdörtgen.  
ABCD is a rectangle.

$$|EC|=16, |BC|=12, |EF|=4$$

$$A(ABCD) = ?$$

- A) 204    B) 240    C) 180    D) 192    E) 216

45.

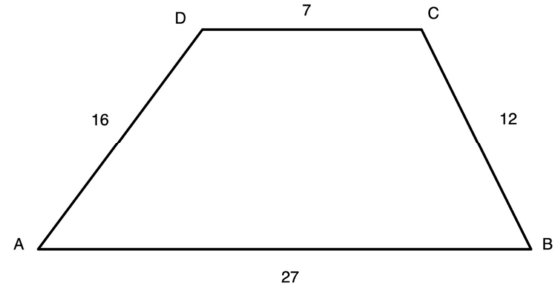


O noktası merkez ve  $|AO| = 4\sqrt{2}$ . Taralı bölgenin alanını bulunuz.

Point O is center and  $|AO| = 4\sqrt{2}$ . Find the area of shaded region.

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

47.

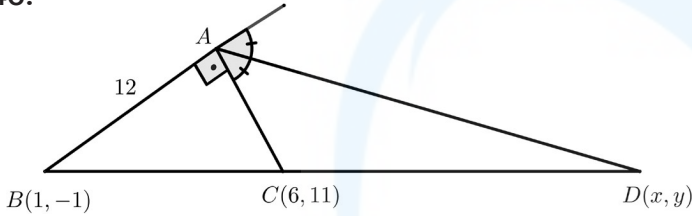


ABCD bir yamuk,  $|AB|=27$  cm,  $|AD|=16$  cm,  $|DC|=7$  cm,  $|BC|=12$  cm olduğuna göre  $A(ABCD)$  kaç  $\text{cm}^2$  dir?

Let ABCD is a trapezoid and  $|AB|=27$  cm,  $|AD|=16$  cm,  $|DC|=7$  cm,  $|BC|=12$  cm, then  $A(ABCD)=?$

- A) 96      B)  $\frac{288}{5}$       C)  $\frac{288}{7}$       D)  $\frac{816}{3}$       E)  $\frac{816}{5}$

46.

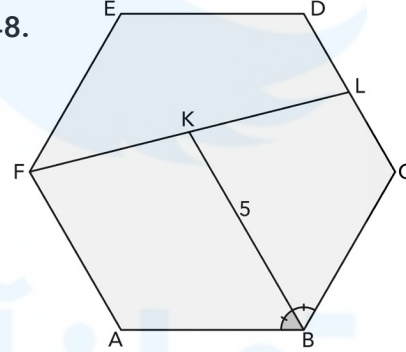


$ABC$  analitik düzlemde bir dik üçgen  $[AD]$  dış açıortay olduğuna göre  $y - x = ?$

$ABC$  is the right triangle in cartesian coordinates and  $[AD]$  is an outer bisector. Find the value of  $y - x = ?$

- A) 10      B) 9      C) 8      D) 7      E) 6

48.



ABCDEF bir düzgün altıgen

ABCDEF is a regular hexagon

$$m(\angle ABK) = m(\angle KBC)$$

$$|DL| = |LC|$$

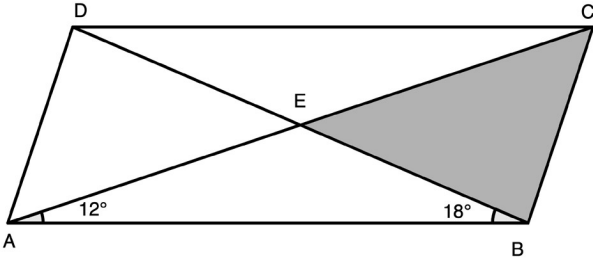
$$|BK| = 5$$

$$|FL| = ?$$

- A) 5      B)  $2\sqrt{6}$       C)  $2\sqrt{13}$       D)  $13\sqrt{2}$       E)  $6\sqrt{2}$



49.



ABCD paralelkenardır.  
 ABCD is a parallelogram.

