1)

$$4a = 3b, \quad 5b = 3c \Rightarrow \frac{b+c}{c-2a} = ?$$

A) -12 **B)** -8 **C)** 12 **D)** 16 **E)** 32

2) $cos(75°) = ?$

A) $\frac{\sqrt{6}-\sqrt{2}}{4}$ **B)** $\frac{\sqrt{6}+\sqrt{2}}{4}$ **C)** $\frac{\sqrt{2}-\sqrt{6}}{4}$ **D)** $-\frac{\sqrt{6}+\sqrt{2}}{4}$ **E)** $1-\sqrt{2}$

3)

$$m + x = 3;\ y - n = 4$$

$$\Rightarrow xy + ym - xn - mn + 1 = ?$$

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

4)

$$2x = 3y \Rightarrow$$

$$\frac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{y}-\frac{1}{x}} = ?$$

A) 5 **B)** 3 **C)** 0 **D)** –1 **E)** **–2**

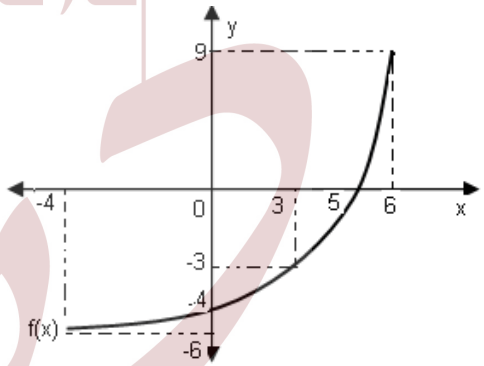
5)

$$f(x) = \frac{6}{2-\frac{4}{3-\frac{1}{x}}}$$

f **fonksiyonu aşağıdaki noktalardan hangisinde süreksizdir?**

A) -2 **B)** 3 **C)** 1 **D)** 4 **E)** 10

6)



$f(0) - f^{-1}(9) = ?$

A) **7** **B)** 3 **C)** 0 **D)** –1 **E)** **–10**

7) $\sqrt{x-1} + x = 3 \Rightarrow x = ?$

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

8)

$$\frac{\sqrt{3}-\sqrt{12}+\sqrt{75}}{\sqrt{27}-\sqrt{3}}+2=?$$

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

9)

$$\frac{5^{x+2}+5^{x+1}+5^{x}}{-5^{x-1}+5^{x}}=\frac{y}{4}\Rightarrow y=?$$

A) 17 **B)** 18 **C)** 31 **D)** 93 **E)** 155

10)

$$\frac{10^{x}+10^{x}+10^{x}+10^{x}}{2^{x}}=20\Rightarrow 3^{x+1}=?$$

A) 3 **B)** 9 **C)** 15 **D)** 27 **E)** 75

11)

$$A=\{0,1,2,3,4,5,6,7,8,9\};\ a,b,c\in A$$

$$(a\neq b,\quad b\neq c,\quad a\neq c)$$

$(3a+4b+7c)$ toplamının değeri en az kaçtır?

A) 10 **B)** 22 **C)** 34 **D)** 41 **E)** 63

12) $27-3x=35-\{14-2[(3-x)]\}\Rightarrow x=?$

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

13)

$$\left[\left(1+\frac{1}{4}\right):\left(1-\frac{1}{8}\right)\right]\cdot 7-\left(\frac{\frac{1}{2}+\frac{1}{5}-0{,}7}{13}\right)^{4}=?$$

A) 16 **B)** 18 **C)** 10 **D)** 8 **E)** 4

14)

$$\frac{\mathbf{2,3-0,23}}{\mathbf{20,7}}=?$$

A) 10 **B)** 1,4 **C)** 0,7 **D)** 0,1 **E)** 0,01

15)

$$\left.\begin{array}{l}x+4y=12\\3x-2y=22\end{array}\right\}\Rightarrow x=?$$

A) 16 **B)** 8 **C)** 4 **D)** 3 **E)** 2

16)

$$\frac{x-3}{x} = \frac{10}{x+8} \Rightarrow$$

Aşağıdakilerden hangisi x'in değeri olabilir?

A) 10 **B)** 8 **C)** 4 **D)** -8 **E)** -30

17)

$$\left.\begin{array}{l} A+2B=35 \\ B+C=12 \\ 2C+2A=25 \end{array}\right\} \Rightarrow A=?$$

A) 3,5 **B)** 4 **C)** 12 **D)** 18 **E)** 19

18)

Aynı güçte 20 işçiden oluşan bir ekip 8 m genişliğinde 6 km uzunluğunda bir asfalt yolu günde 6 saat çalışarak 21 günde bitiriyorlar. Aynı özelliklere sahip 14 işçi 12 m genişliğinde 8 km uzunluğundaki yolu 36 günde bitirmesi için günde kaç saat çalışmalıdır?

A) 10 **B)** 12 **C)** 14 **D)** 8 **E)** 20

19) $f(2x-3) = ax+2, \quad f^{-1}(6) = 1 \Rightarrow a = ?$

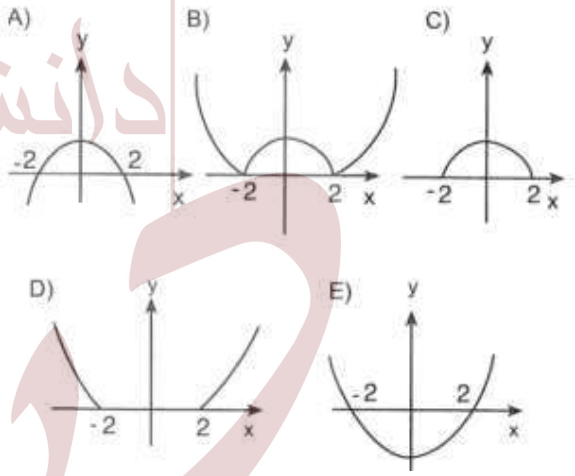
A) 16 **B)** 8 **C)** 4 **D)** 3 **E)** 2

20) $x^2y < 0;\ y^4z < 0;\ xyz < 0$

Buna göre aşağıdakilerden hangisinde x, y, z nin işaretleri doğru verilmiştir?

A) $-,-,-$ **B)** $-,-,+$ **C)** $-,+,+$ **D)** $+,-,-$ **E)** $+,+,-$

21) $f(x) = |4-x^2|$ fonksiyonunun grafiği hangisidir?



22) $x^2 + y^2 - 3xy + x = 0 \Rightarrow \left.\frac{dy}{dx}\right|_{(1,1)} = ?$

A) $\frac{2}{3}$ **B)** $\frac{1}{3}$ **C)** 0 **D)** -1 **E)** $-\frac{9}{7}$

23) $f(x) = e^{2x} + 2x + 1 \Rightarrow f'(0) = ?$

A) -10 **B)** -4 **C)** 2 **D)** 4 **E)** 8

24)

$$\int_1^2 \frac{4x^3-2}{x^2}dx = ?$$

A) π **B)** e **C)** 3 **D)** 4 **E)** 5

25)

$$\sum_{k=1}^{11}(2k-3) = ?$$

A) 165 **B)** 33 **C)** 66 **D)** 99 **E)** 132

26)

$$\lim_{x\to 1}\frac{x^2+x-2}{\sin(x-1)} = ?$$

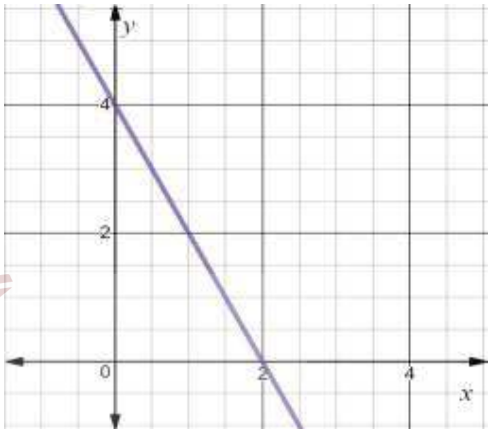
A) 3 **B)** 2 **C)** $\frac{1}{2}$ **D)** 1 **E)** -3

27)

$$sin(157,5)\cdot cos(157,5) = ?$$

A) $-\frac{\sqrt{2}}{2}$ **B)** $\frac{2}{5}$ **C)** $-\frac{5}{4}$ **D)** $\frac{\sqrt{2}}{2}$ **E)** $-\frac{\sqrt{2}}{4}$

28)



$A(3,a)$ noktası üsteki grafikteki d doğrusu üzerindedir. Buna göre a değeri kaçtır?

A) $-\frac{9}{2}$ **B)** -2 **C)** 1 **D)** 2 **E)** $\frac{5}{2}$

29) $\int \frac{dx}{x^2-4} =$

integrali seçeneklerden hangisine <u>eşit olamaz</u>?

A) $\frac{1}{4}\int\left(\frac{1}{x-2}-\frac{1}{x+2}\right)dx$ **B)** $\frac{1}{4}\int\left(\frac{1}{x-2}+\frac{1}{x+2}\right)dx$

C) $\frac{1}{4}\,ln\left|\frac{x-2}{x+2}\right|+c$ **D)** $-\frac{1}{4}\,ln\left|\frac{x+2}{x-2}\right|+c$

E) $\frac{1}{4}\,ln|x-2|-\frac{1}{4}\,ln|x+2|+c$

30)

$$10^{(2+logx)} = 400 \Rightarrow x = ?$$

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

31)

$$sin\left(arccos\left(\frac{-\sqrt{3}}{2}\right)\right)=?$$

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

32) $x^2 + y^2 + 4x - 8y + 20 + \sqrt{z-3} = 0$

$$xy + z = ?$$

A) 11 **B)** 9 **C)** 8 **D)** -2 **E)** -5

33) $P(x+2) = 5x^3 + x^2 - 4x - 8 \Rightarrow$ P(1)=?

A) 37 **B)** 25 **C)** 15 **D)** -8 **E)** -12

34)

$$A = \begin{bmatrix} 3 & 7 & -2 \\ 6 & 1 & -1 \\ 5 & 2 & 8 \\ -2 & 5 & 2 \end{bmatrix} \Rightarrow \quad a_{12} + a_{33} + a_{41} = ?$$

A) 5 **B)** 6 **C)** 8 **D)** 13 **E)** 18

35)

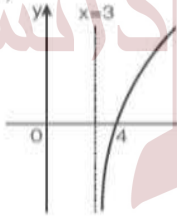
$$(2+i)z = i - 2\bar{z} \quad \Rightarrow z = ?$$

A) $4 - i$ **B)** $-4 - i$ **C)** $1 + 4i$

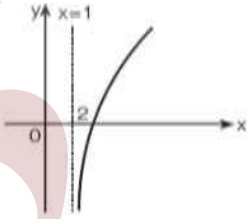
D) $1 - 4i$ **E)** $-1 - 4i$

36) $f(x) = \log_3(x-3)$ fonksiyonun grafiği hangisidir?

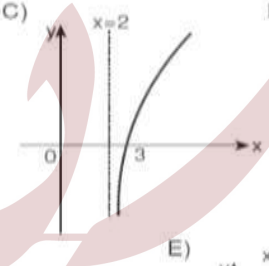
A)



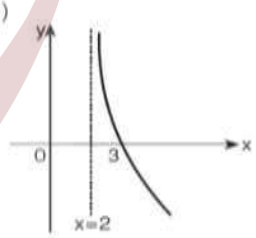
B)



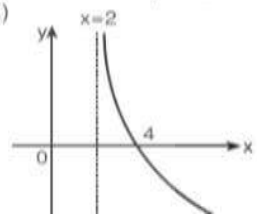
C)



D)



E)



37) $A = \{-1, 0, 1, 2, 3\},\ f: A \to B$

$$f(x) = x^2 + 1 \quad \Rightarrow f(A) = ?$$

A) {0,1,4,9} **B)** {1,2,5,10} **C)** {0,2,5,11}

D) {2,5,10} **E)** $\{-1,3,5,9\}$

38)

$$\sqrt{x^2-5x-5}=3$$

Yukarıdaki denklemin çözüm kümesi nedir?

A) $\{-1,3\}$ **B)** $\{-2,7\}$ **C)**$\{-3,1\}$

D)$\{-7,-2\}$ **E)** $\{-7,2\}$

39) $f(x)=x^2-sin3x \Rightarrow \lim_{h\to 0}\frac{f(h)-f(0)}{h}$?

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

40) $x<0<y<z$

$$\begin{bmatrix} x & y \\ z & 0 \end{bmatrix}\cdot\begin{bmatrix} x & 0 \\ 0 & y \end{bmatrix}=\begin{bmatrix} 4 & 9 \\ -10 & 0 \end{bmatrix} \Rightarrow x+y+z=?$$

A)3 **B)** 5 **C)** 6 **D)** 9 **E)** 18

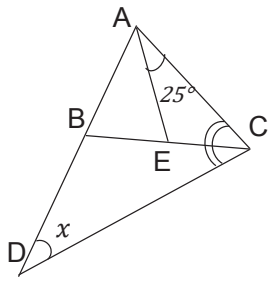
41)

$$A=[2 \quad a \quad 0 \quad 4]_{1\times 4}, \qquad B=\begin{bmatrix} a \\ -1 \\ 7 \\ -3 \end{bmatrix}_{4\times 1}$$

$$A\cdot B=[2]_{1\times 1} \Rightarrow a=?$$

A) 6 **B)** 10 **C)**12 **D)**14 **E)**16

42)



$|AB|=|AE|,$

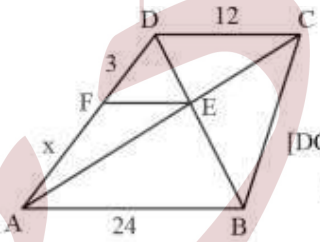
$m(\widehat{ACB})=m(\widehat{BCD})$

$m(ACB)=25°$

$m(\widehat{CDB})=x° \Rightarrow x=?$

A) 15 **B)** 25 **C)** 30 **D)** 36 **E)** 45

43)



|DC| = 12 br
|AB| = 24 br
|DF| = 3 br
[DC] // [AB] // [FE]
|AF| = x = ?

