



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





1. $\left(\frac{1}{2} - \frac{2}{3}\right) - \left[\left(2\frac{1}{4}\right)\frac{1}{4} - \frac{5}{6}\right] = ?$

- A) $-\frac{4}{3}$ B) $-\frac{3}{4}$ C) $-\frac{1}{6}$
D) $\frac{1}{6}$ E) $\frac{3}{4}$

2. $\frac{\sqrt{0,98} + \sqrt{1,62} + \sqrt{0,72}}{\sqrt{2,42}} = ?$

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

3. $\frac{\sqrt[3]{(-6)^3} - \sqrt{(-3)^2}}{\sqrt[3]{(-3)^2} \sqrt{(-3)^2}} = ?$

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

4. $\left(\frac{1 - 2^{-2} + (1 - 2^{-1})2^{-1}}{(2^{-1} - 1)^{-1} + 2^2}\right)^{-1} = ?$

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

5. $1,\bar{3} - 0,\bar{6} = ?$

- A) $0,7\bar{6}$ B) $0,\bar{7}$ C) $0,6\bar{7}$
D) $0,\bar{67}$ E) $0,\bar{6}$

6. $(100)_5 + (310)_5 = (1002)_4 + (2ab)_4$

$\Rightarrow a + b = ?$

- A) 1 B) 3 C) 4 D) 5 E) 6

$$7. \frac{4}{1 + \frac{15}{1 + \frac{4}{x-6}}} = -1 \Rightarrow x = ?$$

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

$$8. \left. \begin{array}{l} \frac{a+2b}{b} = \frac{7}{3} \\ \frac{a-2c}{c} = \frac{1}{3} \end{array} \right\} \Rightarrow \frac{a+c}{b-a} = ?$$

- A) $-\frac{18}{7}$ B) $-\frac{1}{3}$ C) $\frac{5}{7}$
D) $\frac{13}{5}$ E) $\frac{20}{7}$

$$9. \frac{1+\sqrt{3}}{\sqrt{5}-\sqrt{3}} = a \Rightarrow \frac{\sqrt{3}+\sqrt{5}}{\sqrt{3}-1} = ?$$

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

$$10. \sqrt{\frac{10}{9} - \sqrt{\frac{10}{9} - \sqrt{\frac{10}{9} - \dots}}} = ?$$

- A) $\frac{5}{3}$ B) $\frac{3}{2}$ C) $\frac{10}{9}$
D) $\frac{2}{3}$ E) $\frac{9}{10}$

$$11. \frac{(2n+1)!}{(2n-1)!} = 420 \Rightarrow n = ?$$

- A) 6 B) 8 C) 9 D) 10 E) 12

$$12. x^2 - 6x + 5 < 0 \Rightarrow \frac{|x(x-1)| - |x^2+x-2|}{2x^2-3x+1} = ?$$

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

13. $\frac{3x-2}{\sqrt{3}-\sqrt{2}} = \sqrt{5+2\sqrt{6}} \Rightarrow x = ?$

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

14. $f(x, y) = 2x^y - 3y^x \Rightarrow f(f(3, 1), 2) = ?$

- A) -9 B) -6 C) 0 D) 6 E) 9

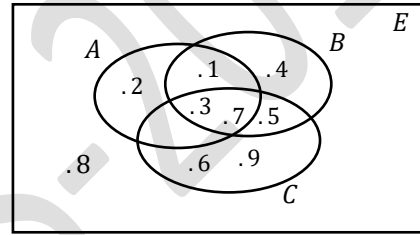
15. $A = \{x: x \in \mathbb{R}, |x-1| \geq 3\}$
 $B = \{y: y \in \mathbb{R}, |y+1| \leq 3\} \Rightarrow A \cap B = ?$

- A) $[-4, -2]$ B) $[-4, -1]$ C) $[-4, 0]$
D) $[-4, -2] \cup [4, 6]$ E) $[-4, 6]$

16. $A = \{-1, 0, 2, 4\}$
 $B \cup C = \{-2, -1, 2, 3, 5\} \Rightarrow (A \setminus B) \setminus C = ?$

- A) $\{0\}$ B) $\{-1, 4\}$ C) $\{0, 4\}$ D) $\{2, 4\}$ E) $\{-1, 2\}$

17.