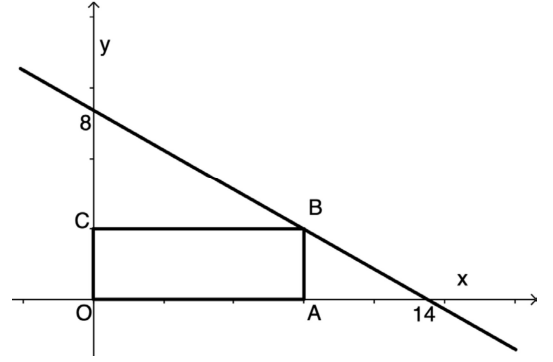
$$m(\angle EAB) = 12^\circ, m(\angle ABE) = 18^\circ$$

$$|AC| = 8, |BD| = 6$$

$$A(\angle EBC) = ?$$

- A) 12    B) 6    C) 9    D) 3    E) 18

50.

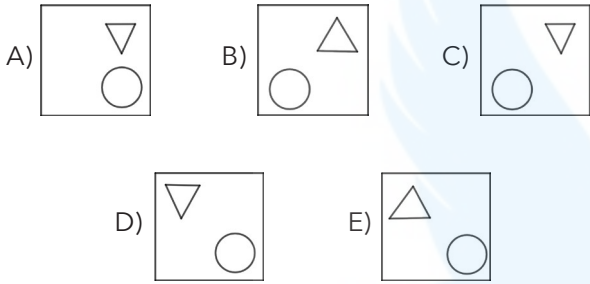
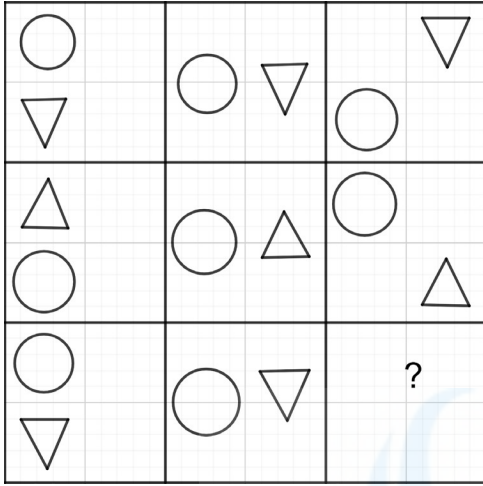


OABC dikdörtgeninin çevresi 22 cm olduğuna göre B noktasının apsisini bulunuz.

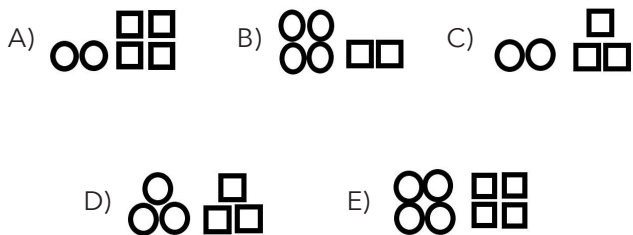
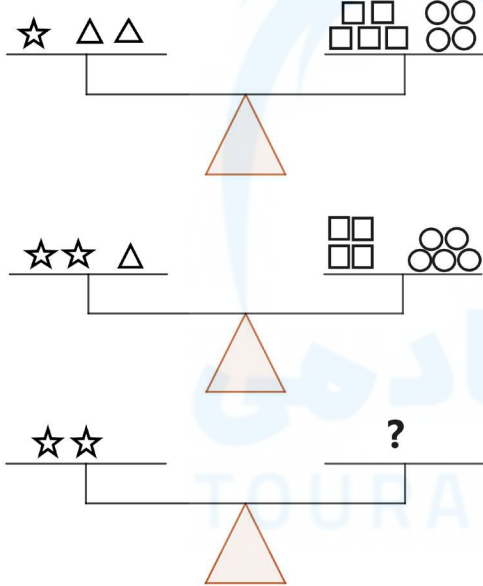
If perimeter of the rectangle OABC is 22 cm then find apsis of the point B.