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

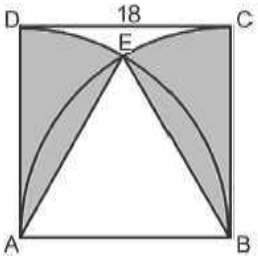
44)

$$f(x)=\begin{cases} x^2-1, & x\geq 2 \\ 4x-5, & x<2 \end{cases}$$

$$f'(3)+f'(0)=?$$

A) 4 **B)** 5 **C)**10 **D)** 16 **E)** 19

45)



$|DC| = 18$ br,

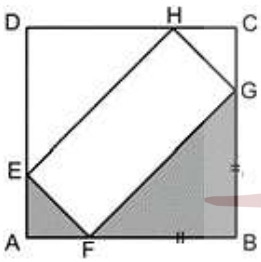
ABCD kare

A ve B noktaları çeyrek çemberlerin merkezidir.

Taralı bölgelerin alanı kaç br^2?

A) 12π **B)** 24π **C)** 27π **D)** 54π **E)** 72π

46)



$2|AF| = |BF| = |GB|$

ABCD kare

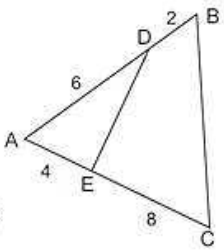
Taralı bölgelerin toplam alanı 20 cm^2 ise

EFGH dikdörtgeninin çevresi kaç cm'dir?

A) 10 **B)** 12 **C)** 16 **D)** 24 **E)** 36

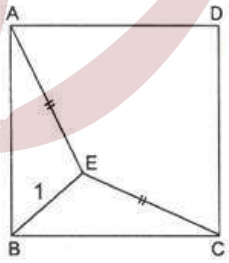
47)

|AD| = 6 cm
|DB| = 2 cm
|AE| = 4 cm
|EC| = 8 cm
$\frac{A(BCED)}{A(ADE)} = ?$



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

48)



(ABCD) karedir.
|AE| = 5 cm
|BE| = 1 cm
|EC| = 5 cm
A(BCEA) = x cm^2
x = ?

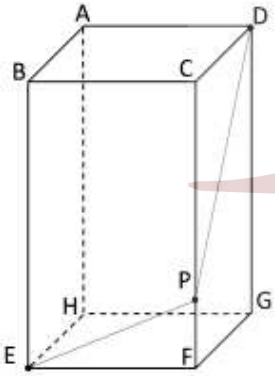
A) 4 **B)** 8 **C)** 16 **D** 24 **E)** 32

49)

Şekilde verilen saatte göstergeler arasındaki açı kaç dercedir?

A) 130 **B)** 120 **C)** 115 **D)** 110 **E)** 105

50)



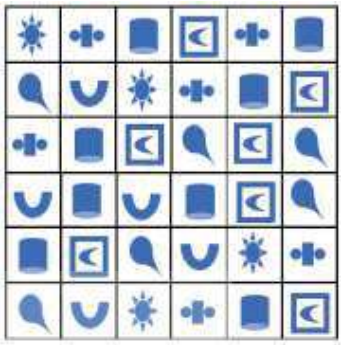
$|EF| = |GF| = |CD| = 4\ cm$

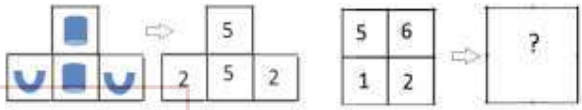
$|DG| = 6\ cm$

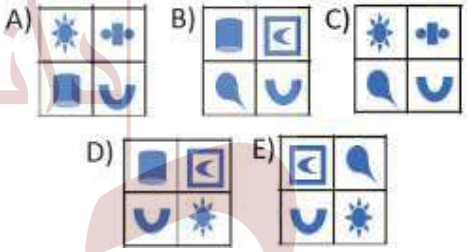
Şekil kare prizmadır. P, $|CG|$ kenarı üzerinde herhangi bir noktadır. (|EP|+ |PD|) toplamı en az kaç cm'dir?

A) 8 **B)** 18 **C)** 20 **D)** 12 **E)** 10

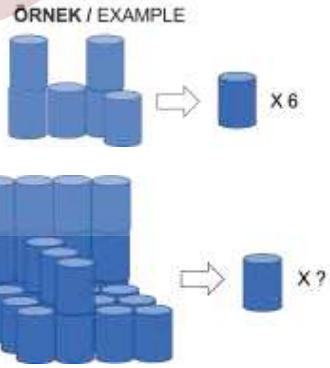
51)





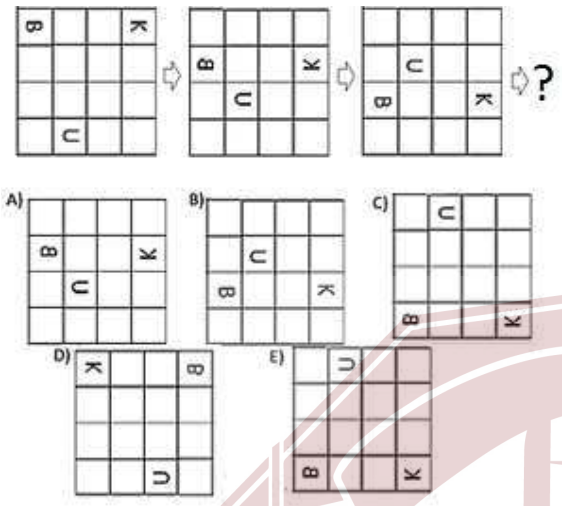


52)



A) 16 **B)** 27 **C)** 28 **D)** 29 **E)** 30

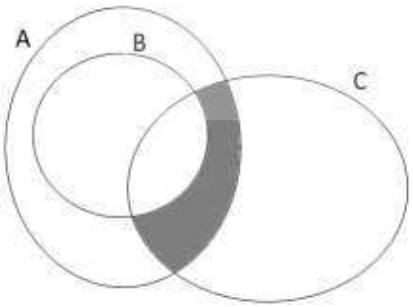
53)



54) Anne, baba ve 3 çocukla birlikte 5 kişilik bir aile bir yemek masasına, yetişkinler yan yana oturmak koşulu ile kaç değişik şekilde oturabilirler?

A) 4! **B)** 48 **C)** 5! **D)** 72 **E)** 12

55)



A, B ve C küme olmak üzere taralı bölge hangi seçenekte verilmiştir?

A) $A\backslash(B \cap C)$ **B)** $(B \cap C)\backslash A$ **C)** $(B \cap A)\backslash C$

D) $(C \cap A)\backslash B$ **E)** $(B \cup A) \cap (C \cup B)$

56.-57. soruları aşağıdaki bilgilere göre cevaplayınız.

$\oplus$	g	a	n	k	İ
g	n	k	i	g	a
a	k	i	g	a	n
n	i	g	a	n	k
k	g	a	n	k	i
i	a	n	k	i	g

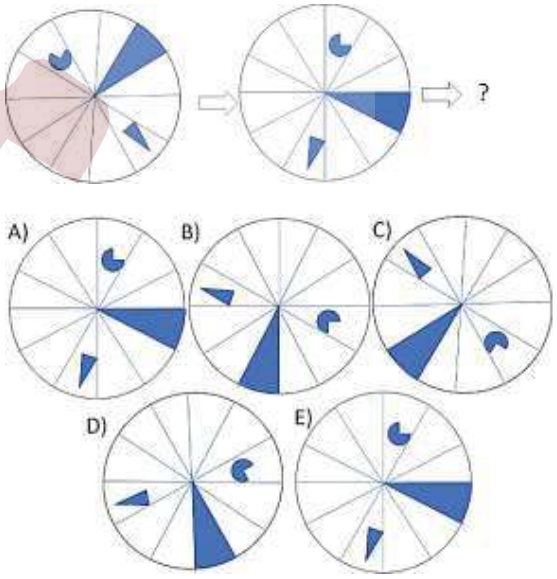
56) $g \oplus x = i \Rightarrow x = ?$

A) g **B)** a **C)** n **D)** k **E)** i

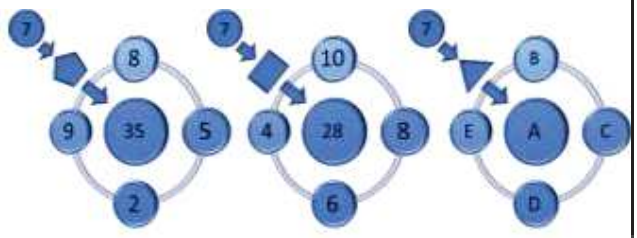
57) $g \oplus (a \oplus k) = ?$

A) g **B)** a **C)** n **D)** k **E)** i

58)



59.-60.-61. soruları aşağıdaki bilgilere göre cevaplayınız.



Şekildeki sayılar arasında yukarıdaki ilişki vardır.

59) Şekilde, *A* yerine hangi sayı gelmelidir?

A) 12 **B)** 14 **C)** 21 **D)** 35 **E)** 36

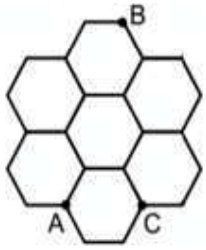
60) $(E + A) \cdot B$ =?

A) 15 **B)** 25 **C)** 32 **D)** 39 **E)** 75

61) $(D + B) : C$ =?

A) 0 **B)** -4 **C)** 2 **D)** -7 **E)** 8

62. - 63. soruları aşağıdaki bilgiye göre cevaplayınız.



Bir çiftçi tarlasını şekildeki gibi eş altıgenlere bölerek farklı ürünler yetiştirecektir.

Bir kenarı 200 m olan eş altıgen bölümlerden oluşan tarlada çiftçinin ayırdığı bölgelerin sınırları üzerinde ilerlerken yürüme hızı saatte 6 km, bölümler içinden ilerlerken ise yürüme hızı satte 3 km dir.

62) Çiftçi gittiği yoldan tekrar gitmemek şartıyla A dan B'ye en az kaç dakikada gidebilir?

A) 6 **B)** 12 **C)** 14 **D)** 16 **E)** 25

63) Çiftçi gittiği yoldan tekrar gitmemek şartıyla, C köşesine uğraması şartıyla A dan B'ye en az kaç dakikada gider?

A) 8 **B)** 12 **C)** 16 **D)** 18 **E)** 25

64)

$$\left.\begin{array}{l} \triangle + \odot + \odot = 11 \\ \triangle + \square + \square = 7 \\ \square + \Delta = 6 \\ \nabla + \odot = 9 \end{array}\right\} \Rightarrow \nabla = ?$$

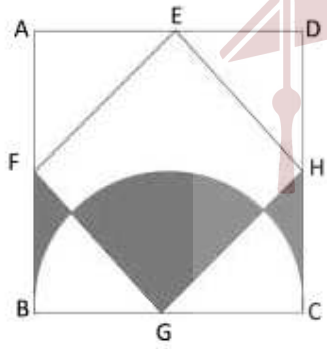
A) 10 **B)** 9 **C)** 7 **D)** 6 **E)** 5

65) $\mathbf{1, 3, 6, 10, 15, 21, 28, y, 45, 55, \ldots}$

Yukarıdaki sayılar bir kurala göre yazılmıştır. Buna göre y kaçtır?

A) 44 **B)** 43 **C)** 42 **D)** 36 **E)** 32

66. ve 67. soruları aşağıdaki bilgiye göre cevaplayınız.



ABCD ve EFGH kare,
ABCD and EFGH square,

G noktası yarım çemberin merkezidir. $|EA| = |CH| = 6\ cm$

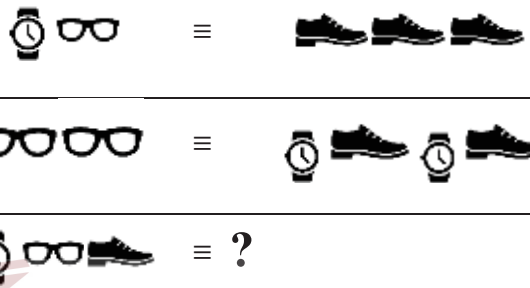
66) Taralı bölgelerin toplam alanı kaç cm^2 dir?

A) 45 **B)** 36 **C)** 18 **D)** 9π **E)** 12π

67) Taralı bölgelerin çevreleri toplamı kaç cm'dir?

A) 45 **B)** $12(\pi + \sqrt{2} - 1)$ **C)** $12(\pi + \sqrt{3} + 1)$
D) 39π **E)** $12(\frac{\pi}{2} + \sqrt{2} + 1)$

68)



A)

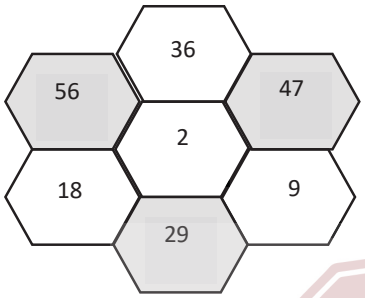
B)

C)

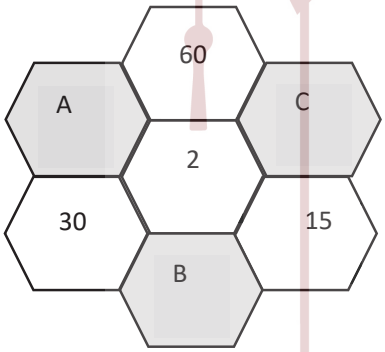
D)

E)

69. ve 70. soruları aşağıdaki şekle ve açıklamaya göre cevaplayınız.



