SAKARYA ÜNİVERSİTESİ

ULUSLARARASI ÖĞRENCİ SINAVI
TEMEL ÖĞRENME BECERİLERİ TESTİ

INTERNATIONAL STUDENT EXAM
BASIC LEARNING SKILLS TEST

22.08.2020

A

GENEL AÇIKLAMA
GENERAL INSTRUCTIONS

ADI
NAME _____

SOYADI
SURNAME _____

ADAY NO
APPLICANT NUMBER _____

SINAV SALON NO
EXAM ROOM NUMBER _____

Adınızı, soyadınızı, aday numarası ve sınav salon numaranızı yukarıya yazınız.
Write your name, surname, applicant number and exam room numbers in the appropriate places above.

ONDALIK KESİRLERİ GÖSTERMEK İÇİN
TÜRKÇE METİNLERDE VİRGÜL (,) KULLANILIR.

DECIMALS ARE INDICATED BY A COMMA (,) IN TURKISH.

1.

K	L
-	7
3	

,

L	M
-	5
1	

$\Rightarrow \quad \dfrac{K+2L+3M-12}{6M} = ?$

A) 8 B) 2 C) 4 D) 6 E) 0

2. $\dfrac{1}{3}+\left[\dfrac{1,26}{12,6}\div\left(\dfrac{0,1}{4}-\dfrac{2}{5}\right)\right] = ?$

A) $\frac{1}{3}$ B) $\frac{1}{5}$ C) $\frac{1}{15}$ D) $\frac{1}{45}$ E) $\frac{3}{5}$

3. $\dfrac{2-(-2)^3}{(-2)^{-2}-(-1)^{-1}} = ?$

A) $\frac{-24}{3}$ B) $\frac{25}{3}$ C) 4 D) 6 E) 8

4. $a \equiv 3 \pmod 7 \Rightarrow a^3+2a^2+1 \equiv ? \pmod 7$

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

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5. $\dfrac{0,1}{1+\dfrac{1}{(0,1)^{-1}}-\dfrac{1}{1+(0,1)^{-1}}}=?$

A) $\frac{10}{11}$ B) $\frac{11}{21}$ C) $\frac{110}{111}$ D) 11 E) $\frac{11}{111}$

6.
$$\begin{array}{r} XY \\ \times\ XZ \\ \hline 1224 \end{array} \quad \cdot\ Y+Z=10 \Rightarrow X.Y.Z=?$$

A) 36 B) 48 C) 56 D) 72 E) 96

7. $\sqrt[4]{2^x}+\sqrt[8]{4^x}+\sqrt[12]{8^x}=48 \Rightarrow x=?$

A) 16 B) 12 C) 8 D) 6 E) 4

8. $\left.\begin{array}{l} x+\dfrac{3}{y}=4 \\ y+\dfrac{3}{x}=8 \end{array}\right\} \Rightarrow \dfrac{y+x}{y-x}=?$

A) 1 B) 3 C) 4 D) $\frac{8}{3}$ E) 2

9. $\frac{-a}{3}=\frac{-b}{4}=\frac{-c}{8},\quad a+c=2b+9 \Rightarrow \frac{c-a}{b}=?$

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

10. $\frac{27^{2n}-9^{3n+1}}{3^{6n-1}}-\frac{4^{3n}-8^{2n-1}}{2^{6n-3}}=?$

A) 32 B) -31 C) -16 D) 16 E) $\frac{43}{24}$

11. $\frac{x^2-y^2-4y-4}{x^2-2xy+y^2-4}=?$

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

D) $\frac{x-y+2}{x+y+2}$ E) $\frac{x-y+2}{x-y-2}$

12. $\left.\begin{array}{l} x=\frac{1}{a}+\frac{1}{b} \\ y=\frac{1}{a}-\frac{1}{b} \end{array}\right\} \Rightarrow \frac{x^2b-y^2b}{x+y}-1=?$

A) $a-1$ B) $\frac{a}{b}-1$ C) $ab-1$ D) 1 E) -1

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13. $\left.\begin{array}{l}\sqrt[b]{3^a}=4\\ 2^{2b}=27\end{array}\right\} \Rightarrow a=?$

A) 9 B) $\frac{1}{9}$ C) 1 D) $\frac{1}{3}$ E) 3

14. $\dfrac{6}{1+\dfrac{4}{1+\dfrac{1}{2+x}}}=2 \Rightarrow x=?$

A) –2 B) –1 C) 0 D) 1 E) 2

15. $(7x-120)^{323-17x}=1$

eşitliğini sağlayan x sayılarının toplamı kaçtır?