- A) 12    B) 8    C) 10    D) 11    E) 7

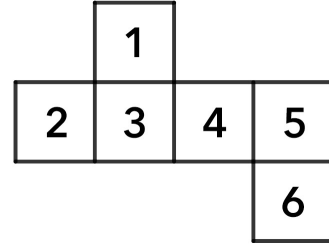
51.



52.

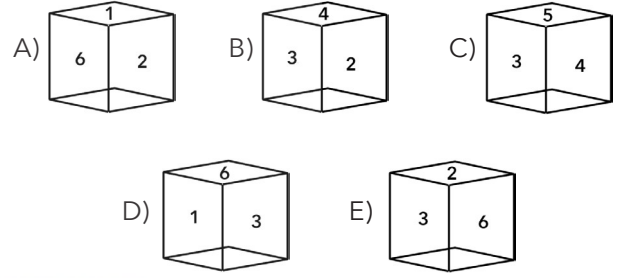


53.

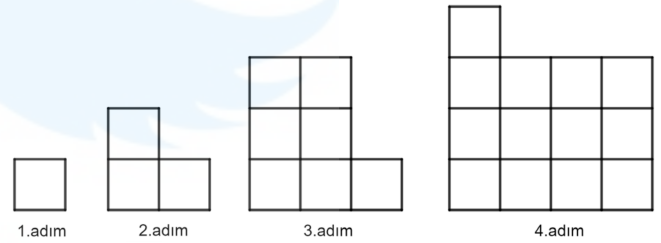


Yukarıda açık şekli verilen küp aşağıdakilerden hangisidir?

Which of the following is the open shape of cube given above?



54.

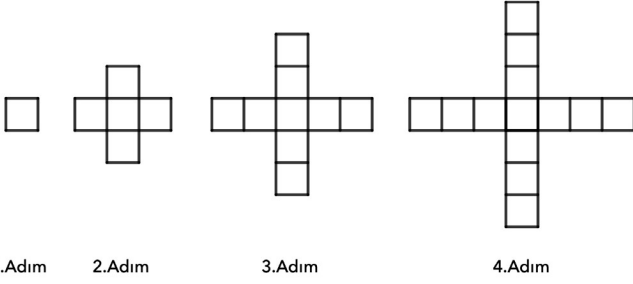


Yukarıdaki şekilde her bir küçük kare bir birim kare olmak üzere 15. Adımda kaç tane bir birimlik kare vardır?

How many unit squares are there in Step 15 according to the above figure where each little square is a unit?

- A) 122      B) 155      C) 211      D) 241      E) 273

55.

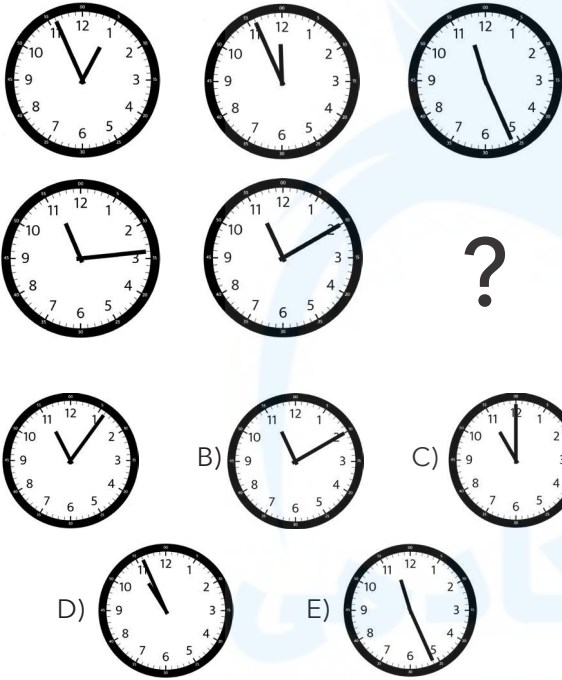


Yukarıdaki örüntüye göre 80. adımda kaç kare vardır?