Koyu altıgenlerdeki sayılar, koyulara bitişik olan diğer altıgenlerdeki sayıların toplanmasıyla elde edilir.



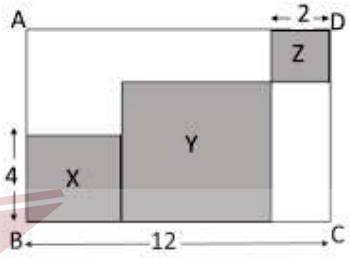
69) A-B=?

A) 36 **B)** 40 **C)** 45 **D)** 48 **E)** 55

70) (B+C):2=?

A) 62 **B)** 57 **C)** 74 **D)** 68 **E)** 52

71. ve 72. soruları aşağıdaki şekle göre cevaplayınız.



ABCD dikdörtgen,

X, Y, Z karedir.

71) Üstteki şekilde X, Y, Z bölgelerinin toplam alanı kaçtır?

A) 36 **B)** 56 **C)** 64 **D)** 72 **E)** 144

72) Şekilde taralı bölgenin çevresi kaçtır?

A) 16 **B)** 24 **C)** 28 **D)** 40 **E)** 60

73) $x \square y = 3x - xy + 4y \Rightarrow (-4)\square 3 = ?$

A) 36 **B)** 30 **C)** 20 **D)** 15 **E)** 12

74)

$$a\nabla b = 3ab + a + b$$
$$3\nabla(2\nabla 2) = ?$$

A) -132 **B)** -92 **C)** 144

D) 153 **E)** 163

75) Aşağıdaki sayılar bir kurala göre yazılmıştır. Buna göre x kaçtır?

1, 4, 13, 40, 121, x, 1092

A) 360 **B)** 363 **C)** 362 **D)** 361 **E)** 364

76. ve 77. soruları aşağıdaki bilgiye göre cevaplayınız.

$2459 \rightarrow 119$

$7815 \rightarrow 165$

$4785 \rightarrow 195$

$5418 \rightarrow x$

$y \rightarrow 103$

Üstte, sol taraftaki sayıların rakamları bir kurala göre kullanılmış ve sağ taraftaki sayılar elde edilmiştir.

76) $x = ?$

A) 108 **B)** 118 **C)** 158 **D)** 114 **E)**128

77) $y = ?$

A) 2543 **B)** 4413 **C)** 5418 **D)** 4248 **E)** 5233

78) Aşağıdaki sayılar bir kurala göre yazılmıştır. Buna göre $(y - x)$ değeri nedir?

13, 23, 14, 22, 15, 21, x, 20, 17, y, 18,…

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

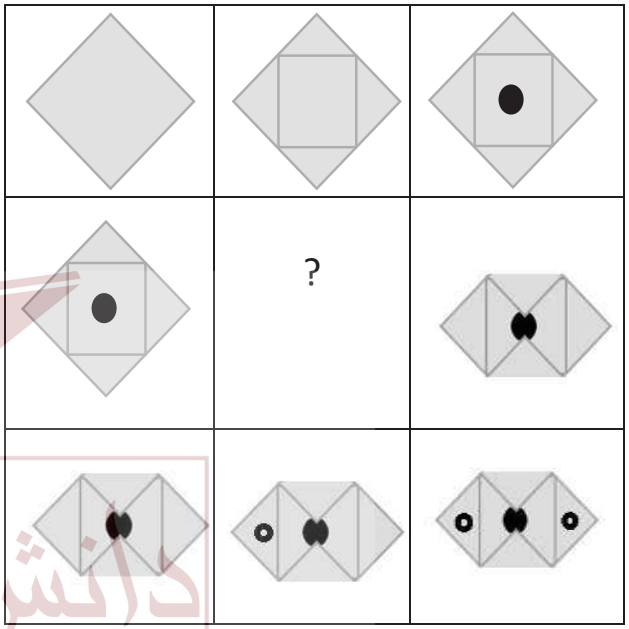
79) Aşağıdaki tabloda, I sütunundaki sayıların rakamları bir kurala göre II sütunundaki sayılara dönüştürülmüştür. Buna göre x'in değer nedir?

I.		II.
27438	→	38427
41295	→	95241
62741	→	41762
x	→	54870

A)70854 **B)**54807 **C)**58470

D) 70845 **E)**78054

80)



A)

B)

C)

D)

E)

1)

$$4a = 3b, \quad 5b = 3c \Rightarrow \frac{b+c}{c-2a} = ?$$

A) -12 **B)** -8 **C)** 12 **D)** 16 **E)** 32

2) $cos(75°) = ?$

A) $\frac{\sqrt{6}-\sqrt{2}}{4}$ **B)** $\frac{\sqrt{6}+\sqrt{2}}{4}$ **C)** $\frac{\sqrt{2}-\sqrt{6}}{4}$ **D)** $-\frac{\sqrt{6}+\sqrt{2}}{4}$ **E)** $1-\sqrt{2}$

3)

$$m + x = 3;\ y - n = 4$$

$$\Rightarrow xy + ym - xn - mn + 1 = ?$$

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

4)

$$2x = 3y \Rightarrow$$

$$\frac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{y}-\frac{1}{x}} = ?$$

A) 5 **B)** 3 **C)** 0 **D)** –1 **E)** –2

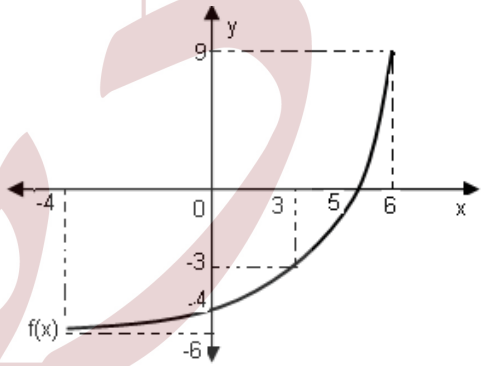
5)

$$f(x) = \frac{6}{2-\frac{4}{3-\frac{1}{x}}}$$

Which of the following points does the function f discontinuou?

A) -2 **B)** 3 **C)** 1 **D)** 4 **E)** 10

6)



$$f(0) - f^{-1}(9) = ?$$

A) 7 **B)** 3 **C)** 0 **D)** –1 **E)** –10

7) $\sqrt{x-1} + x = 3 \Rightarrow x = ?$

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

8)

$$\frac{\sqrt{3}-\sqrt{12}+\sqrt{75}}{\sqrt{27}-\sqrt{3}}+2=?$$

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

9)

$$\frac{5^{x+2}+5^{x+1}+5^{x}}{-5^{x-1}+5^{x}}=\frac{y}{4}\Rightarrow y=?$$

A) 17 **B)** 18 **C)** 31 **D)** 93 **E)** 155

10)

$$\frac{10^{x}+10^{x}+10^{x}+10^{x}}{2^{x}}=20\Rightarrow 3^{x+1}=?$$

A) 3 **B)** 9 **C)** 15 **D)** 27 **E)** 75

11)

$$A=\{0,1,2,3,4,5,6,7,8,9\};\ a,b,c\in A$$

$$(a\neq b,\quad b\neq c,\quad a\neq c)$$

What is minimum value of $(3a+4b+7c)$?

A) 10 **B)** 22 **C)** 34 **D)** 41 **E)** 63

12) $27-3x=35-\{14-2[(3-x)]\}\Rightarrow x=?$

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

13)

$$\left[\left(1+\frac{1}{4}\right):\left(1-\frac{1}{8}\right)\right]\cdot 7-\left(\frac{\frac{1}{2}+\frac{1}{5}-0{,}7}{13}\right)^{4}=?$$

A) 16 **B)** 18 **C)** 10 **D)** 8 **E)** 4

14)

$$\frac{2{,}3-0{,}23}{20{,}7}=?$$

A) 10 **B)** 1,4 **C)** 0,7 **D)** 0,1 **E)** 0,01

15)

$$\left.\begin{matrix} x+4y=12 \\ 3x-2y=22 \end{matrix}\right\} \Rightarrow x=?$$

A) 16 **B)** 8 **C)** 4 **D)** 3 **E)** 2

16)

$$\frac{x-3}{x}=\frac{10}{x+8} \Rightarrow$$

Which of the following can be value of x?

A) 10 **B)** 8 **C)** 4 **D)** -8 **E)** -30

17)

$$\left.\begin{matrix} A+2B=35 \\ B+C=12 \\ 2C+2A=25 \end{matrix}\right\} \Rightarrow A=?$$

A) 3,5 **B)** 4 **C)** 12 **D)** 18 **E)** 19

18)

A team of 20 workers of the same power finishes an 8-meter-wide 6 km-long asphalt road in 6 days, working in 21 days. How many hours a day should 14 crews work with the same characteristics to finish the 12 m wide 8 km long road in 36 days?

A) 10 **B)** 12 **C)** 14 **D)** 8 **E)** 20

19) $f(2x-3)=ax+2,\quad f^{-1}(6)=1 \Rightarrow a=?$

A) 16 **B)** 8 **C)** 4 **D)** 3 **E)** 2

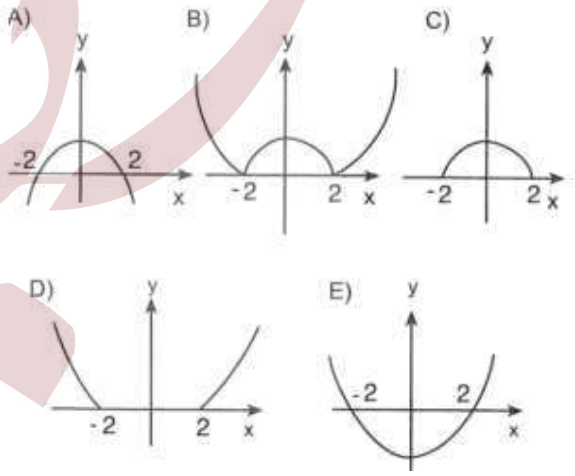
20) $x^2y<0;\ y^4z<0;\ xyz<0$

Accordingly, which of the following is given as correct the signs of x, y, z ?

A) $-,-,-$ **B)** $-,-,+$ **C)** $-,+,+$ **D)** $+,-,-$ **E)** $+,+,-$

21) $f(x)=|4-x^2|$

What is graphic of the function above?



22) $x^2+y^2-3xy+x=0 \Rightarrow \left.\frac{dy}{dx}\right|_{(1,1)}=?$

A) $\frac{2}{3}$ **B)** $\frac{1}{3}$ **C)** 0 **D)** -1 **E)** $-\frac{9}{7}$

23) $f(x) = e^{2x} + 2x + 1 \Rightarrow f'(0) = ?$

A) -10 **B)** -4 **C)** 2 **D)** 4 **E)** 8

24)

$$\int_1^2 \frac{4x^3 - 2}{x^2} dx = ?$$

A) π **B)** e **C)** 3 **D)** 4 **E)** 5

25)

$$\sum_{k=1}^{11} (2k - 3) = ?$$

A) 165 **B)** 33 **C)** 66 **D)** 99 **E)** 132

26)

$$\lim_{x \to 1} \frac{x^2 + x - 2}{\sin(x - 1)} = ?$$

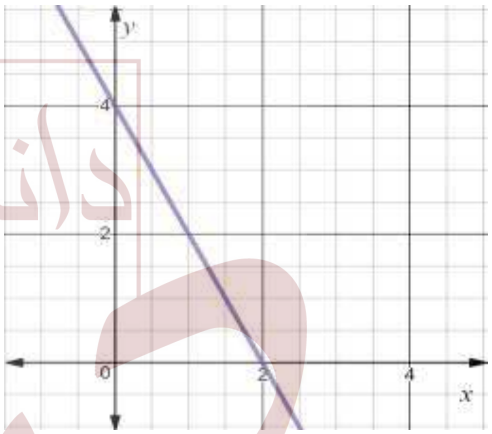
A) 3 **B)** 2 **C)** $\frac{1}{2}$ **D)** 1 **E)** -3

27)

$$sin(157,5) \cdot cos(157,5) = ?$$

A) $-\frac{\sqrt{2}}{2}$ **B)** $\frac{2}{5}$ **C)** $-\frac{5}{4}$ **D)** $\frac{\sqrt{2}}{2}$ **E)** $-\frac{\sqrt{2}}{4}$

28)



$A(3, a)$ point is located on the d line on the above graph. Accordingly, what is the value of a?

A) $-\frac{9}{2}$ **B)** -2 **C)** 1 **D)** 2 **E)** $\frac{5}{2}$

29) $\int \frac{dx}{x^2 - 4} =$

The above integral <u>cannot be equal</u> to one of the following options?