What is the sum of the number of x that provide the equality?

A) $\frac{245}{7}$ B) $\frac{254}{7}$ C) $\frac{323}{7}$ D) $\frac{373}{7}$ E) $\frac{377}{7}$

16. $a,b,c \in \mathbb{R}^+$, $a.b=\frac{4}{9}$, $a.c=\frac{1}{3}$, $b.c=\frac{3}{4}$

ise aşağıdakilerden hangisi doğrudur?

If $a,b,c \in \mathbb{R}^+$, $a.b=\frac{4}{9}$, $a.c=\frac{1}{3}$, $b.c=\frac{3}{4}$ then which of the following is true?

A) c<b<a B) c<a<b C) a<c<b

D) a<b<c E) b<a<c

17. $\dfrac{8x+9}{(2x-3)^2} > 1$ eşitsizliğini sağlayan tüm x sayılarının kümesi nedir?

What is the set of all number of x that provide the inequality?

A) $(-1,6)$ B) $(-1,6)-\left\{\dfrac{3}{2}\right\}$ C) $(0,6)-\left\{\dfrac{3}{2}\right\}$

D) $(0,5)-\left\{\dfrac{3}{2}\right\}$ E) $(-1,5)-\left\{\dfrac{3}{2}\right\}$

18. $\left.\begin{array}{l} x=|x| \\ x\cdot y<0 \end{array}\right\} \Rightarrow |x-y|-|y-x|=?$

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

19. $x<y<0,\ \dfrac{\sqrt{y^4}+2\sqrt{y^2}}{y}-\sqrt{x^2-2xy+y^2}=-5 \Rightarrow x=?$

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

20. $n\in\mathbb{Z}^+, A_n=\left\{x\in\mathbb{R}:\dfrac{(-1)^n n}{n+1}<x<\dfrac{2n}{n+1}\right\} \Rightarrow A_3\setminus(A_1\cup A_2)=?$

A) $\left(\dfrac{-1}{2},\dfrac{3}{4}\right)$ B) $\left(\dfrac{-1}{2},\dfrac{3}{4}\right)\cup\left(\dfrac{3}{4},\dfrac{4}{3}\right)$ C) $\left[\dfrac{-3}{4},\dfrac{3}{2}\right)$

D) $\left[\dfrac{-3}{2},\dfrac{3}{4}\right)\cup\left(\dfrac{3}{4},\dfrac{3}{2}\right]$ E) $\left(\dfrac{-3}{4},\dfrac{-1}{2}\right]\cup\left[\dfrac{4}{3},\dfrac{3}{2}\right)$

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21. $s(B)=6x,\ s(B\cap A^c)=9,\ s(A\cap B)=x^2 \Rightarrow x=?$

A) 3 B) 6 C) 9 D) 11 E) 20

22. $A=\{x:|x+1|\geq 2,\ x\in\mathbb{R}\}$
$B=\{x:|x-1|<5,\ x\in\mathbb{Z}\}$
$\Rightarrow s(A\cap B)=?$

A) 4 B) 5 C) 6 D) 7 E) 8

23. $f\left(\frac{2x}{3}+2\right)=\frac{x}{3}-4,\ g(x)=\frac{x-5}{2} \Rightarrow \left(f^{-1}\circ g\right)(3)=?$

A) 6 B) 8 C) 9 D) 11 E) 12

24. $f(x)=2^{x-1}f(x-1),\ f(1)=1 \Rightarrow f(50)=?$

A) 2^{1220} B) 2^{1222} C) 2^{1223} D) 2^{1224} E) 2^{1225}

25. $f(x)=x^2+x-1, g(x)=\dfrac{x-1}{2} \Rightarrow (f\circ g^{-1})(1)=?$

A) 1 B) 3 C) 11 D) 13 E) 17

26. $P(x+1)=3x^2-2x+6 \Rightarrow P(2x-3)=?$

$P(2x-3) \mid x+2$

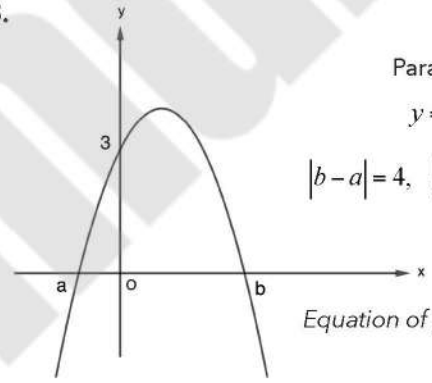
$= \quad ?$

A) 6 B) 22 C) 152 D) 192 E) 214

27. $P(x+3)+P(x+1)=2x^2+8x+16 \Rightarrow P(3)=?$

A) 14 B) 12 C) 8 D) 6 E) 4

28.