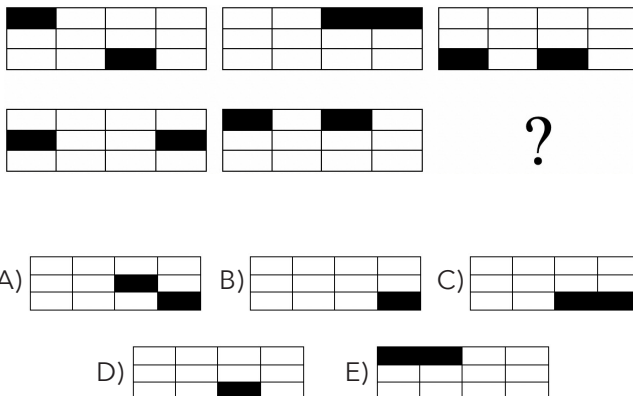
How many squares are there in step 80 according to the above pattern?

- A) 317    B) 313    C) 311    D) 308    E) 301

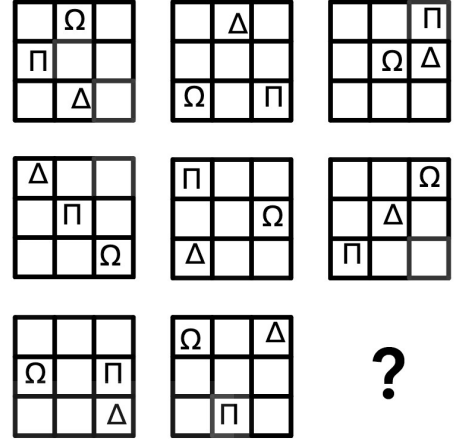
56.



57.

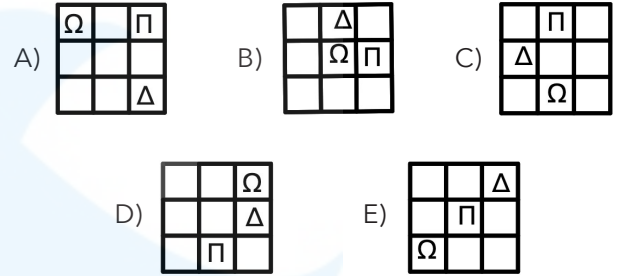


58.



Yukarıdaki şekilde ? yerine aşağıdakilerden hangisi gelmelidir?

Which of the following figure must stand instead of ? given above?



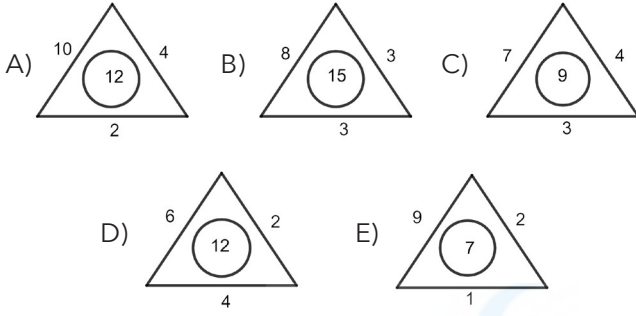
59. Birbirine eş 125 küçük küpten oluşmuş büyük bir küpün bütün yüzeyleri boyanıyor. Bu durumda boyasız kaç küp bulunur?

All surfaces of a large cube made up of 125 identical small cubes are painted. In this case, how many unpainted cubes are there?

- A) 9    B) 27    C) 18    D) 36    E) 64

60. Aşağıdakilerden hangisi farklıdır?

Which of the following is different?



62. 17, 33, 64, 124, 240, ?

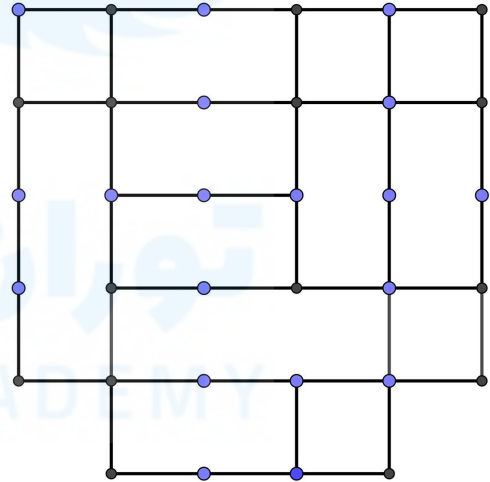
- A) 464 B) 442 C) 398 D) 468 E) 480

61.