$(A \cup B) \setminus (B \cap C) = ?$

- A) $\{1, 2, 3, 7\}$ B) $\{1, 2, 4, 5\}$ C) $\{3, 7, 5\}$
D) $\{1, 2, 3, 4, 7\}$ E) $\{1, 2, 4\}$

18. $P(2x-1) = 2x^3 - 2x^2 + 3x + 4$
 $P(x-1) = (x+2)B(x) + K$
 $K \in \mathbb{R} \Rightarrow K = ?$

- A) -26 B) -3 C) 4 D) 7 E) 18

19. $\frac{\sin 23^\circ \cos 37^\circ + \sin 37^\circ \cos 23^\circ}{\cos 23^\circ \cos 37^\circ - \sin 23^\circ \sin 37^\circ} = ?$

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

20. $\tan\left(\frac{\pi}{2} + \frac{3\pi}{4}\right) - \cot\left(\frac{13\pi}{4}\right) = ?$

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

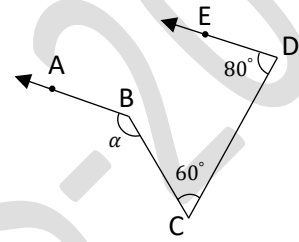
21. $z = \frac{1 - \sqrt{7}i}{\sqrt{3} - i} \Rightarrow |z^4| = ?$

- A) $\sqrt{2}$ B) 2 C) 4 D) 8 E) 16

22. $\left. \begin{matrix} \log_3 2 = a \\ \log_9 5 = b \end{matrix} \right\} \Rightarrow \log_6 40 = ?$

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

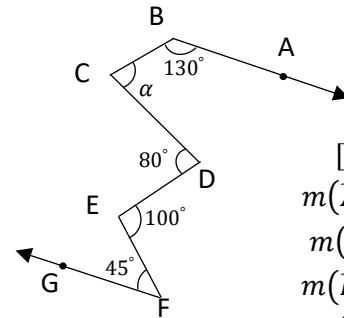
23.



$\left. \begin{matrix} [BA // [DE \\ m(\widehat{BCD}) = 60^\circ \\ m(\widehat{CDE}) = 80^\circ \end{matrix} \right\} \Rightarrow \alpha = ?$

- A) 110° B) 120° C) 140° D) 160° E) 220°

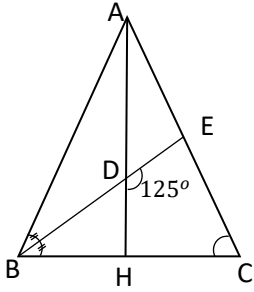
24.



$\left. \begin{matrix} [BA // [FG \\ m(\widehat{ABC}) = 130^\circ \\ m(\widehat{CDE}) = 80^\circ \\ m(\widehat{DEF}) = 100^\circ \\ m(\widehat{EFG}) = 45^\circ \\ m(\widehat{BCD}) = \alpha \end{matrix} \right\} \Rightarrow \alpha = ?$

- A) 60° B) 65° C) 70° D) 75° E) 80°

25.

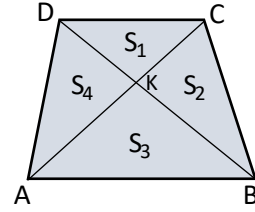


$$\left. \begin{array}{l} |AB| = |AC| \\ |BH| = |HC| \\ m(\widehat{ABD}) = m(\widehat{DBH}) \\ m(\widehat{EDH}) = 125^\circ \end{array} \right\}$$

$$\Rightarrow m(\widehat{ECH}) = ?$$

- A) 35° B) 45° C) 56° D) 60° E) 70°

27.