Parabolün denklemi $y=-x^2+mx+3$ tür,

$|b-a|=4,\ |b|>|a| \Rightarrow m=?$

Equation of given parabola is $y=-x^2+mx+3$

$|b-a|=4,\ |b|>|a| \Rightarrow m=?$

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

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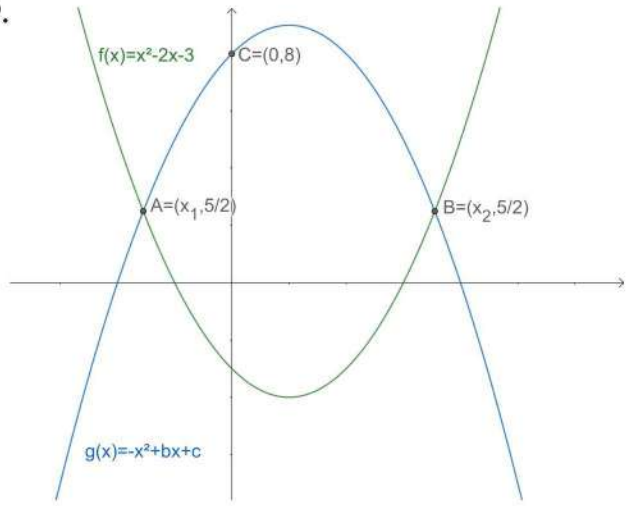
29.



$f(x)$ ve $g(x)$ parabol $\Rightarrow g(x)=?$

If $f(x)$ *and* $g(x)$ *are parabolas* $\Rightarrow g(x)=?$

A) $-x^2-2x+4$ B) $-x^2+2x+4$ C) $-x^2+2x+8$

D) $-x^2-2x-8$ E) $-x^2+2x-4$

30. $z_1=3+2i,\ z_2=1-4i \Rightarrow Im\left(\frac{z_1}{z_2}\right)-Re\left(\frac{z_1}{z_2}\right)=?$

A) $\frac{-9}{17}$ B) $\frac{9}{17}$ C) $\frac{-19}{17}$ D) $\frac{19}{17}$ E) 19

31. $i^2=-1 \Rightarrow \frac{5}{i^{2020}}-\frac{1+i^{2019}}{1+i^{2021}}=?$

A) $5-i$ B) $5+i$ C) $\frac{1-i}{2}$ D) $1-i$ E) $1+i$

32. $\log_7 2 = x^2,\ \log_8 7 = y^{-2} \quad \log_{16} 49 = ?$

A) $\frac{y^2}{x^2y^2+1}$ B) $\frac{x^2}{x^2y^2+1}$ C) $\frac{2}{x^2+y^2}$

D) $\frac{2}{x^2-y^2+1}$ E) $\frac{1}{x^2y^2+1}$

33. $\frac{7^x - 7^{-x}}{3} = 2 \Rightarrow x = ?$

A) $-3+\sqrt{10}$ B) $-3-\sqrt{10}$ C) $\log_7\left(-3-\sqrt{10}\right)$

D) $\log_7\left(-3+\sqrt{10}\right)$ E) $\ln\left(-1+\sqrt{7}\right)$

34. $x \in \left(0, \frac{\pi}{2}\right) \quad \tan x = \frac{\log_5 2}{\sqrt{\log_5\left(\frac{5}{2}\right)\log_5(10)}} \Rightarrow \sin x = ?$

A) $log_5 2$ B) $log_2 5$ C) $log_{10} 5$ D) $\frac{1}{2}$ E) $log_{25} 2$

35. $f(x) = -x^3 + ax^2 - 5x + 3, \quad g(x) = 3x^4 + 2$

$\frac{d}{dx}(f+g)(1) = 8 \Rightarrow a = ?$

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

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36. $f(x)=\dfrac{x^2-1}{2x-1} \Rightarrow f'(1)=?$

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

37. $\lim\limits_{x\to 0}\dfrac{f(x)}{x^2-1}=5 \Rightarrow \lim\limits_{x\to 0}\dfrac{5f(x)}{x-1}=?$

A) 25 B) 5 C) 1 D) 0 E) -5

38. $\lim\limits_{x\to 1}\dfrac{\sqrt[3]{x}-1}{\sqrt{x}-1}=?$

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

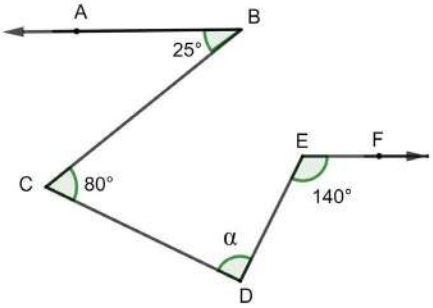
39. $\int_a^b f(x)f'(x)dx=54,\ f(a)-f(b)=18 \Rightarrow \dfrac{f(b)}{f(a)}=?$

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

40. $\int_{-1}^{2}\left|1-x^2\right|dx=?$

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

41.