40	4	11	7
35	3	10	8
30	2	11	9
25	7	10	?

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

63.








Yukarıdaki resimde kaç kare vardır?

How many squares are there in the picture above?

- A) 9 B) 10 C) 11 D) 12 E) 15

64.  +  +  = 18

 +  +  = 10

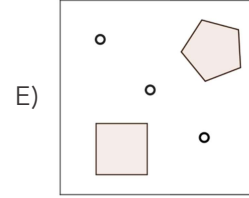
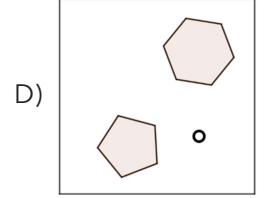
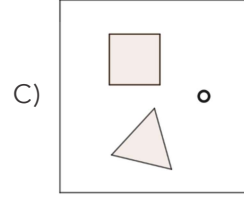
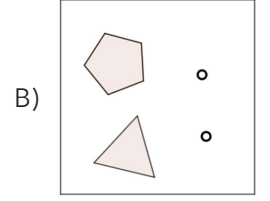
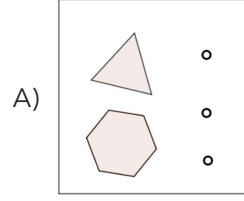
 +  +  = 5

 +  +  = ?

- A) 7    B) 8    C) 9    D) 11    E) 13

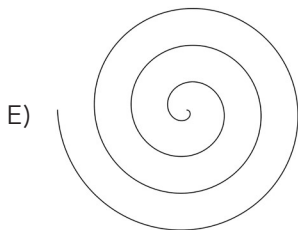
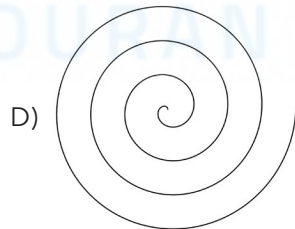
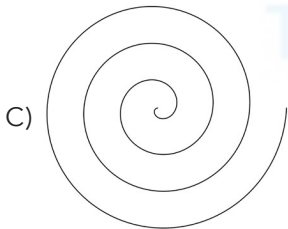
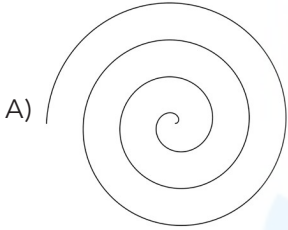
66. Aşağıdakilerden hangisi farklıdır?

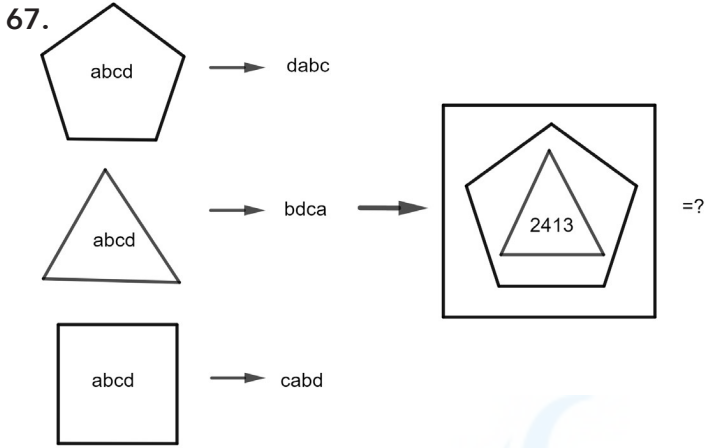
Which of the following is different?