A) $\frac{1}{4} \int \left(\frac{1}{x-2} - \frac{1}{x+2}\right) dx$ **B)** $\frac{1}{4} \int \left(\frac{1}{x-2} + \frac{1}{x+2}\right) dx$

C) $\frac{1}{4} ln\left|\frac{x-2}{x+2}\right| + c$ **D)** $-\frac{1}{4} ln\left|\frac{x+2}{x-2}\right| + c$

E) $\frac{1}{4} ln|x - 2| - \frac{1}{4} ln|x + 2| + c$

30) $10^{(2+logx)} = 400 \Rightarrow x = ?$

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

31) $sin\left(arccos\left(\frac{-\sqrt{3}}{2}\right)\right) = ?$

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

32) $x^2 + y^2 + 4x - 8y + 20 + \sqrt{z-3} = 0$

$xy + z = ?$

A) 11 **B)** 9 **C)** 8 **D)** -2 **E)** -5

33) $P(x+2) = 5x^3 + x^2 - 4x - 8 \Rightarrow$ P(1)=?

A) 37 **B)** 25 **C)** 15 **D)** -8 **E)** -12

34)

$$A = \begin{bmatrix} 3 & 7 & -2 \\ 6 & 1 & -1 \\ 5 & 2 & 8 \\ -2 & 5 & 2 \end{bmatrix} \Rightarrow a_{12} + a_{33} + a_{41} = ?$$

A) 5 **B)** 6 **C)** 8 **D)** 13 **E)** 18

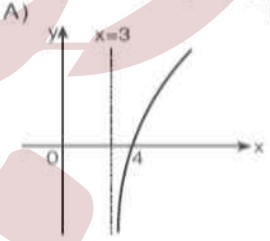
35) $(2+i)z = i - 2\bar{z} \Rightarrow z = ?$

A) $4 - i$ **B)** $-4 - i$ **C)** $1 + 4i$
D) $1 - 4i$ **E)** $-1 - 4i$

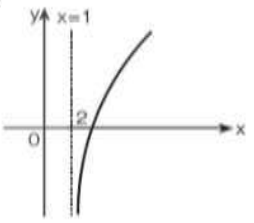
36) $f(x) = \log_3(x-3)$

What is the graphic of function above?

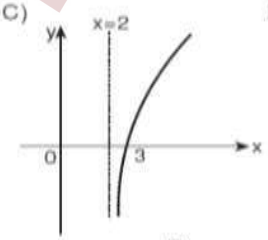
A)



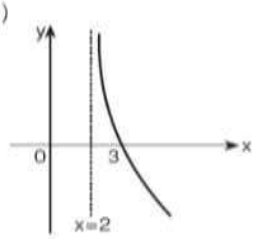
B)



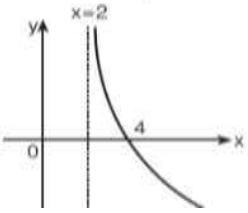
C)



D)



E)



37) $A=\{-1,0,1,2,3\},\ f:A\to B$

$f(x)=x^2+1 \Rightarrow f(A)=?$

A) {0,1,4,9} **B)** {1,2,5,10} **C)** {0,2,5,11}
D) {2,5,10} **E)** {−1,3,5,9}

38)

$$\sqrt{x^2-5x-5}=3$$

What is the solution set of above equation?

$A)\ \{-1,3\}$ $B)\ \{-2,7\}$ $C)\{-3,1\}$

$D)\{-7,-2\}$ $E)\ \{-7,2\}$

39)

$$f(x)=x^2-sin3x \Rightarrow \lim_{h\to 0}\frac{f(h)-f(0)}{h}?$$

A) −3 **B)** 2 **C)**−1 **D)** 0 **E)**−2

40) $x<0<y<z$

$$\begin{bmatrix} x & y \\ z & 0 \end{bmatrix}\cdot\begin{bmatrix} x & 0 \\ 0 & y \end{bmatrix}=\begin{bmatrix} 4 & 9 \\ -10 & 0 \end{bmatrix} \Rightarrow x+y+z=?$$

A)3 **B)** 5 **C)** 6 **D)** 9 **E)** 18

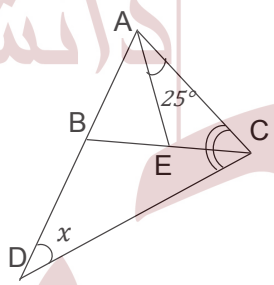
41)

$$A=[2 \quad a \quad 0 \quad 4]_{1\times 4}, \qquad B=\begin{bmatrix} a \\ -1 \\ 7 \\ -3 \end{bmatrix}_{4\times 1}$$

$$A\cdot B=[2]_{1\times 1} \Rightarrow a=?$$

$A)\ 6$ $B)\ 10$ $C)12$ $D)14$ $E)16$

42)



$|AB|=|AE|,$

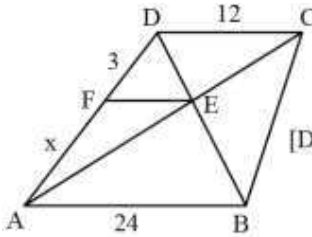
$m(\widehat{ACB})=m(\widehat{BCD})$

$m(ACB)=25°$

$m(\widehat{CDB})=x° \Rightarrow x=?$

A) 15 **B)** 25 **C)** 30 **D)** 36 **E)** 45

43)



|DC| = 12 br
|AB| = 24 br
|DF| = 3 br
[DC] // [AB] // [FE]
|AF| = x = ?

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

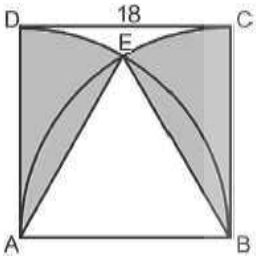
44)

$$f(x) = \begin{cases} x^2 - 1, & x \geq 2 \\ 4x - 5, & x < 2 \end{cases}$$

$$f'(3) + f'(0) = ?$$

A) 4 **B)** 5 **C)**10 **D)** 16 **E)** 19

45)



$|DC| = 18$ br,

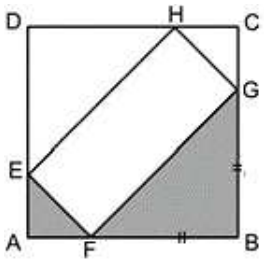
ABCD square

The points A and B are the center of the quarter circles.

What is the area of dark areas br^2?

A) 12π **B)** 24π **C)** 27π **D)** 54π **E)** 72π

46)



$2|AF| = |BF| = |GB|$

ABCD kare

ABCD square

If the total area of dark regions is $20\ cm^2$,what is the circumference of the EFGH rectangle?

A) 10 **B)** 12 **C)** 16 **D)** 24 **E)** 36

47)

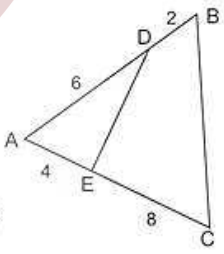
$|AD| = 6$ cm

$|DB| = 2$ cm

$|AE| = 4$ cm

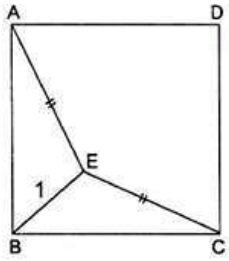
$|EC| = 8$ cm

$\frac{A(BCED)}{A(ADE)} = ?$



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

48)



(ABCD) karedir.
|AE| = 5 cm
|BE| = 1 cm
|EC| = 5 cm
A(BCEA) = x cm^2
x = ?

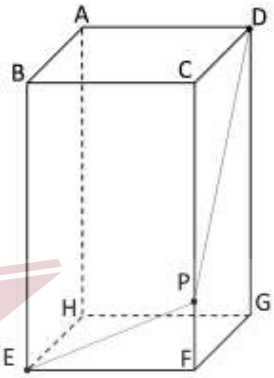
A) 4 **B)** 8 **C)** 16 **D** 24 **E)** 32

49)

What is the angle between the indicators at the given clock?

A) 130 **B)** 120 **C)** 115 **D)** 110 **E)** 105

50)



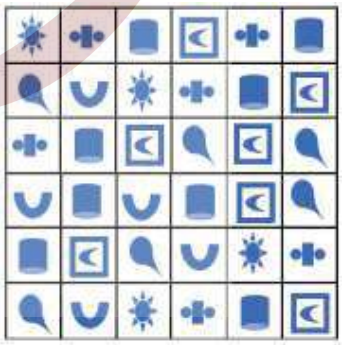
$|EF| = |GF| = |CD| = 4\ cm$

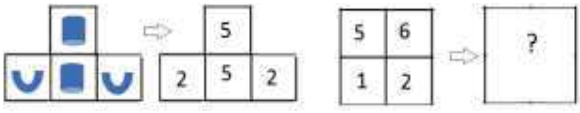
$|DG| = 6\ cm$

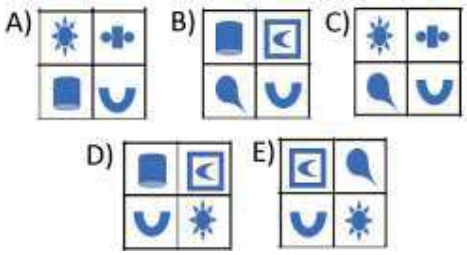
Shape is a square prism. P is any point on the $|CG|$ edge. |EP|+|PD| is at least how many cm?

A) 8 **B)** 18 **C)** 20 **D)** 12 **E)** 10

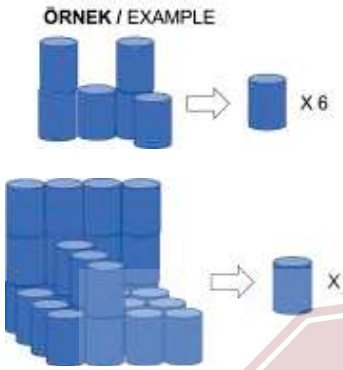
51)





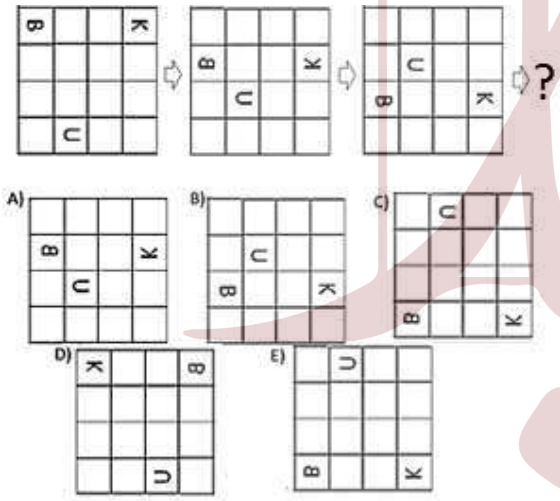


52)



A) 16 **B)** 27 **C)** 28 **D)** 29 **E)** 30

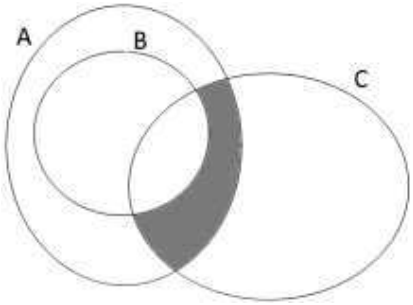
53)



54) How many different ways can a family of 5 with a mother, father and 3 children sit at a dining table, provided that adults sit side by side?

A) 4! **B)** 48 **C)** 5! **D)** 72 **E)** 12

55)



A, B, and C are sets. Which of the following represents the dark region correctly?

A) $A\backslash(B \cap C)$ **B)** $(B \cap C)\backslash A$ **C)** $(B \cap A)\backslash C$

D) $(C \cap A)\backslash B$ **E)** $(B \cup A) \cap (C \cup B)$

Answer questions 56.-57. according to the following information.

$\oplus$	g	a	n	k	i
g	n	k	i	g	a
a	k	i	g	a	n
n	i	g	a	n	k
k	g	a	n	k	i
i	a	n	k	i	g

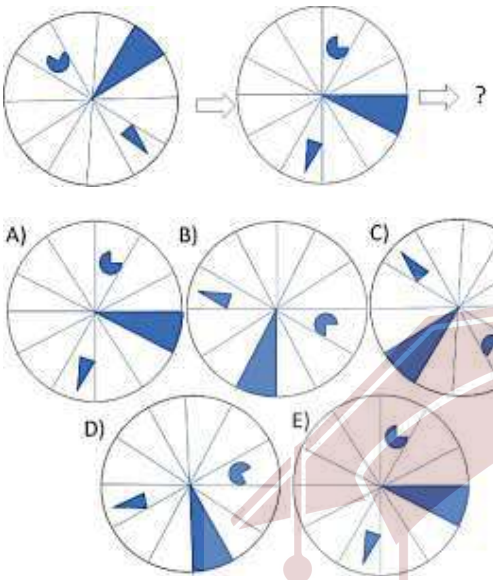
56) $g \oplus x = i \Rightarrow x = ?$

A) g **B)** a **C)** n **D)** k **E)** i

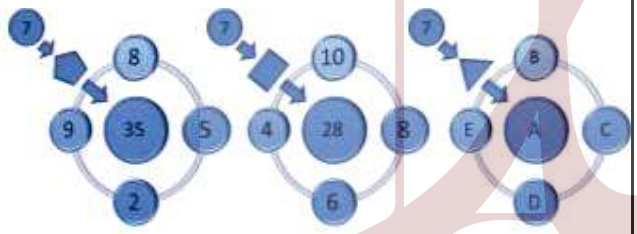
57) $g \oplus (a \oplus k) = ?$

A) g **B)** a **C)** n **D)** k **E)** i

58)



Answer questions 59.-60.-61. according to the following information.