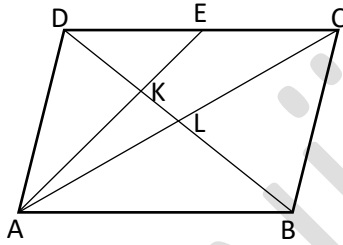


$$\left. \begin{array}{l} [AB] \parallel [DC] \\ [AC] \cap [DB] = \{K\} \\ 2|AB| = 5|DC| \end{array} \right\}$$

$$\Rightarrow \frac{A(DKC)}{A(ABCD)} = \frac{S_1}{S_1 + S_2 + S_3 + S_4} = ?$$

- A) $\frac{2}{25}$ B) $\frac{4}{25}$ C) $\frac{2}{49}$ D) $\frac{4}{49}$ E) $\frac{5}{49}$

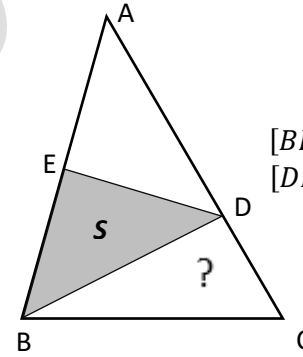
26.



$$\left. \begin{array}{l} [AB] \parallel [DC], [AD] \parallel [BC] \\ [BD] \cap [AE] = \{K\} \\ [BD] \cap [AC] = \{L\} \\ |DE| = |EC|, |DK| = 4 \text{ cm} \end{array} \right\} \Rightarrow |LB| = ? \text{ cm}$$

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

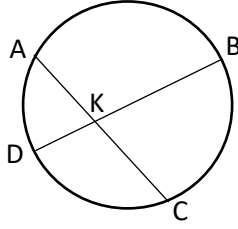
28.



$$\left. \begin{array}{l} |AD| = 2|DC| \\ |AE| = |EB| \\ [BD] \cap [AC] = \{D\} \\ [DE] \cap [AB] = \{E\} \\ A(EBD) = S \end{array} \right\} \Rightarrow A(DBC) = ?$$

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

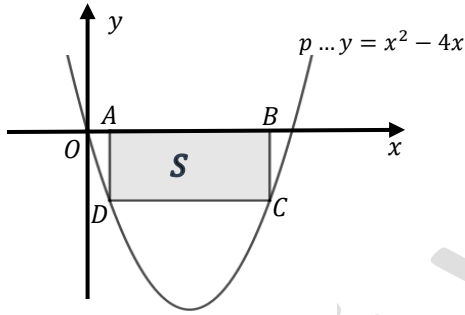
29.



$$\left. \begin{array}{l} [AC] \cap [DB] = \{K\} \\ m(\widehat{DKC}) = 105^\circ \\ m(\widehat{AD}) = 70^\circ \end{array} \right\} \Rightarrow m(\widehat{BC}) = ?$$

- A) 70° B) 80° C) 100°
D) 110° E) 120°

30.



$$\left. \begin{array}{l} [AB] \parallel [DC] \\ [AD] \parallel [BC] \\ [AD] \perp [AB] \\ |AB| = 2|AD| \\ [DC] \cap p = \{C, D\} \\ [AB] \in Ox \end{array} \right\} \Rightarrow A(ABCD) = S = ?$$

- A) $9 - \sqrt{17}$ B) $9 - \sqrt{5}$ C) 9
D) $9 + \sqrt{5}$ E) $9 + \sqrt{17}$

31. $A_k = \{(x, y) : x, y \in \mathbb{R}, y = x + k\}, (k \in \mathbb{R})$

$B = \{(x, y) : x, y \in \mathbb{R}, x^2 + y^2 - 2x - 2y = 16\}$

$A_k \cap B \neq \emptyset \Rightarrow k = ?$

A) $k \in [-5, 5]$ B) $k \in [-5, 4]$ C) $k \in [-6, 4]$

D) $k \in [-4, 4]$ E) $k \in [-6, 6]$

32.

$$\left. \begin{array}{l} a_1 = 4, \\ a_n = 2^n a_{n+1}, \\ n \in \mathbb{N} = \{1, 2, 3, 4, \dots\} \end{array} \right\} \Rightarrow a_{20} = ?$$

- A) 2^{-200} B) 2^{-188} C) 2^{-100}
D) 2^{100} E) 2^{200}

33. $\lim_{x \rightarrow 0} \frac{\tan x}{3x^2 - x} = ?$

- A) -1 B) 0 C) 1 D) 2 E) ∞

34.