$[AB] // [EF]$

$m(ABC) = 25^\circ$

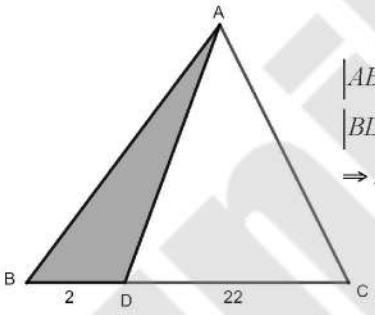
$m(DEF) = 140^\circ$

$m(BCD) = 80^\circ$

$m(CDE) = \alpha = ?$

A) 65° B) 70° C) 75° D) 80° E) 85°

42.



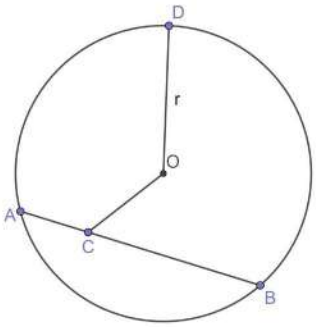
$|AB| = |AC| = 13$

$|BD| = 2, \ |DC| = 22$

$\Rightarrow A(ABD) = ?$

A) 5 B) 10 C) 12 D) 15 E) 18

43.



$|AB| = 8$

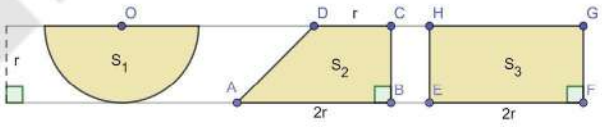
$|BC| = 6$

$|OC| = 2\sqrt{3}$

$\Rightarrow |OD| = ?$

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

44.



Aşağıdaki sıralamalardan hangisi doğrudur?

Which of the following sortings is correct?

A) $S_1 < S_2 < S_3$ B) $S_1 < S_3 < S_2$ C) $S_2 < S_1 < S_3$

D) $S_2 < S_3 < S_1$ E) $S_3 < S_2 < S_1$

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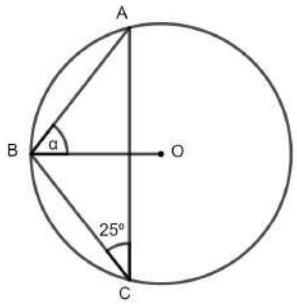
45.

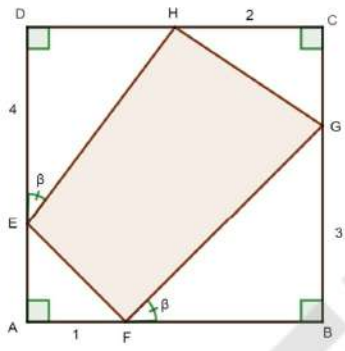


$m(BCA) = 25^o$

$m(ABO) = \alpha = ?$

A) 55° B) 60° C) 65° D) 70° E) 75°

46.



ABCD bir karedir

$m(DEH) = m(GFB)$

$A(EFGH) = ?$

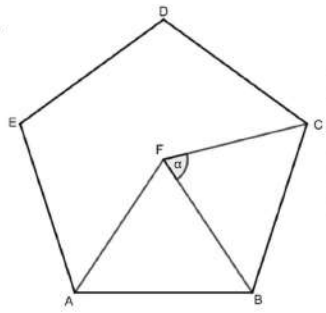
ABCD is a square

$m(DEH) = m(GFB)$

calculate $A(EFGH)$

A) $\frac{21}{2}$ B) $\frac{23}{2}$ C) $\frac{25}{2}$ D) $\frac{27}{2}$ E) $\frac{29}{2}$

47.



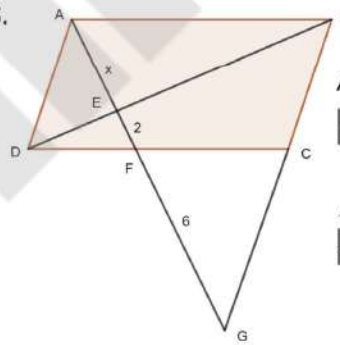
ABCDE bir beşgen,
ABF bir eşkenar üçgendir.