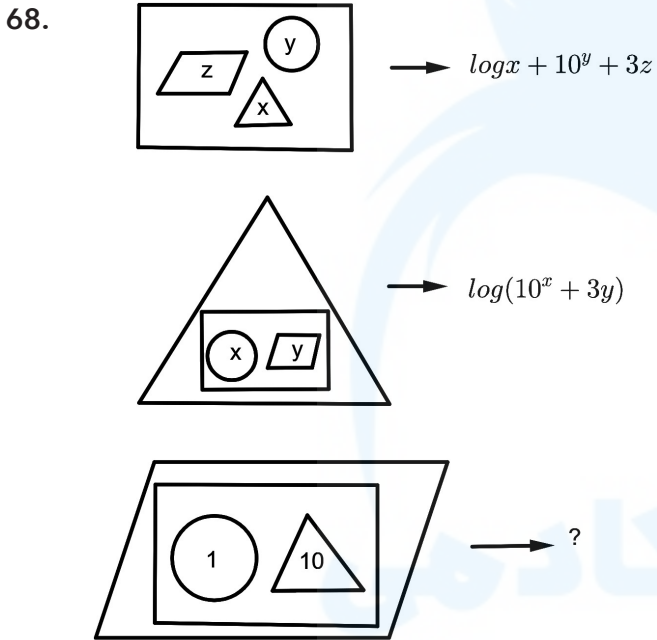
65. Aşağıdakilerden hangisi farklıdır?

Which of the following is different?





- A) 3241 B) 3214 C) 4312 D) 2431 E) 4132

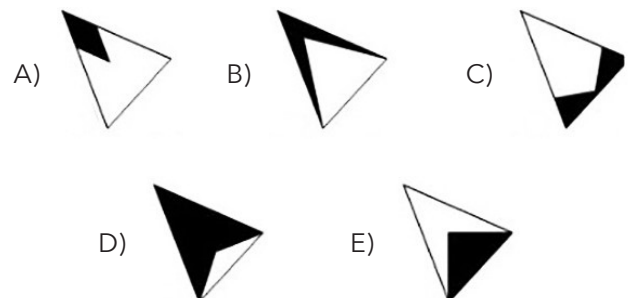
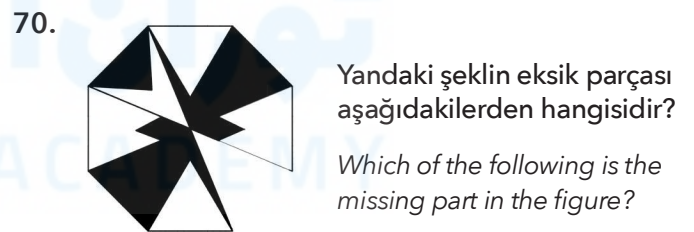
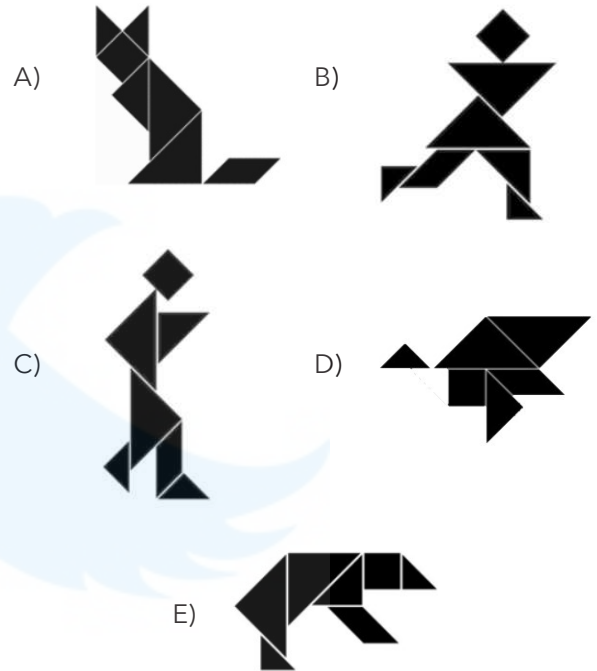


- A) 3 B) 33 C) 31 D) 12 E) 39

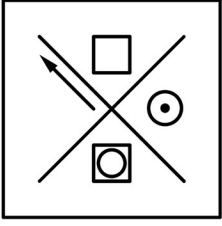


Yukarıdaki şekildeki tüm kesik parçalarla aşağıdaki figürlerden hangisi elde edilemez?