$f(x) = \sin(x^2 + 2x) \Rightarrow f'(0) = ?$

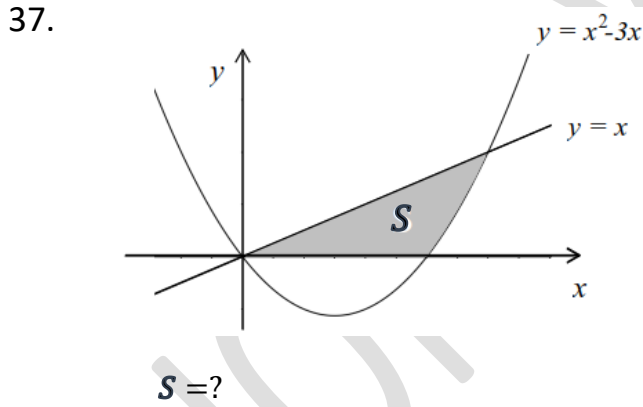
- A) -2 B) -1 C) 0 D) 1 E) 2

35. $\left. \begin{array}{l} x = 2 \ln t - 1 \\ y = e^{2t} - t^2 \end{array} \right\} \Rightarrow \frac{dy}{dx} = ?$

- A) $\frac{e^{2t}-2t}{2 \ln t}$ B) $te^{2t} - t^2$ C) $-\frac{e^{2t}-2t}{t}$
D) $2 \ln t(e^{2t} - t)$ E) $-\frac{te^{2t}-t^2}{2t}$

36. $\int_e^{e^2} \ln(ex) dx = ?$

- A) 1 B) e C) $e(2e - 1)$
D) $2e(1 - e)$ E) $e^2 + e$



- A) $\frac{32}{9}$ B) $\frac{17}{3}$ C) $\frac{37}{7}$ D) $\frac{37}{6}$ E) 8

38. $\int_1^2 xe^x dx = ?$

- A) 0 B) 1 C) e D) $2e^2 - 3e$ E) e^2

39. $A = \begin{bmatrix} 0 & -1 \\ 1 & -1 \end{bmatrix} \Rightarrow A - A^{-1} = ?$

- A) $\begin{bmatrix} -2 & 1 \\ -1 & -2 \end{bmatrix}$ B) $\begin{bmatrix} 0 & 1 \\ -2 & 1 \end{bmatrix}$ C) $\begin{bmatrix} 2 & -1 \\ -1 & -2 \end{bmatrix}$
D) $\begin{bmatrix} 1 & -2 \\ 2 & -1 \end{bmatrix}$ E) $\begin{bmatrix} 1 & -2 \\ -2 & -1 \end{bmatrix}$

40. $A = \begin{bmatrix} -1 & 0 & 0 \\ 0 & 2 & 0 \\ 1 & 2 & -1 \end{bmatrix} \Rightarrow 2A^2 = ?$

- A) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 4 & 0 \\ 4 & -2 & 2 \end{bmatrix}$ B) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 8 & 0 \\ -4 & 2 & 2 \end{bmatrix}$
C) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 8 & 0 \\ -4 & 4 & 2 \end{bmatrix}$ D) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 8 & 0 \\ -4 & -4 & 2 \end{bmatrix}$
E) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 8 & 0 \\ 4 & -4 & 2 \end{bmatrix}$



1. I. 324 → 1
II. 752 → 10
III. 641 → 9
IV. 483 → 9
V. 310 → 4
VI. 384 → ?
A) 6 B) 7 C) 9 D) 11 E) 13

2. I. 344 → 13
II. 752 → 3
III. 645 → 14
IV. 481 → 4
V. 384 → 29
VI. 483 → ?
A) 5 B) 9 C) 12 D) 20 E) 21

3. I. 2361 → 16
II. 2754 → 21
III. 3647 → 25
IV. 4481 → 37
V. 5183 → 44
VI. 6876 → ?
A) 51 B) 55 C) 56 D) 59 E) 60

4. 645271 → 516472
764538 → 487635
301986 → 163089
587532 → ?
A) 725853 B) 758235 C) 857352
D) 527835 E) 725835

5. 4 * 2 = 18
5 * 3 = 28
6 * 2 = 38
8 * 4 = 68
9 * 3 = ?
A) 77 B) 78 C) 83 D) 84 E) 98

6. 7 △ 2 = 45
6 △ 5 = 11
8 △ 4 = 48
7 △ 5 = 24
9 △ 6 = ?
A) 16 B) 27 C) 34 D) 45 E) 52

7. → 4625
→ 3344
→ 3648
→ 3636
→ ?