ABCDE is a regular pentagon and ABF is an equilateral triangle.

$m(BFC) = \alpha = ?$

A) 66° B) 65° C) 64° D) 63° E) 62°

48.



ABCD paralelkenar

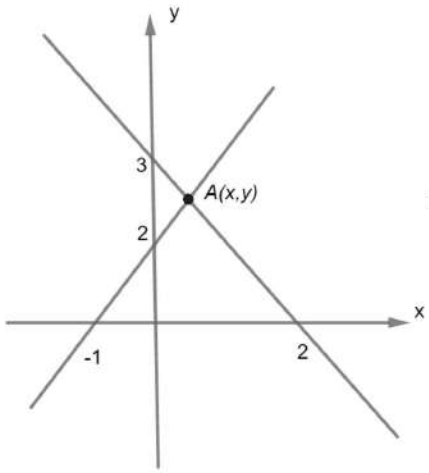
$|EF| = 2,\ |FG| = 6 \Rightarrow x = ?$

ABCD is a paralellogram

$|EF| = 2,\ |FG| = 6 \Rightarrow x = ?$

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

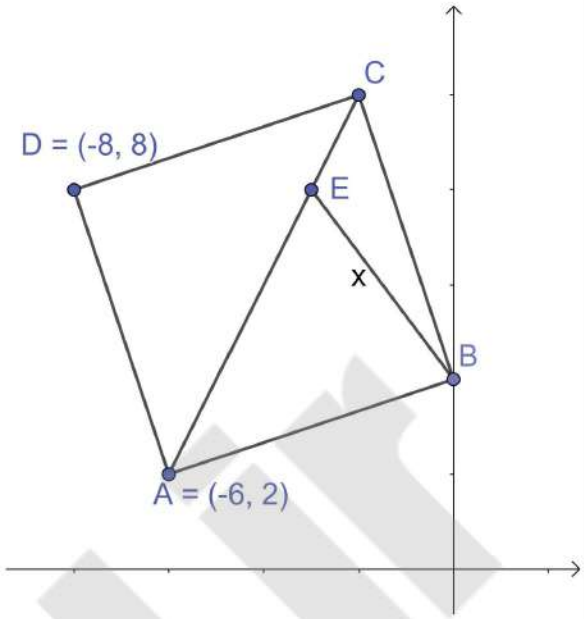
49.



$y) \Rightarrow x + y = ?$

A) $\frac{2}{7}$ B) $\frac{5}{2}$ C) $\frac{10}{7}$ D) 2 E) $\frac{20}{7}$

50.



ABCD bir kare ve $|AE| = 3|EC|$ ise $|EB|$ 'nin uzunluğu nedir?

If ABCD is a square and $|AE| = 3|EC|$ *then what is the lenght of the* $|EB|$ *?*

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

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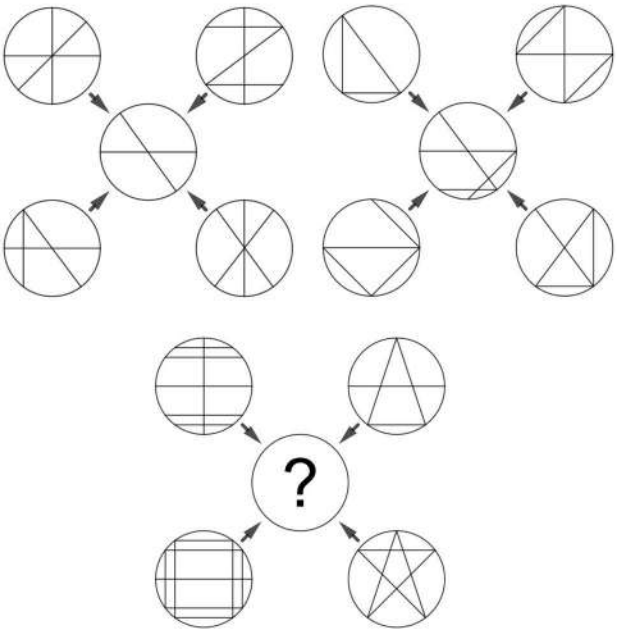
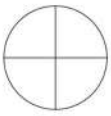
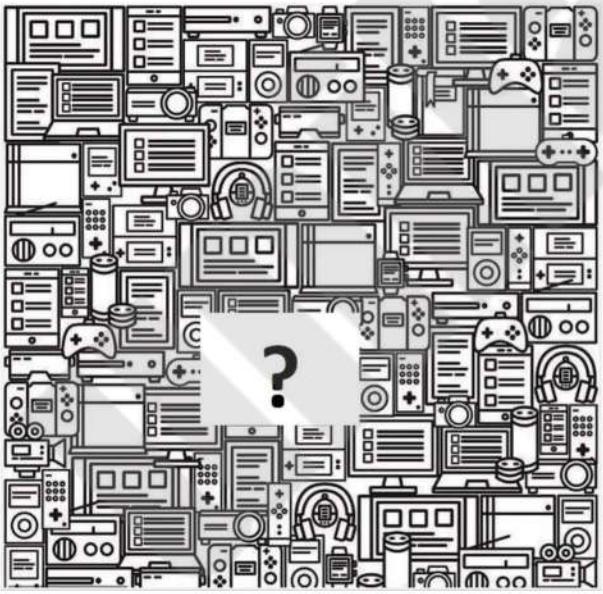
51.