The above relationship exists between numbers on the figure:

59) At the figure, which number should come instead of **A?**

A) 12 **B)** 14 **C)** 21 **D)** 35 **E)** 36

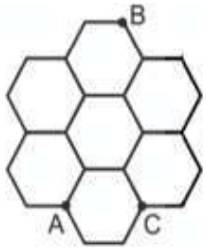
60) $(E + A) \cdot B = ?$

A) 15 **B)** 25 **C)** 32 **D)** 39 **E)** 75

61) $(D + B) : C = ?$

A) 0 **B)** -4 **C)** 2 **D)** -7 **E)** 8

Answer questions **62. - 63.** according to the following information.



A farmer will grow different crops by dividing his field into co-hexagons as shown.

In the field consisting of co-hexagonal sections with an edge of 200 m, the walking speed is 6 km per hour while walking on the boundaries of the farmer's zones and the walking speed is 3 km per hour while moving through the sections.

62) The farmer can go from A to B in at least how many minutes, provided that he does not go the same way again?

A) 6 **B)** 12 **C)** 14 **D)** 16 **E)** 25

63) The farmer goes from A to B in at least how many minutes, provided he does not go the same way, and reaches the corner C?

A) 8 **B)** 12 **C)** 16 **D)** 18 **E)** 25

64)

$$\left.\begin{array}{l} \triangle + \odot + \odot = \mathbf{11} \\ \triangle + \square + \square = \mathbf{7} \\ \square + \Delta = \mathbf{6} \\ \nabla + \odot = \mathbf{9} \end{array}\right\} \Rightarrow \nabla = ?$$

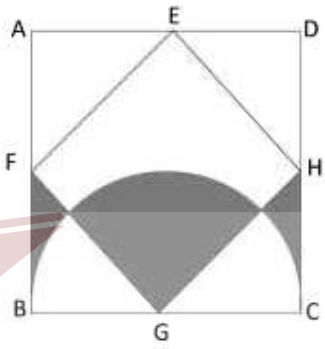
A) 10 **B)** 9 **C)** 7 **D)** 6 **E)** 5

65) $\mathbf{1, 3, 6, 10, 15, 21, 28}, y, \mathbf{45, 55}, \ldots$

The numbers given above are written according to a certain rule. Accordingly, what is the value of "y"?

A) 44 **B)** 43 **C)** 42 **D)** 36 **E)** 32

Answer questions 66. and 67. according to the following information.



ABCD and EFGH square,

The point G is the center of the half circle.

$|EA| = |CH| = 6\ cm$

66) What is the total area of the shaded areas?

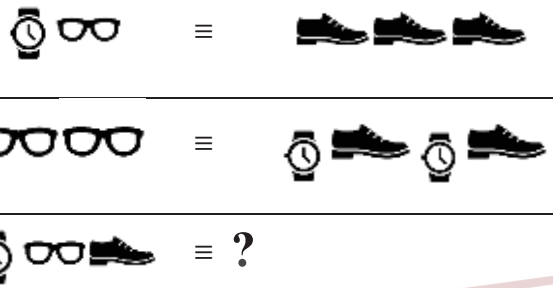
A) 45 **B)** 36 **C)** 18 **D)** 9π **E)** 12π

67) What is the total circumference of the shaded areas?

A) 45 **B)** $12(\pi + \sqrt{2} - 1)$ **C)** $12(\pi + \sqrt{3} + 1)$

D) 39π **E)** $12(\frac{\pi}{2} + \sqrt{2} + 1)$

68)



A)

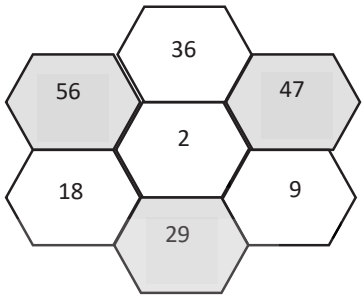
B)

C)

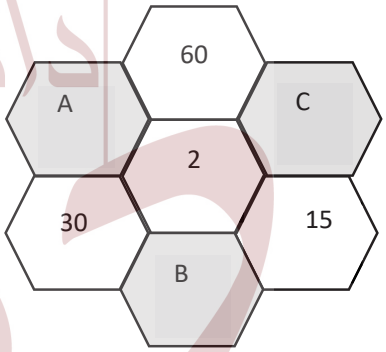
D)

E)

Answer the questions 69. and 70. according to the following shape and the information.



The numbers in the dark hexagons are obtained by the summation of the numbers in the other hexagons which are adjacent of the darks.



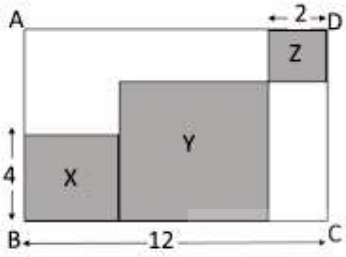
69) A-B=?

A) 36 **B)** 40 **C)** 45 **D)** 48 **E)** 55

70) (B+C):2=?

A) 62 **B)** 57 **C)** 74 **D)** 68 **E)** 52

Answer questions 71. and 72. according to the following shape.



ABCD rectangle,

X, Y, Z is square.

71) What is the total area of the X, Y, Z regions in the upper figure?

A) 36 **B)** 56 **C)** 64 **D)** 72 **E)** 144

72) How many rectangles are there in this shape?

A) 16 **B)** 24 **C)** 28 **D)** 40 **E)** 60

73) $x \square y = 3x - xy + 4y \Rightarrow (-4)\square 3 = ?$

A) 36 **B)** 30 **C)** 20 **D)** 15 **E)** 12

74)

$$a \nabla b = 3ab + a + b$$
$$3 \nabla (2 \nabla 2) = ?$$

A) -132 **B)** -92 **C)** 144

D) 153 **E)** 163

75) The numbers given below are written according to a certain rule. Accordingly, what is the value of "x"?

1, 4, 13, 40, 121, x, 1092

A) 360 **B)** 363 **C)** 362 **D)** 361 **E)** 364

Answer questions 76. and 77. according to the following information.

$2459 \rightarrow 119$
$7815 \rightarrow 165$
$4785 \rightarrow 195$
$5418 \rightarrow x$
$y \rightarrow 103$

Above, the numbers on the right-hand side are obtained by use the digits of the numbers on the left-hand side in a certain rule.

76) $x = ?$

A) 108 **B)** 118 **C)** 158 **D)** 114 **E)**128

77) $y = ?$

A) 2543 **B)** 4413 **C)** 5418 **D)** 4248 **E)** 5233

78)

The numbers given below are written according to a certain rule. Accordingly, what is the value of $(y - x)$?

13, 23, 14, 22, 15, 21, x, 20, 17, y, 18,…

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

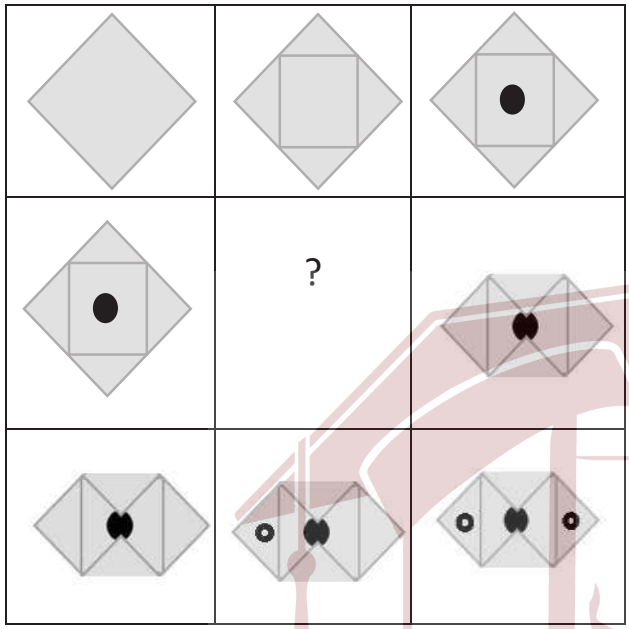
79)

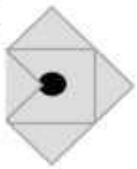
Below table, the digits of the numbers of the column **I** are converted to the numbers in column **II** according to a certain rule. Accordingly, what is the value of x?

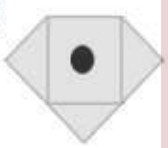
I.		**II.**
27438	→	38427
41295	→	95241
62741	→	41762
x	→	54870

A)70854 **B)**54807 **C)**58470 **D)** 70845 **E)**78054

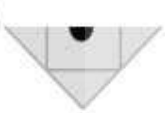
80)



A) 

B) 

C)

D) 

E)

1)

$$4a = 3b, \quad 5b = 3c \Rightarrow \frac{b+c}{c-2a} = ?$$

A) -12 **B)** -8 **C)** 12 **D)** 16 **E)** 32

2) $cos(75°) = ?$

A) $\frac{\sqrt{6}-\sqrt{2}}{4}$ **B)** $\frac{\sqrt{6}+\sqrt{2}}{4}$ **C)** $\frac{\sqrt{2}-\sqrt{6}}{4}$ **D)** $-\frac{\sqrt{6}+\sqrt{2}}{4}$ **E)** $1-\sqrt{2}$

3)

$$m + x = 3;\ y - n = 4$$

$$\Rightarrow xy + ym - xn - mn + 1 = ?$$

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

4)

$$2x = 3y \Rightarrow$$

$$\frac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{y}-\frac{1}{x}} = ?$$

A) 5 **B)** 3 **C)** 0 **D)** –1 **E)** –2

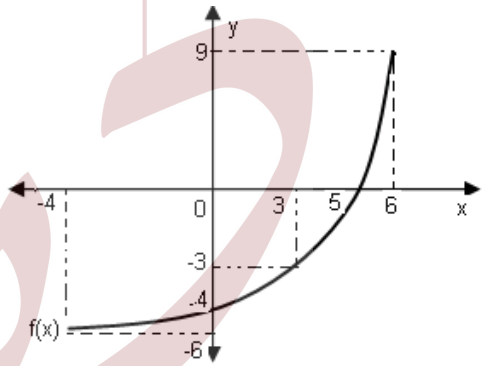
5)

$$f(x) = \frac{6}{2-\frac{4}{3-\frac{1}{x}}}$$

التابع (f) في أي من النقاط التالية غير مستمر.

A) -2 **B)** 3 **C)** 1 **D)** 4 **E)** 10

6)



$$f(0) - f^{-1}(9) = ?$$

A) 7 **B)** 3 **C)** 0 **D)** –1 **E)** –10

7) $\sqrt{x-1} + x = 3 \Rightarrow x = ?$

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

8)

$$\frac{\sqrt{3}-\sqrt{12}+\sqrt{75}}{\sqrt{27}-\sqrt{3}}+2=?$$

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

9)

$$\frac{5^{x+2}+5^{x+1}+5^{x}}{-5^{x-1}+5^{x}}=\frac{y}{4}\Rightarrow y=?$$

A) 17 **B)** 18 **C)** 31 **D)** 93 **E)** 155

10)

$$\frac{10^{x}+10^{x}+10^{x}+10^{x}}{2^{x}}=20\Rightarrow 3^{x+1}=?$$

A) 3 **B)** 9 **C)** 15 **D)** 27 **E)** 75

11)

$A=\{0,1,2,3,4,5,6,7,8,9\};\ a,b,c\in A$

$(a\neq b,\quad b\neq c,\quad a\neq c)$

$(3a+4b+7c)$ ما هي أقل قيمة لمجموع

A) 10 **B)** 22 **C)** 34 **D)** 41 **E)** 63

12) $27-3x=35-\{14-2[(3-x)]\}\Rightarrow x=?$

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

13)

$$\left[\left(1+\frac{1}{4}\right):\left(1-\frac{1}{8}\right)\right]\cdot 7-\left(\frac{\frac{1}{2}+\frac{1}{5}-0{,}7}{13}\right)^{4}=?$$

A) 16 **B)** 18 **C)** 10 **D)** 8 **E)** 4

14)

$$\frac{2{,}3-0{,}23}{20{,}7}=?$$

A) 10 **B)** 1,4 **C)** 0,7 **D)** 0,1 **E)** 0,01

15)

$$\left.\begin{matrix}x+4y=12\\3x-2y=22\end{matrix}\right\}\Rightarrow x=?$$

A) 16 **B)** 8 **C)** 4 **D)** 3 **E)** 2

16)

$$\frac{x-3}{x} = \frac{10}{x+8} \Rightarrow$$

أي مما يأتي يمكن أن يكون قيمة x؟

A) 10 **B)** 8 **C)** 4 **D)** -8 **E)** -30

17)

$$\left.\begin{array}{l} A+2B=35 \\ B+C=12 \\ 2C+2A=25 \end{array}\right\} \Rightarrow A=?$$

A) 3,5 **B)** 4 **C)** 12 **D)** 18 **E)** 19

18)

فريق مكون من ٢٠ عاملاً لهم نفس القوة، ينجز هذا الفريق تعبيد طريق بطول ٦ كم وعرض ٨م بالعمل ٦ ساعات يومياً في ٢١ يوم. كم ساعة عمل في اليوم يحتاجها فريق آخر له نفس الخصائص مكون من ١٤ عاملاً من أجل إنجاز تعبيد طريق عرضه ١٢م وطوله ٨كم في ٣٦ يوماً؟