A) 2538 B) 2534 C) 2564
D) 4538 E) 4534

8. ?

A) B) C)
D) E)

9. ⇒ $\frac{Y}{X} = ?$

A) 3 B) 6 C) 8 D) 9 E) 12

10. ?

I II III IV
A) B)
C) D)
E)

11. ?

A) B) C)
D) E)

12. 4, 6, 11, 13, 18, X, 25, 27 ...

X=?

A) 19 B) 20 C) 21 D) 22 E) 23

13. $\square \blacktriangle \longrightarrow 59$
 $\blacktriangle \blacksquare \longrightarrow 916$
 $\bullet \square \longrightarrow 365$
 $\triangle \pentagon \longrightarrow 46$
 $\blacktriangle \triangle \longrightarrow ?$
- A) 54 B) 59 C) 64 D) 253 E) 254

14. $\left. \begin{array}{l} * \bullet \diamond * \\ \square * \diamond * \\ \bullet * \odot \diamond \\ \diamond \diamond * \odot \\ * \odot \square \bullet \end{array} \right\} \begin{array}{l} 2874 \\ 4358 \\ 3465 \\ 8623 \\ 7586 \end{array}$
- $\diamond \diamond \odot * = ?$
- A) 5748 B) 5768 C) 6458
D) 6754 E) 7685

15. $\left. \begin{array}{l} 5268 \\ 8536 \\ 6893 \\ 2379 \end{array} \right\} \begin{array}{l} \square \blacktriangle \blacktriangle \blacktriangleright \\ \diamond \triangle \blacktriangledown \odot \\ \blacktriangle \diamond \blacktriangleright \square \\ \blacktriangleright \square \odot \triangle \end{array}$
- $\odot \triangle \square \blacktriangleright = ?$
- A) 9867 B) 6729 C) 8635
D) 9387 E) 9386

- 16.
- A) 10 B) 17 C) 24 D) 28 E) 42

- 17.
- $(1,2)=?$
- A) (T,P) B) (T,X) C) (Z,P) D) (Z,T) E) (Z,X)

18. 2, 6, 4, 7, 11, 9, 12, 16, X, 17, 21, ...
- X=?
- A) 13 B) 14 C) 15 D) 17 E) 18

19.

3	4	1	6
2	8	6	4
4	3	2	5
X	9	5	5

X = ?

- A) 1 B) 2 C) 3 D) 5 E) 6

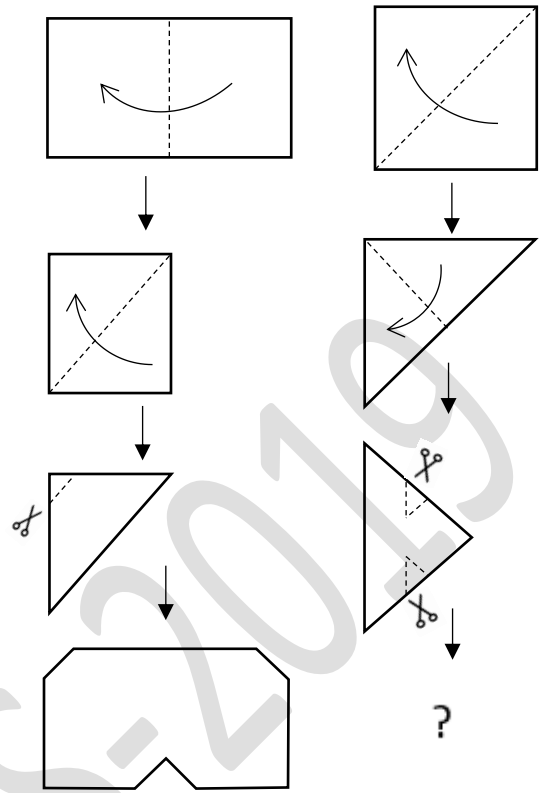
20.