Which of the following figures can not be obtained with the all pieces in the above figure?

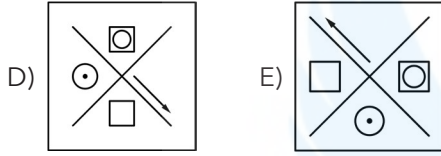
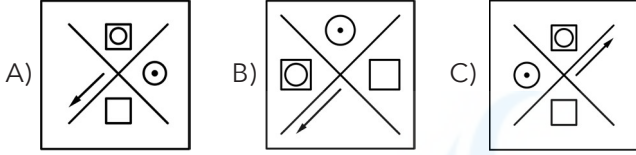


71.

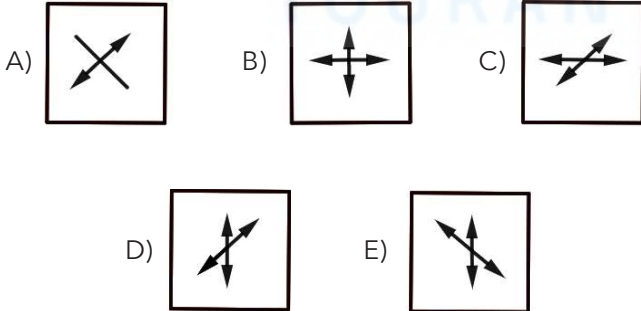
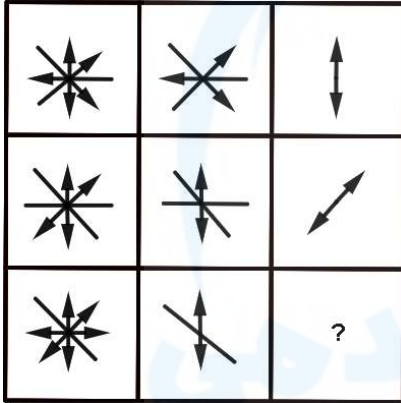


Solda verilen şeklin döndürülmüş hali aşağıdakilerden hangisidir?

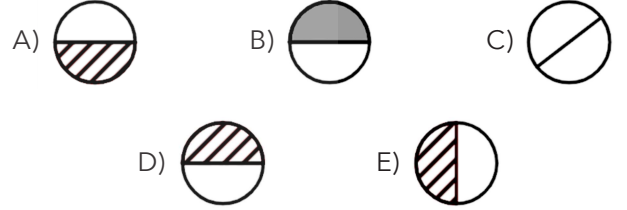
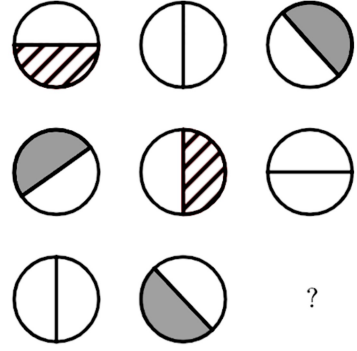
Which of the following is the rotated version of the figure given left?



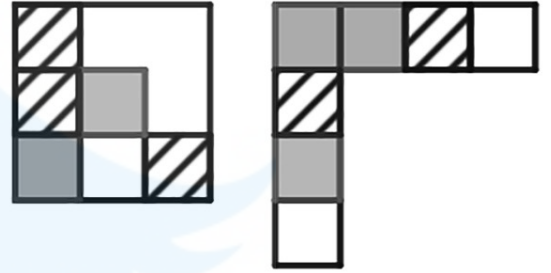
72.



73.