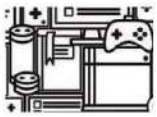
A)  B)  C) 

D)  E) 

52.

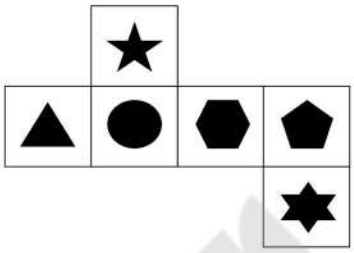


A)  B)  C) 

D)  E) 

53. Aşağıdaki şeklin katlanmasıyla oluşabilecek küp hangisidir?

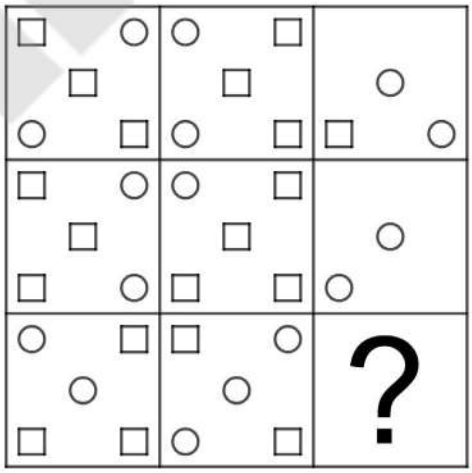
Which cube is the folded form of the following shape?

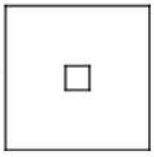
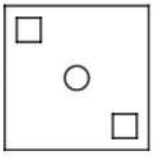
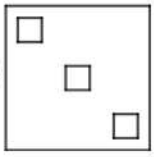


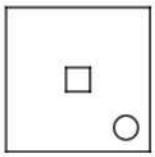
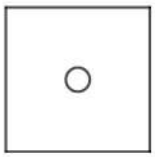
A)  B)  C) 

D)  E) 

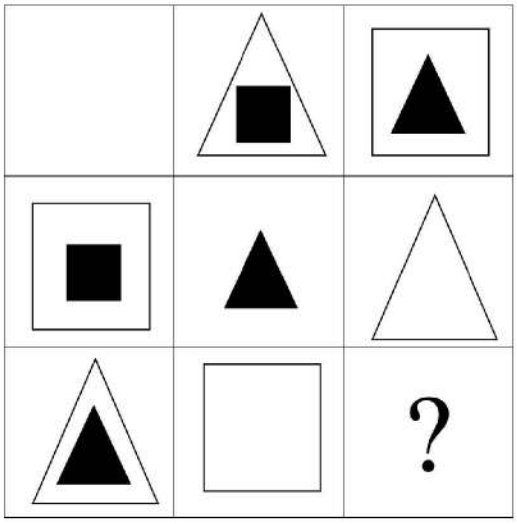
54.

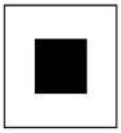


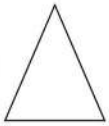
A)  B)  C) 

D)  E) 

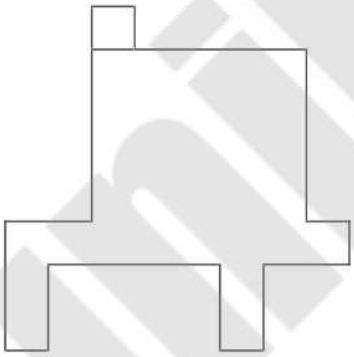
55.