ROKA	5653
LALE	3426
ELMA	4643
NANE	7816

KARAMEL=?

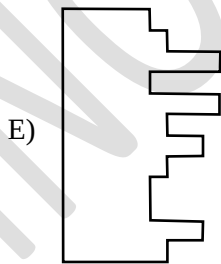
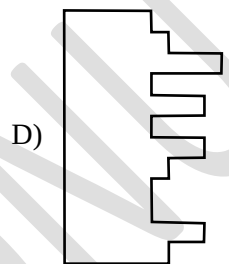
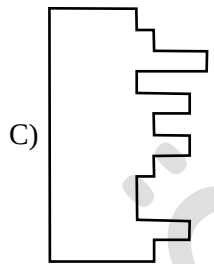
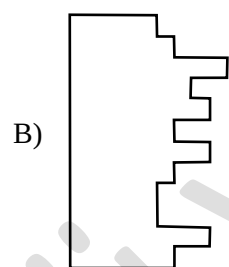
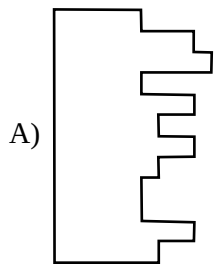
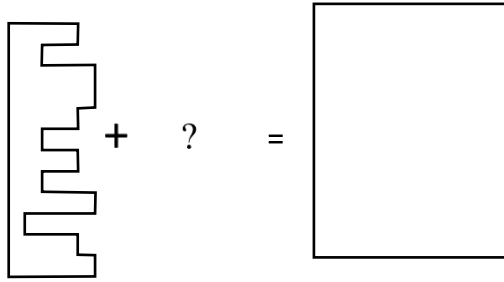
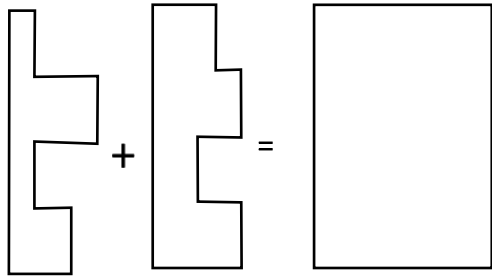
- A) 1373264 B) 1676534 C) 1676234
D) 8373264 E) 1373564

21.

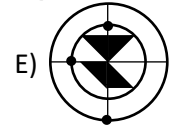
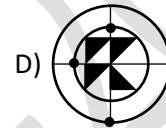
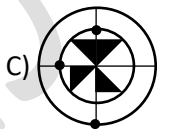
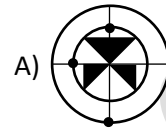
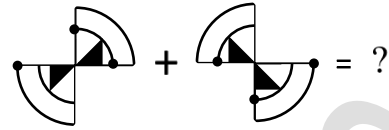
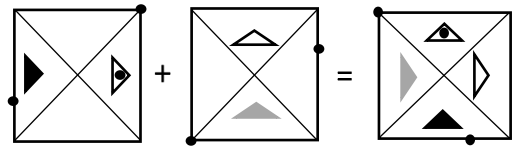


- A)
- B)
- C)
- D)
- E)