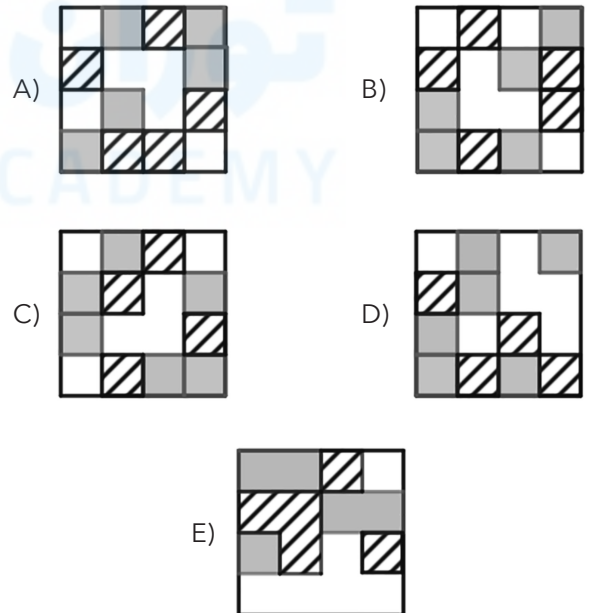


74.



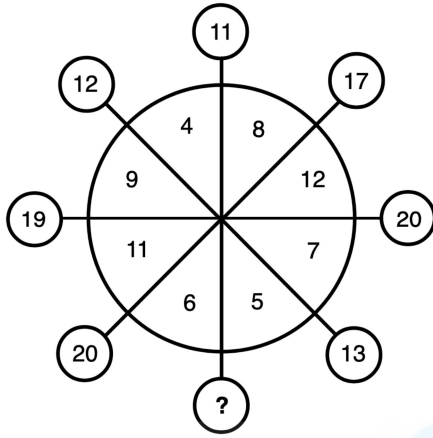
Bu iki şekil birleştirilirse aşağıdakilerden hangisi oluşur?

Which of the following is obtained if two figures are merged?





75.



- A) 9      B) 12      C) 10      D) 14      E) 16

76.  $\left. \begin{array}{l} ABCDE \\ CEDAB \\ ECABD \\ DABEC \end{array} \right\} \Leftrightarrow \left\{ \begin{array}{l} 47256 \\ 25764 \\ 62547 \\ 74625 \end{array} \right. \Rightarrow A \cdot B - C = ?$

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

77.  $4, 7, 16, 43, a, b, 1096 \Rightarrow b - a = ?$

- A) 65      B) 150      C) 230      D) 125      E) 243

78.

$$\left. \begin{array}{l} 675 \rightarrow 65 \\ 243 \rightarrow 18 \\ 896 \rightarrow 102 \\ a73 \rightarrow 33 \end{array} \right\} \Rightarrow a = ?$$

- A) 5      B) 2      C) 4      D) 1      E) 7

79.

+	$x$	$y$	$z$
$y$	$z+5$		$x+9$
•	$x$	$y$	$z$
$y$			42

$x, y, z \in \mathbb{Z}$  ( $x, y, z$  tam sayıdır /  $x, y, z$  are integers)

Yukarıdaki toplama ve çarpma işlemlerine göre  $x = ?$

According to the addition and multiplication tables given above, find  $x$ .

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

80.

$$\triangle 2 = 18$$

$$\square 3 = 24$$

$$\triangle 3 = 27$$

$$\square 4 = 32$$

$$\triangle 8 - \square 4 = ?$$

- A) 288      B) 228      C) 158      D) 308      E) 328



A-KİTAP-YÖS CEVAP ANAHTARI

1	B
2	A
3	C
4	B
5	D
6	A
7	B
8	D
9	E
10	C
11	C
12	D
13	B
14	C
15	A
16	C
17	D
18	C
19	E
20	C
21	D
22	B
23	C
24	A
25	B
26	A
27	E
28	E
29	D
30	D
31	E
32	B
33	A
34	E
35	C
36	E
37	A
38	B
39	E
40	A
41	D
42	B
43	C
44	B
45	A
46	A
47	E



توران آکادمی  
TÖREN AN ACADEMY

48	C
49	D
50	E
51	C
52	B
53	E
54	C
55	A
56	B
57	C
58	C
59	B
60	D
61	E
62	A
63	D
64	E
65	Cancelled
66	E
67	A
68	B
69	D
70	E
71	D
72	C
73	D
74	B
75	B
76	A
77	E
78	C
79	A
80	A