A)  B)  C) 

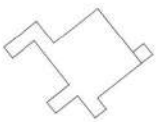
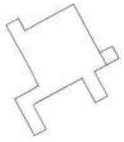
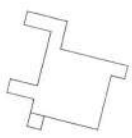
D)  E) 

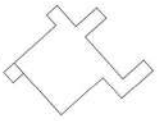
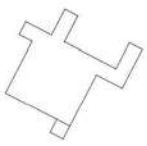
56.



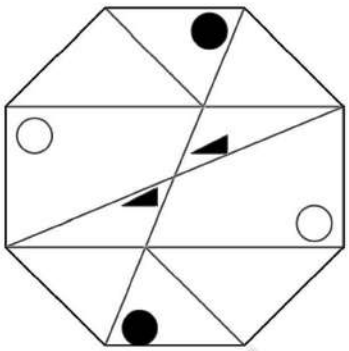
Aşağıdaki şekillerden hangisi yukarıdaki şekille özdeştir?

Which shape below is identical to the shape above?

A)  B)  C) 

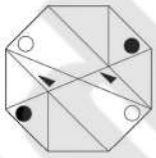
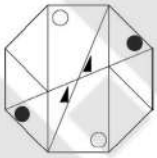
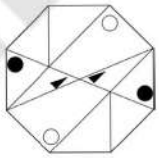
D)  E) 

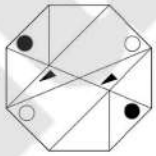
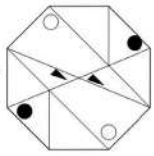
57.



Yukarıdaki şekil saat yönünde 225 derece döndürülürse aşağıdakilerden hangisi elde edilir?

Which of the following is the shape above rotated by 225 degrees clockwise?

A)  B)  C) 

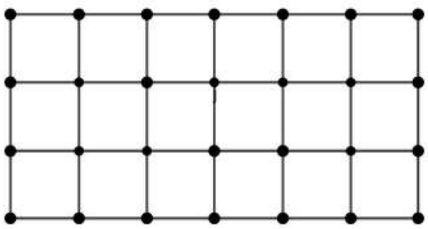
D)  E) 

58.

$$\begin{array}{r} ABC \\ ABC \\ ABC \\ +\ ABC \\ \hline 1704 \end{array} \qquad A + B = ?$$

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

59.



Şekilde kaç adet kibrit (1 birim uzunluğunda) vardır?

How many matches (1 unit long) are there in that figure ?

A) 32 B) 38 C) 42 D) 45 E) 48

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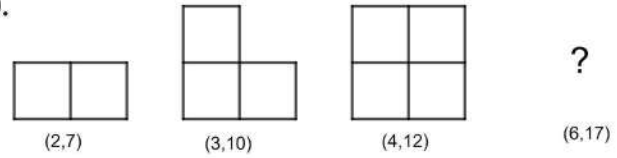
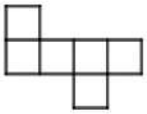
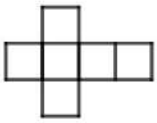
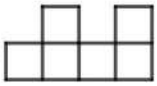
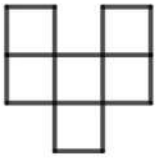
60.



A) 
B) 
C) 

D) 
E) 

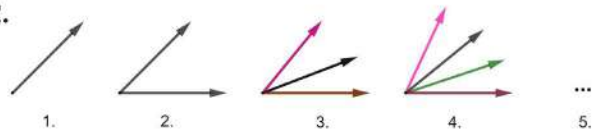
61. Aşağıdaki aritmetik diziye göre $a_8 = ?$

According to following arithmetic sequence, calculate a_8

-5	.	.	.	.	.	50
↓						↓
a_1						a_{12}

A) 20 B) 25 C) 30 D) 35 E) 40

62.



Number of ray Işın sayısı	1	2	3	4	5
Number of angle Açı sayısı	0	1	3	6	?

A) 8 B) 9 C) 10 D) 11 E) 12

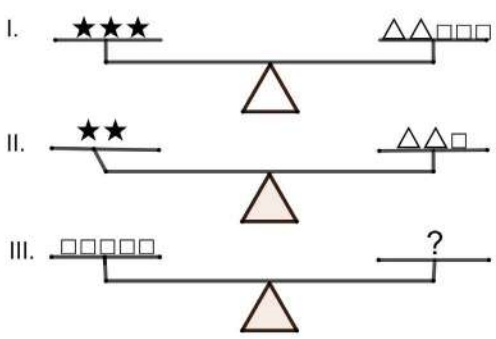
63.