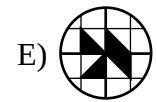
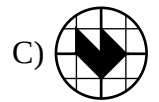
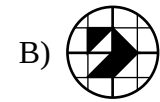
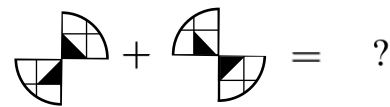
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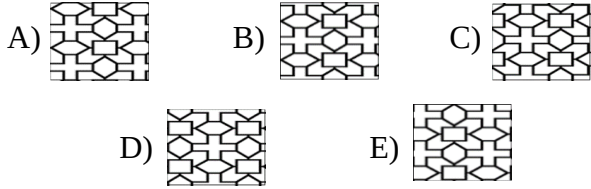
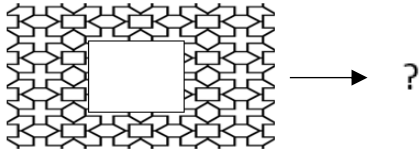
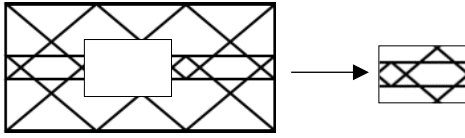
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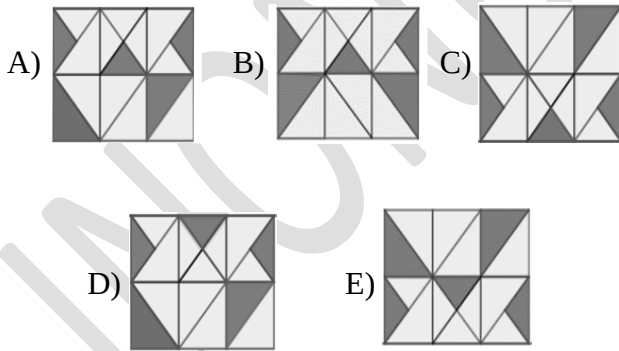
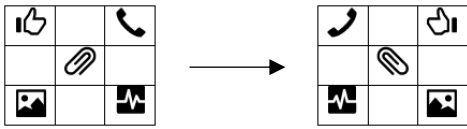
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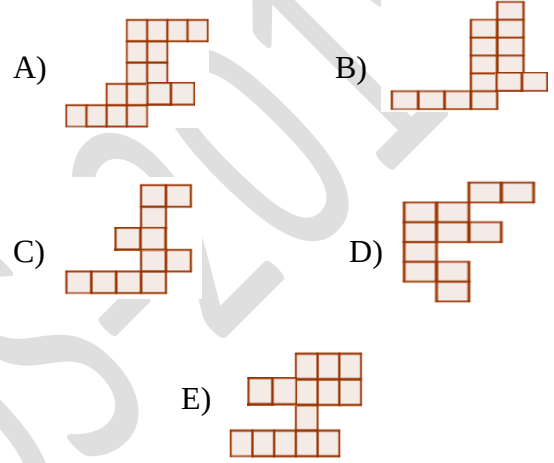
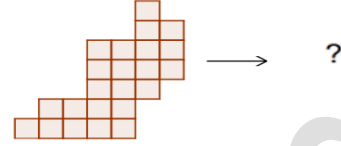
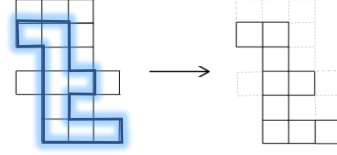
25.



26.



27.



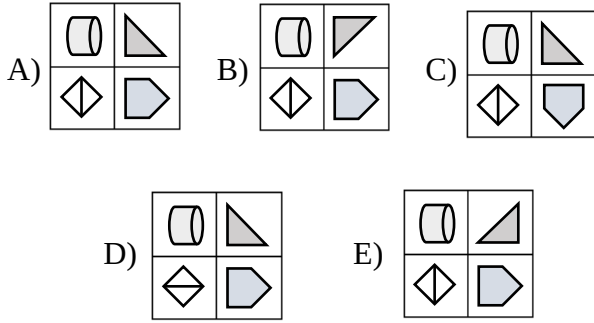
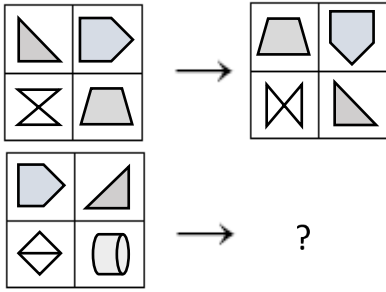
28.