A) 10 **B)** 12 **C)** 14 **D)** 8 **E)** 20

19) $f(2x-3) = ax+2, \quad f^{-1}(6) = 1 \Rightarrow a=?$

A) 16 **B)** 8 **C)** 4 **D)** 3 **E)** 2

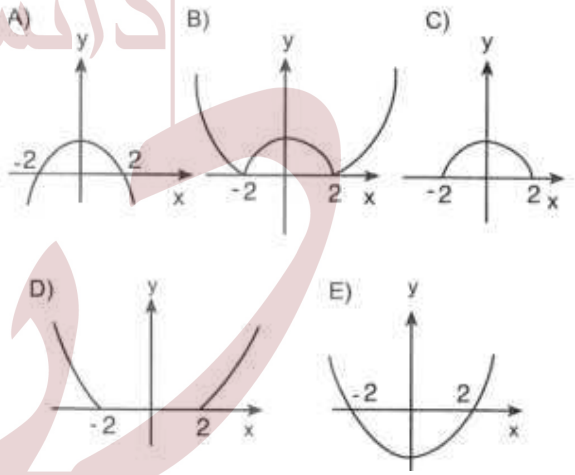
20) $x^2y < 0;\ y^4z < 0;\ xyz < 0$

وفقا لذلك، أي من الخيارات أدناه تتضمن العلامات الصحيحية لـ x, y, z

A) $-,-,-$ **B)** $-,-,+$ **C)** $-,+,+$ **D)** $+,-,-$ **E)** $+,+,-$

21)

أي مما يأتي هو الشكل المناسب للتابع $f(x) = |4-x^2|$



22) $x^2 + y^2 - 3xy + x = 0 \Rightarrow \left.\frac{dy}{dx}\right|_{(1,1)} = ?$

A) $\frac{2}{3}$ **B)** $\frac{1}{3}$ **C)** 0 **D)** -1 **E)** $-\frac{9}{7}$

23) $f(x) = e^{2x} + 2x + 1 \Rightarrow f'(0) = ?$

A) -10 **B)** -4 **C)** 2 **D)** 4 **E)** 8

24)

$$\int_1^2 \frac{4x^3 - 2}{x^2} dx = ?$$

A) π **B)** e **C)** 3 **D)** 4 **E)** 5

25)

$$\sum_{k=1}^{11} (2k - 3) = ?$$

A) 165 **B)** 33 **C)** 66 **D)** 99 **E)** 132

26)

$$\lim_{x \to 1} \frac{x^2 + x - 2}{\sin(x - 1)} = ?$$

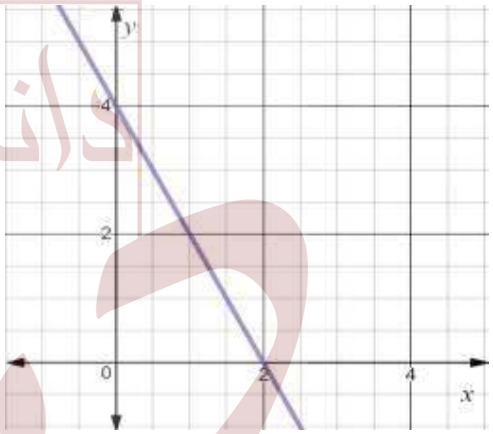
A) 3 **B)** 2 **C)** $\frac{1}{2}$ **D)** 1 **E)** -3

27)

$$sin(157,5) \cdot cos(157,5) = ?$$

A) $-\frac{\sqrt{2}}{2}$ **B)** $\frac{2}{5}$ **C)** $-\frac{5}{4}$ **D)** $\frac{\sqrt{2}}{2}$ **E)** $-\frac{\sqrt{2}}{4}$

28)



النقطة $A(3, a)$ تقع على المستقيم d في الرسم البياني أعلاه، بناء عليه ما قيمة a؟

A) $-\frac{9}{2}$ **B)** -2 **C)** 1 **D)** 2 **E)** $\frac{5}{2}$

29) $\int \frac{dx}{x^2 - 4} =$

أيٌّ من الخيارات الآتية لا يمكن أن يساويها التكامل؟

A) $\frac{1}{4} \int \left(\frac{1}{x-2} - \frac{1}{x+2}\right) dx$ **B)** $\frac{1}{4} \int \left(\frac{1}{x-2} + \frac{1}{x+2}\right) dx$

C) $\frac{1}{4} ln\left|\frac{x-2}{x+2}\right| + c$ **D)** $-\frac{1}{4} ln\left|\frac{x+2}{x-2}\right| + c$

E) $\frac{1}{4} ln|x - 2| - \frac{1}{4} ln|x + 2| + c$

30) $10^{(2+logx)} = 400 \Rightarrow x = ?$

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

31)

$$sin\left(arccos\left(\frac{-\sqrt{3}}{2}\right)\right) = ?$$

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

32) $x^2 + y^2 + 4x - 8y + 20 + \sqrt{z-3} = 0$

$xy + z = ?$

A) 11 **B)** 9 **C)** 8 **D)** -2 **E)** -5

33) $P(x+2) = 5x^3 + x^2 - 4x - 8 \Rightarrow$ P(1)=?

A) 37 **B)** 25 **C)** 15 **D)** -8 **E)** -12

34)

$$A = \begin{bmatrix} 3 & 7 & -2 \\ 6 & 1 & -1 \\ 5 & 2 & 8 \\ -2 & 5 & 2 \end{bmatrix} \Rightarrow a_{12} + a_{33} + a_{41} = ?$$

A) 5 **B)** 6 **C)** 8 **D)** 13 **E)** 18

35)

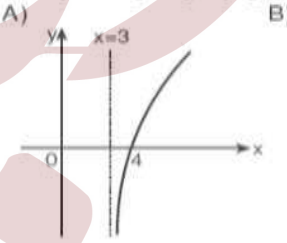
$(2+i)z = i - 2\bar{z} \Rightarrow z = ?$

A) $4 - i$ **B)** $-4 - i$ **C)** $1 + 4i$
D) $1 - 4i$ **E)** $-1 - 4i$

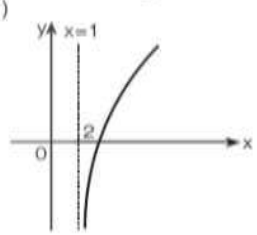
36)

أي مما ياتي هو الشكل البياني للدالة $f(x) = \log_3(x-3)$

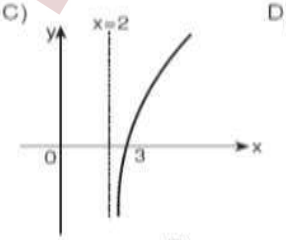
A)



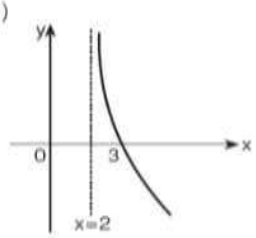
B)



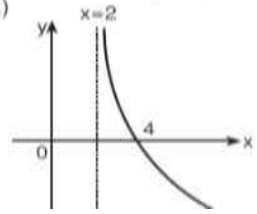
C)



D)



E)



37) $A=\{-1,0,1,2,3\},\ f:A\to B$

$f(x)=x^2+1 \Rightarrow f(A)=?$

A) $\{0,1,4,9\}$ **B)** $\{1,2,5,10\}$ **C)** $\{0,2,5,11\}$
D) $\{2,5,10\}$ **E)** $\{-1,3,5,9\}$

38)

$\sqrt{x^2-5x-5}=3$

ما هي مجموعة الحلول للمعادلة أعلاه؟

$A)\ \{-1,3\}$ $B)\ \{-2,7\}$ $C)\{-3,1\}$

$D)\{-7,-2\}$ $E)\ \{-7,2\}$

39)

$f(x)=x^2-sin3x \Rightarrow \lim_{h\to 0}\frac{f(h)-f(0)}{h}?$

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

40) $x<0<y<z$

$\begin{bmatrix} x & y \\ z & 0 \end{bmatrix}\cdot\begin{bmatrix} x & 0 \\ 0 & y \end{bmatrix}=\begin{bmatrix} 4 & 9 \\ -10 & 0 \end{bmatrix} \Rightarrow x+y+z=?$

A)3 **B)** 5 **C)** 6 **D)** 9 **E)** 18

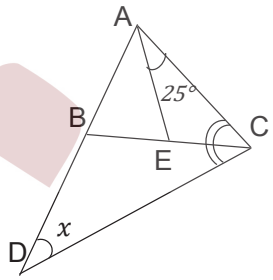
41)

$A=[2 \quad a \quad 0 \quad 4]_{1\times 4}, \qquad B=\begin{bmatrix} a \\ -1 \\ 7 \\ -3 \end{bmatrix}_{4\times 1}$

$A\cdot B=[2]_{1\times 1} \Rightarrow a=?$

$A)\ 6$ $B)\ 10$ $C)12$ $D)14$ $E)16$

42)



$|AB|=|AE|,$

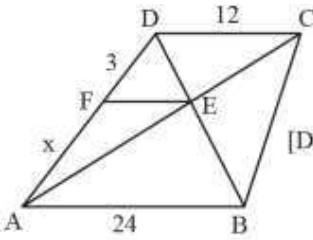
$m(\widehat{ACB})=m(\widehat{BCD})$

$m(ACB)=25°$

$m(\widehat{CDB})=x° \Rightarrow x=?$

A) 15 **B)** 25 **C)** 30 **D)** 36 **E)** 45

43)



|DC| = 12 br
|AB| = 24 br
|DF| = 3 br
[DC] // [AB] // [FE]
|AF| = x = ?

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

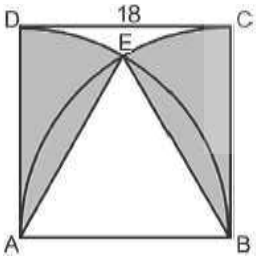
44)

$$f(x) = \begin{cases} x^2 - 1, & x \geq 2 \\ 4x - 5, & x < 2 \end{cases}$$

$$f'(3) + f'(0) = ?$$

A) 4 **B)** 5 **C)**10 **D)** 16 **E)** 19

45)



|DC| = 18 br,

ABCD kare

ABCD square

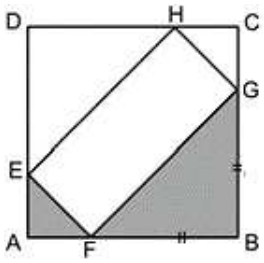
ABCD مربع

A و B مركز ربع الدائرة

كم br^2 مساحة المنطقة المظللة؟

A) 12π **B)** 24π **C)** 27π **D)** 54π **E)** 72π

46)



$2|AF| = |BF| = |GB|$

ABCD kare

ABCD square

ABCD مربع

إذا كانت مساحة المنطقة المظللة ٢٠سم٢

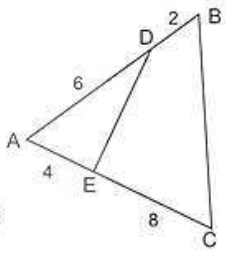
كم (سم) هو محيط المستطيل EFGH

A) 10 **B)** 12 **C)** 16 **D)** 24 **E)** 36

47)

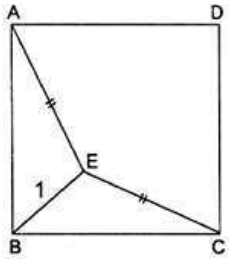
|AD| = 6 cm
|DB| = 2 cm
|AE| = 4 cm
|EC| = 8 cm

$$\frac{A(BCED)}{A(ADE)} = ?$$



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

48)



(ABCD) karedir.
|AE| = 5 cm
|BE| = 1 cm
|EC| = 5 cm
A(BCEA) = x cm^2
x = ?

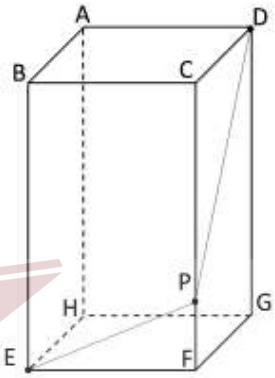
A) 4 **B)** 8 **C)** 16 **D** 24 **E)** 32

49)

كم درجة قياس الزاوية التي بين عقربي الساعة أعلاه؟

A) 130 **B)** 120 **C)** 115 **D)** 110 **E)** 105

50)



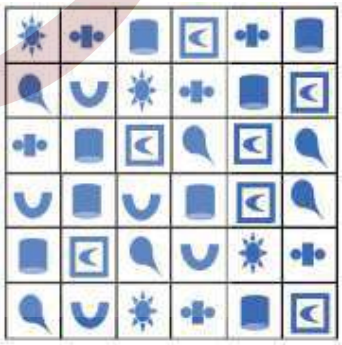
$|EF| = |GF| = |CD| = 4\ cm$

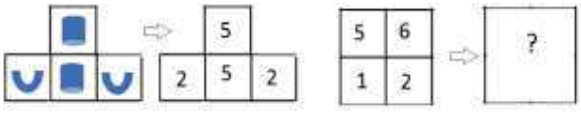
$|DG| = 6\ cm$

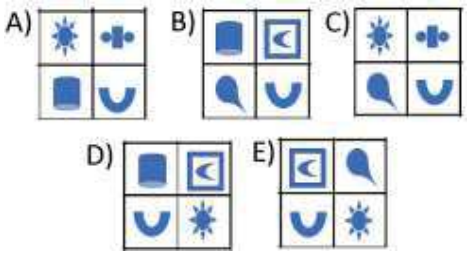
الشكل أعلاه موشور مربع، P هي نقطة لا على التعيين على الضلع $|CG|$ ، ما هو مجموع (|EP|+ |PD|) على الأقل؟

A) 8 **B)** 18 **C)** 20 **D)** 12 **E)** 10

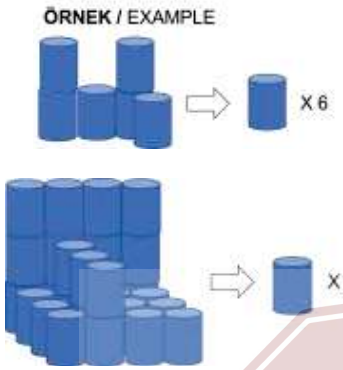
51)