+	★	○	Δ
Δ	⊕	★	○
○	▽	⊕	★

$\Rightarrow 4\Delta = ?$

A) ★ B) Δ C) ▽ D) ○ E) ⊕

64.



A) ★★Δ B) ★ΔΔ C) ★★ΔΔ D) ★ΔΔΔ E) ★★★Δ

65.

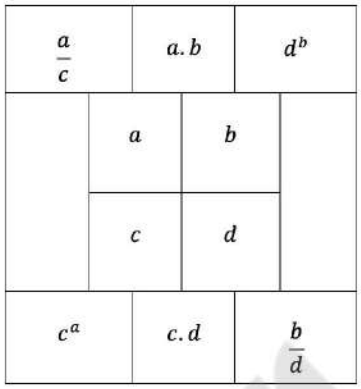
Δ	⊗	◊	□
⊗	□	⊕	○
◊	○	⊗	Δ
○	⊕	□	◊
□	◊	Δ	⊕

5123 1765 2671
3256 6537

○ ⊕ □ ◊ = ?

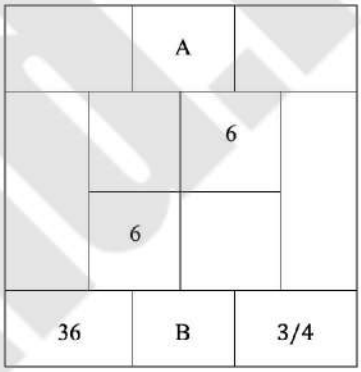
A) 1765 B) 5123 C) 6537 D) 3256 E) 2671

66.



Yukarıdaki şekilde a,b,c ve d birer pozitif tamsayıyı göstermektedir. Aşağıdaki verilen şekle göre B-A=?

a, b, c and d denote a positive integer in the above figure. According to the following figure B-A=?



A) 30 B) 36 C) -12 D) 15 E) -9

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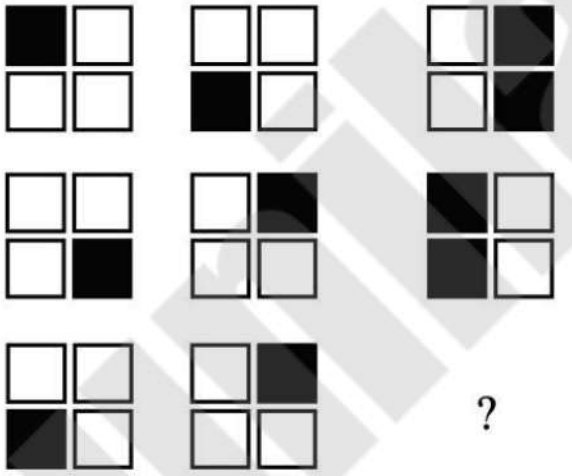
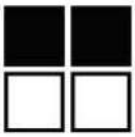
67. 2, 6, 12, x, 42, ... x = ?

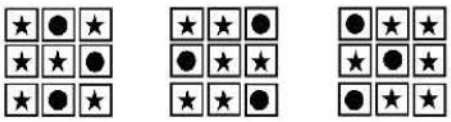
A) 14 B) 20 C) 24 D) 34 E) 40

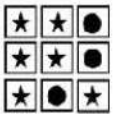
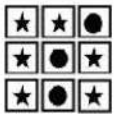
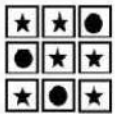
68.

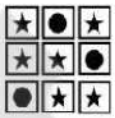


A)  B)  C) 

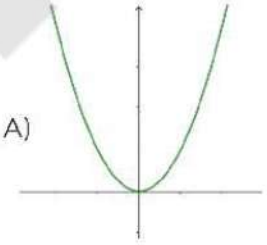
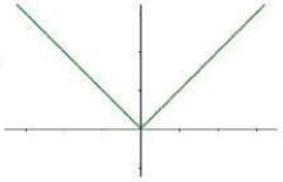
D)  E) 

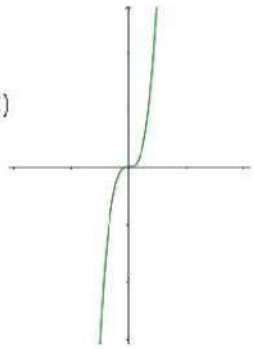
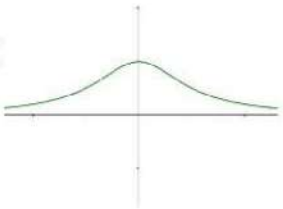
69. 

A)  B)  C) 

D)  E) 

70. Hangisi farklıdır?
Which one is different?

A)  B) 

C)  D) 

E)