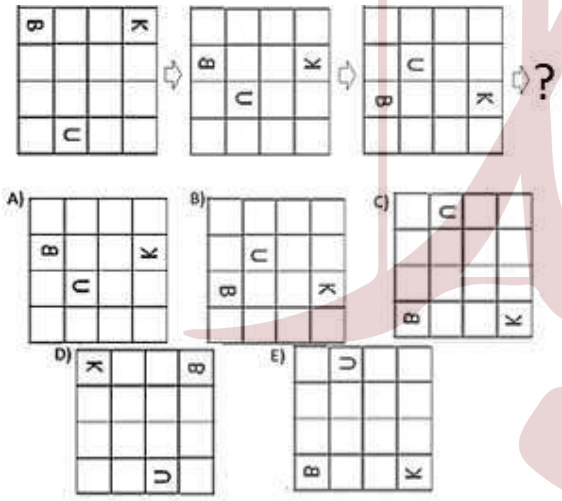


52)



A) 16 **B)** 27 **C)** 28 **D)** 29 **E)** 30

53)

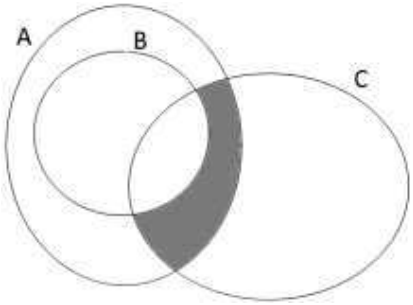


54)

إذا جلست عائلة مكونة من أب وأم وثلاثة أطفال على مائدة طعام مخصصة لخمسة أشخاص، بكم طريقة مختلفة يمكنهم الجلوس بشرط أن يجلس البالغون جنباً إلى جنب؟

A) 4! **B)** 48 **C)** 5! **D)** 72 **E)** 12

55)



A، B و C مجموعات، أي مما يأتي يمثل المنطقة المظللة؟

A) $A\backslash(B \cap C)$ **B)** $(B \cap C)\backslash A$ **C)** $(B \cap A)\backslash C$

D) $(C \cap A)\backslash B$ **E)** $(B \cup A) \cap (C \cup B)$

أجب عن الأسئلة **56.-57.** وفقا للمعلومات التالية..

$\oplus$	g	a	n	k	i
g	n	k	i	g	a
a	k	i	g	a	n
n	i	g	a	n	k
k	g	a	n	k	i
i	a	n	k	i	g

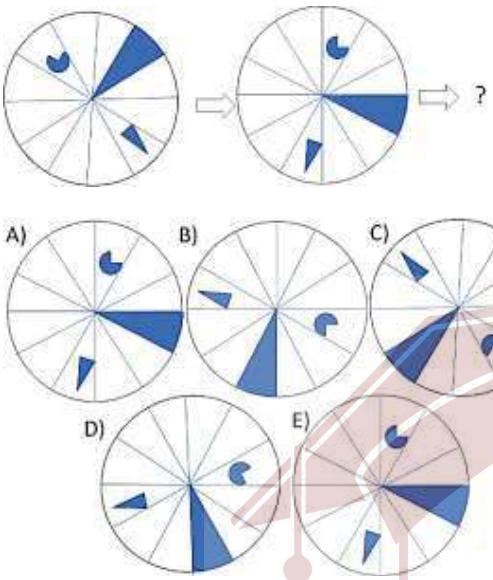
56) $g \oplus x = i \Rightarrow x = ?$

A) g **B)** a **C)** n **D)** k **E)** i

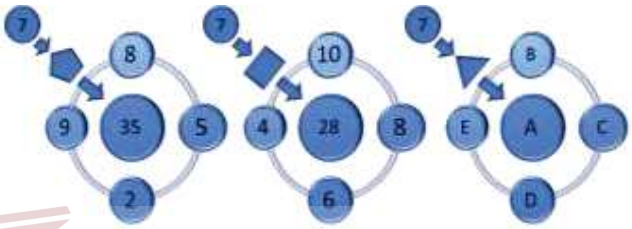
57) $g \oplus (a \oplus k) = ?$

A) g **B)** a **C)** n **D)** k **E)** i

58)



أجب عن الأسئلة ٥٩، **60**، ٦١ بناء على المعطيات التالية.



بين الأعداد في الشكل أعلاه علاقات.

59)

أي رقم يجب أن يأتي بدلا من A في الشكل؟

A) 12 **B)** 14 **C)** 21 **D)** 35 **E)** 36

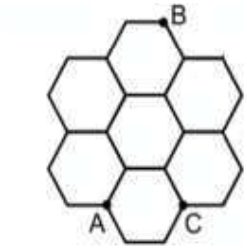
60) $(E + A) \cdot B = ?$

A) 15 **B)** 25 **C)** 32 **D)** 39 **E)** 75

61) $(D + B) : C = ?$

A) 0 **B)** -4 **C)** 2 **D)** -7 **E)** 8

أجب عن الأسئلة **62**،**63** حسب المعطيات التالية.



قسم فلاح حقله مسدسات متساوية على نحو الشكل أعلاه لزراعتها بالمحصولات.

في الحقل المكون من أقسام سداسية يبلغ طول ضلع واحد منها ٢٠٠م تبلغ سرعة المشي ٦ كم في الساعة إذا سار على حدود أضلاع المسدسات، فيما تبلغ سرعة المشي ٣كم في الساعة إذا سار متنقلا داخل المسدسات.

62)

بكم دقيقة على الأقل يستطيع الفلاح قطع الطريق من **A** إلى **B** إذا لم يسلك الطريق نفسه مرة أخرى؟

A) 6 **B)** 12 **C)** 14 **D)** 16 **E)** 25

63)

بكم دقيقة على الأقل يستطيع الفلاح قطع الطريق من **A** إلى **B** بشرط أن يمر بالزاوية **C** وأن لا يسلك الطريق نفسه مرة أخرى؟

A) 8 **B)** 12 **C)** 16 **D)** 18 **E)** 25

64)

$$\left.\begin{array}{l} \triangle + \odot + \odot = 11 \\ \triangle + \square + \square = 7 \\ \square + \Delta = 6 \\ \nabla + \odot = 9 \end{array}\right\} \Rightarrow \nabla = ?$$

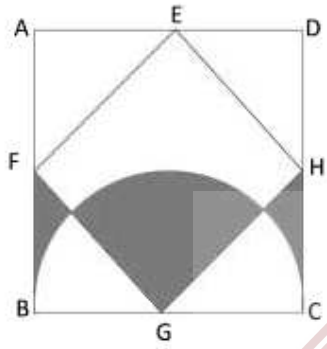
A) 10 **B)** 9 **C)** 7 **D)** 6 **E)** 5

65) $1, 3, 6, 10, 15, 21, 28, y, 45, 55, \ldots$

الأرقام المكتوبة أعلاه مكتوبة وفقا لقاعدة. بناء عليها كم ناتج "y"؟

A) 44 **B)** 43 **C)** 42 **D)** 36 **E)** 32

أجب عن الأسئلة **66**،**67** حسب المعطيات التالية.



$|EA| = |CH| = 6\ cm$

ABCD و EFGH مربعان

النقطة G مركز نصف الدائرة

66)

كم سم٢ مساحة مجموع المناطق المظللة؟

A) 45 **B)** 36 **C)** 18 **D)** 9π **E)** 12π

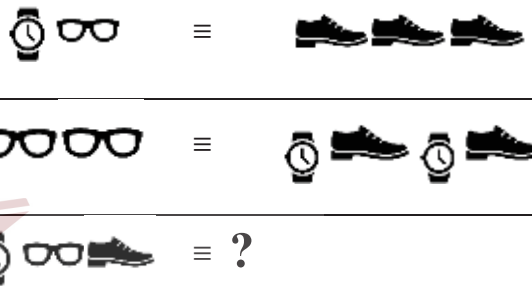
67)

كم سم محيط مجموع المناطق المظللة؟

A) 45 **B)** $12(\pi + \sqrt{2} - 1)$ **C)** $12(\pi + \sqrt{3} + 1)$

D) 39π **E)** $12(\frac{\pi}{2} + \sqrt{2} + 1)$

68)



A)

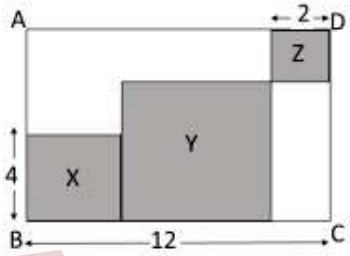
B)

C)

D)

E)

أجب عن الأسئلة **72, 71** حسب الشكل التالي.



ABCD مستطيل

X, Y, Z مربعات

71)

كم مساحة مجموع مناطق X, Y, Z في الشكل أعلاه؟

A) 36 **B)** 56 **C)** 64 **D)** 72 **E)** 144

72)

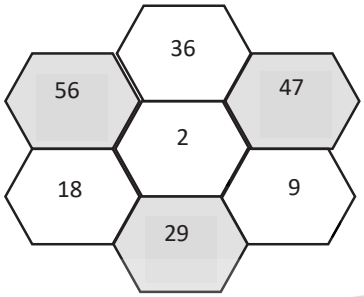
ما محيط المنطقة المظللة في الشكل؟

A) 16 **B)** 24 **C)** 28 **D)** 40 **E)** 60

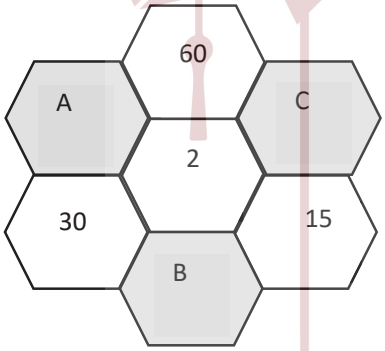
73) $x\square y = 3x - xy + 4y \Rightarrow (-4)\square 3 = ?$

A) 36 **B)** 30 **C)** 20 **D)** 15 **E)** 12

أجب عن الأسئلة **70, 69** حسب الشكل والتوضيح التالي.



تم الحصول على الأعداد التي في المسدسات المضللة من خلال جمع الأعداد التي في المسدسات الملاصقة لها.



69) A-B=?

A) 36 **B)** 40 **C)** 45 **D)** 48 **E)** 55

70) (B+C):2=?

A) 62 **B)** 57 **C)** 74 **D)** 68 **E)** 52

74)

$$a\nabla b = 3ab + a + b$$
$$3\nabla(2\nabla 2) = ?$$

A) -132 **B)** -92 **C)** 144

D) 153 **E)** 163

75)

الأرقام المكتوبة أدناه مكتوبة وفقا لقاعدة. بناء عليها كم قيمة x ؟

1, 4, 13, 40, 121, x, 1092

A) 360 **B)** 363 **C)** 362 **D)** 361 **E)** 364

أجب عن السؤالين ٧٦،٧٧ وفقاً للمعطيات المذكورة أدناه.

$2459 \rightarrow 119$

$7815 \rightarrow 165$

$4785 \rightarrow 195$

$5418 \rightarrow x$

$y \rightarrow 103$

استعملت الأرقام في يسار الجدول أعلاه وفقاً لقاعدة، وتم الحصول على الأرقام التي في يمين الجدول.

76) $x = ?$

A) 108 **B)** 118 **C)** 158 **D)** 114 **E)**128

77) $y = ?$

A) 2543 **B)** 4413 **C)** 5418 **D)** 4248 **E)** 5233

78)

كُتبت الأرقام المذكورة أدناه وفقاً لقاعدة، فما قيمة $(y - x)$؟

13, 23, 14, 22, 15, 21, x, 20, 17, y, 18,…

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

79)

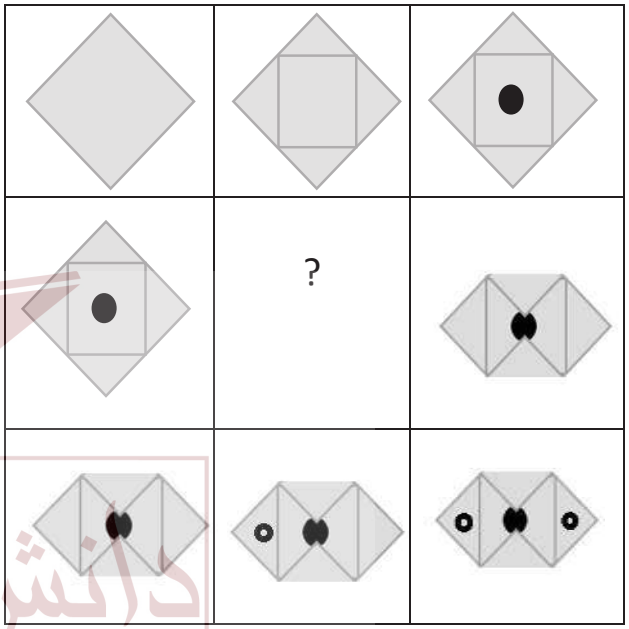
في الجدول أدناه تحولت أرقام الأعداد في العمود الأول إلى الأعداد في العمود الثاني وفقاً لقاعدة. بناء عليها ما قيمة x؟

I.		II.
27438	→	38427
41295	→	95241
62741	→	41762
x	→	54870

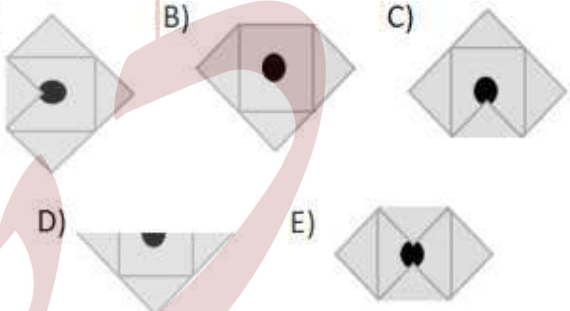
A)70854 **B)**54807 **C)**58470

D) 70845 **E)**78054

80)



A) B) C)



D) E)

@diyare_danesh

RULES FOR THE CONDUCT OF THE EXAMINATION

1. No materials or electronic devices shall be brought into the room or used at an examination. Unauthorized materials include, but are not limited to: books, dictionaries, class notes, or aid sheets, weapons, explosive materials. Unauthorized electronic devices include, but are not limited to: cellular (mobile) telephones, laptop computers, calculators, MP3 players (such as an Ipod), Personal Digital Assistants ("PDA" such as a Palm Pilot or Blackberry), pagers, electronic dictionaries, Compact Disc Players, Mini Disc Players, Smart Watches and Smart Glasses. Anyone who violate these rules will be penalized by invalidating their exam results.

2. KBU-ULOS Exam duration: 120 minutes.

3. No candidate who has submitted their question paper to those supervising the examination and have left the test room, for any reason whatsoever, will be allowed to re-enter the room.

4. Candidates will NOT be permitted to enter an examination room later than first thirteen (30) minutes after the commencement of the examination, nor to leave until at least half an hour after the examination has commenced. Candidates shall remain seated at their desks during the final fifteen (15) minutes of the examination. Students who arrive following the first 30 minutes after the examination has started will NOT be allowed in the test rooms.

5. Candidates shall not communicate with one another in any manner whatsoever during the examination. During the test, it is forbidden to ask questions of or talk to those supervising the exam. It is also against the rules of the examination for supervisors to converse or whisper to any candidates. Similarly, it is forbidden to ask another candidate for a pencil, eraser, or anything else.

6. During the examination, candidates are required to comply with all the directions given to them by the supervisors; they also have the authority to assign seats to candidates. You must follow all instructions given to you. Otherwise, your name and application number will be taken, and your examination will be invalidated.

7. If, during the test anyone is found cheating, trying to cheat, or helping someone else to cheat, his/her name and application number will be recorded, and his/her answer sheet will not be considered for evaluation. Supervisors do not have to warn candidate(s) about their act of cheating. This is the candidates' responsibility. During the examination, it is extremely important that you take utmost attention for not letting your answer sheet be seen by another candidate.

8. It is important to fill in the necessary areas on the answer sheet. You must use only a soft lead pencil for writing your name and other information or marking answers. No type of pen may be used. Mark your answers only on the answer sheet. For each question mark one letter (A, B, C, D, or E) on your answer sheet. Answers marked only in the question books will be ignored.

9. Do not open the question book until you are told to do so. After required you should check throughout your question book and make sure that no pages are missing and all pages are readable. You should inform the supervisors immediately in such an event so that your test booklet can be changed. Check whether the letter printed at the top of each page in the question book is the same as the letter printed on the cover. If you realize such a disparity later in the exam, you should ask those supervisors in charge for a new question book that matches with the type you have been working on up to that time. Remember to mark the type of the question book on your answer sheet; otherwise, your exam will be invalid, since it will not be possible to evaluate it.

10. You may use the blank spaces on the pages of the question book as scrap paper for writing or calculating purposes.

11. No one, including supervisors in charge, is allowed to smoke a cigarette, or any other tobacco products during the examination.

12. It is strictly forbidden to make a record of your answers on any paper and take it out.

13. At the end of the examination, hand in both the question book and the answer sheet. Question books and other material issued for the examination shall not be removed from the examination room.

القواعد التي يجب إتباعها في الامتحان

1 **يمنع إدخال الهاتف الجوال إلى الامتحان منعا باتا**
يمنع اصطحاب الاجهزة التالية إلى الامتحان : أجهزة اللاسلكي والتجابر والاتصالات وما شابهها والحاسوب الصغير و الساعات المخالفة للساعات العادية وكافة أنواع الأجهزة التي تحمل مواصفات الحواسيب والأسلحة والمعدات وأوراق المسودات والدفاتر والكتب والقواميس والقواميس الالكترونية والآلة الحاسبة والمساطر الحسابية والفرجال والمنقلة والمسطرة وما شابهها. والطلاب المرشحون الذين يدخلون الإمتحان مصطحبين هذه الاجهزة ستكتب أرقامهم الأجنبية في مسودة ضبط القاعة الامتحانية وسيعتبر امتحانهم لاغيا

2 **مدة الاجابة عن الأسئلة في هذا الأمتحان هي 120 دقيقة**

3 الطالب المرشح الذي يسلم أوراقه ويغادر قاعة الامتحان لايمكن إعادته مرة أخرى إلى القاعة مهما كانت الأسباب

4 ممنوع الخروج من القاعة لأي سبب كان أثناء الامتحان. ولن يسمح لأي مرشح بالخروج في أول 30 دقيقة من الامتحان حتى ولو أنهه ،كما يُمنع الخروج آخر 15 دقيقة من الامتحان. ولن يتم ادخال أي طالب إلى القاعة بعد مرور 30 دقيقة على بدء الامتحان

5 ممنوع الكلام مع المراقبين أو سؤالهم طوال مدة الامتحان.ويُمنع كلام المراقبين مع الطلاب بصوت منخفض أو عن قرب. كما يُمنع الطلاب منعاً باتاً من طلب قلم أو ممحاة وما شابهها من الأشياء من بعضهم البعض

6 يجب الالتزام بكل توجيهات وتحذيرات المراقبين اثناء الامتحان. ويمكن للمراقبين تغيير أماكن الطلاب عند الضرورة. واعتبار امتحانكم مقبولاً يرتبط بالتزامكم بقوانين الامتحان قبل كل شيء. وفي حال تصرفكم بشكل مخالف للتعليمات أو عدم الالتزام بالتوجيهات والتحذيرات سيتم كتابة رقم هويتكم في مسودة الضبط ويعتبر امتحانكم لاغياً

7 ستكتب في مسودة ضبط القاعة الامتحانية أرقام هويات الطلاب الذين يقومون بالغش أو يحاولون الغش أو الذين يغششون أو يساعدون على الغش، وسيتم اعتبار امتحان هؤلاء الطلاب لاغيًا. والمراقبون ليسوا ملزمين بتحذير الطلاب الذين يغشون أو يساعدون على الغش؛ فالمسؤولية في هذا تقع على عاتقكم. ومن المهم للطالب إمساكهُ بورقة الإجابة بشكلٍ لايراه الطلاب الاخرون

8 يجب عليكم ملء الفرغات الموجودة في ورقة الاجابة. ويجب أن يستخدم القلم الرصاص في كتابة أي شيء في ورقة الإجابة وفي جميع الاشارات.ويمنع استخدام القلم الجاف وقلم الحبر منعًا باتًا. ويجب تظليل الأجوبة في ورقة الإجابة؛ فالإجابات التي تُظلل على كتيب الاسئلة غير مقبولة

9 تأكدوا فور أخذكم كتيب الاسئلة من أن صفحاته كاملة ولا يوجد فيها خطأ طباعي. وإذا كانت صفحات كتيب الاسئلة ناقصة أو بها خطأ طباعي راجعوا فورا رئيس القاعة ، كما يجب عليكم التأكد من تطابق نوع كتيب الأسئلة الموجودة في قمة كل صفحة من صفحات كتيب الأسئلة مع نوع كتيب الأسئلة الموضح على الغلاف الأمامي للكتيب. وفي حال اختلافهما اطلبوا من رئيس القاعة كتيب أسئلة جديد. وإذا لاحظتم لاحقاً أن نوع الكتيب مختلف راجعوا رئيس القاعة؛ لإعطائكم كتيب أسئلة ليست فيه أخطاء من نفس النوع الذي أجبتم عليه فيما مضى، ولا تنسوا الإشارة على ورقة الإجابة إلى نوع كتيب الأسئلة الذي سيعطى لكم. وإذا لم توضع الاشارة هذه لن يتم تقييم امتحانكم وسيعتبر لاغياً

10 يمكنكم استخدام الأماكن الفارغة في صفحات كتيب الأسئلة كمسودة

11 ممنوع تدخين السجائر أو السيجار أو الغليون وما شابهه أثناء الامتحان لكل الأشخاص بما فيهم مراقبوا الامتحان

12 يُمنع منعاً باتاً كتابة الأسئلة وأجوبتها هذه على ورقةٍ مستقلةٍ وإخراجها من قاعة الامتحان

13 لا تنسوا تسليم كتيب الأسئلة وورقة الإجابة إلى موظفي القاعة قبل مغادرتها

SINAVDA UYULACAK KURALLAR

1. Cep telefonu ile sınava girmek kesinlikle yasaktır. Çağrı cihazı, telsiz, vb. haberleşme araçları ile cep bilgisayarı, saat fonksiyonu dışında fonksiyonu bulunan saat vb. her türlü bilgisayar özelliği bulunan cihazlarla ve ayrıca silah vb. teçhizatla, müsvedde kâğıdı, defter, kitap, sözlük, sözlük işlevi olan elektronik aygıt, hesap makinesi, hesap cetveli, pergel, açıölçer, cetvel vb. araçlarla da sınava girmek yasaktır. Bu araçlarla sınava girmiş adayların yabancı uyruk numaraları mutlaka Salon Sınav Tutanağına yazılacak, bu adayların sınavları geçersiz sayılacaktır.

2. Sinav süresi 120 dakikadır.

3. Sınav sırasında herhangi bir nedenle dışarı çıkmak yasaktır. Sınavın başlamasını izleyen ilk 30 dakika ve sınav süresinin son 15 dakikası içinde, sınavlarını tamamlasalar bile hiçbir adayın salondan çıkmasına izin verilmeyecektir. Sınavın başlamasını izleyen ilk 30 dakikadan sonra hiçbir aday sınava alınmaz..

4. Sınav evrakını teslim ederek salonu terk eden aday, her ne sebeple olursa olsun tekrar sınava alınmayacaktır.

5. Sınav süresince görevlilerle konuşmak ve onlara soru sormak yasaktır. Aynı şekilde görevlilerin de adaylarla yakından ve alçak sesle konuşmaları; ayrıca, adayların birbirinden kalem, silgi vb. şeyleri istemeleri kesinlikle yasaktır.

6. Sınav sırasında görevlilerin her türlü uyarılarına uymak zorundasınız. Gerektiğinde görevliler oturduğunuz yerleri de değiştirebilir. Sınavınızın geçerli sayılması, her şeyden önce sınav kurallarına uymanıza bağlıdır. Kurallara aykırı davranışta bulunur ve yapılacak uyarılara uymazsanız kimliğiniz tutanağa yazılacak ve sınavınız geçersiz sayılacaktır.

7. Sınav sırasında kopya çeken, çekmeye girişen, kopya veren, kopya çekilmesine yardım edenlerin kimlik bilgileri Salon Sınav Tutanağına yazılacak ve bu adayların sınavları geçersiz sayılacaktır. Görevliler kopya çekmeye veya vermeye çalışanları uyarmak zorunda değildir. Sorumluluk size aittir. Sınav sırasında cevap kâğıdınızı başkaları tarafından görülmeyecek şekilde tutmanız sizin için son derece önemlidir.

8. Cevap kâğıdında ilgili alanları doldurmanız gerekmektedir. Cevap kâğıdına yazılacak her türlü yazıda ve yapılacak bütün işaretlemelerde kurşun kalem kullanılacaktır. Tükenmez kalem ve dolma kalem kesinlikle kullanılmayacaktır. Cevapların cevap kâğıdına işaretlenmiş olması gerekir. Soru kitapçığına işaretlenen cevaplar geçerli değildir.

9. Soru kitapçığınızı alır almaz, sayfaların eksik olup olmadığını, kitapçıkta basım hatalarının bulunup bulunmadığını kontrol ediniz. Soru kitapçığınızın sayfası eksik veya basımı hatalı ise değiştirilmesi için derhâl Salon Başkanına başvurunuz. Soru kitapçığında her sayfanın tepesinde basılı bulunan soru kitapçığı türünün, kitapçığın ön kapağında basılı soru kitapçığı türüyle aynı olup olmadığını kontrol ediniz. Farklı olması durumunda Salon Başkanından yeni bir soru kitapçığı isteyiniz. Soru kitapçığınızın türünün değişik olduğunu daha sonra fark ederseniz, size o zamana kadar cevaplama yaptığınız türden, hatasız bir soru kitapçığı verilmesi için Salon Başkanına başvurunuz. Cevap kâğıdınıza, size verilecek olan soru kitapçığının türünü işaretlemeyi unutmayınız. Bu işaret konmamışsa sınavınızın değerlendirilmesine olanak bulunmadığından sınavınız geçersiz sayılacaktır.

10. Soru kitapçığının sayfalarındaki boş yerleri müsvedde için kullanabilirsiniz.

11. Sınav sırasında, görevliler dahil, kimse sigara, pipo, puro vb. şeyleri içmeyecektir.

12. Soruları ve bu sorulara verdiğiniz cevapları ayrı bir kâğıda yazıp bu kâğıdı dışarı çıkarmanız kesinlikle yasaktır.

13. Sınav salonundan ayrılmadan önce, soru kitapçığınızı, cevap kâğıdınızı salon görevlilerine teslim etmeyi unutmayınız.