4	3	3	5
1	8	3	6
7	5	2	7
X	8	4	9

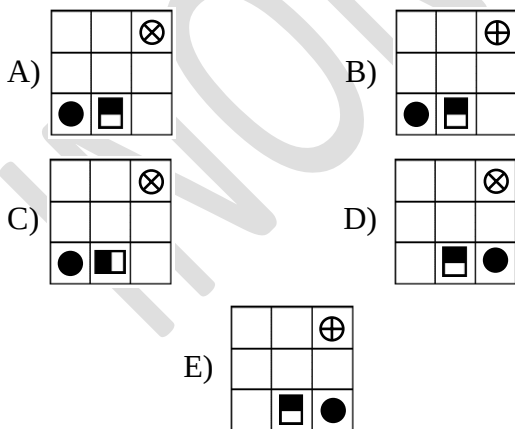
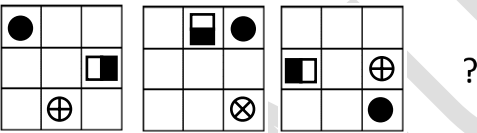
 $X = ?$

A) 1 B) 2 C) 3 D) 4 E) 6

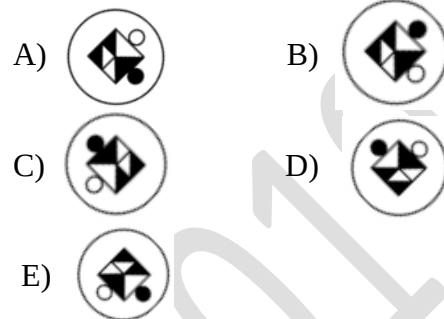
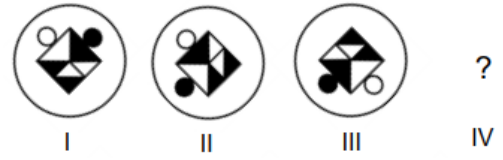
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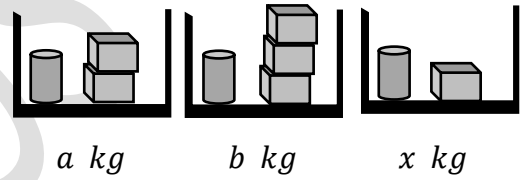
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31.

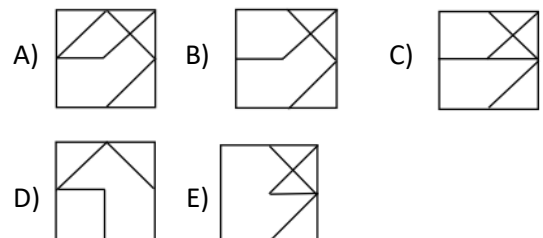
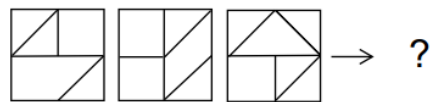
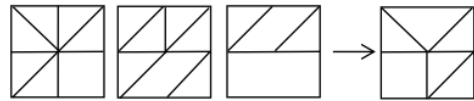


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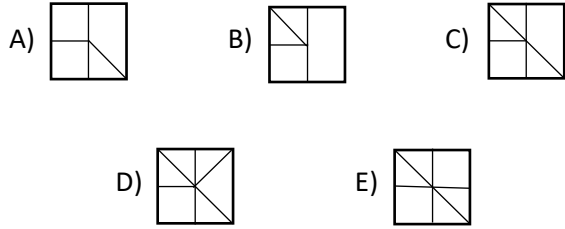
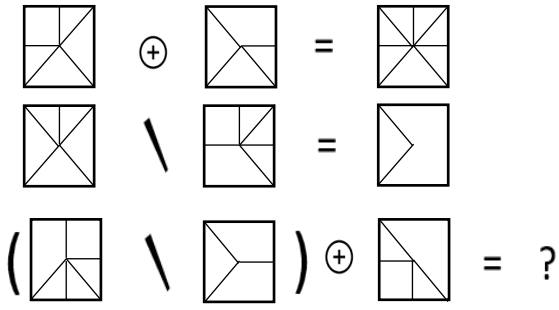

 $x = ?$

- A) $a - b$ B) $\frac{a}{2}$ C) $2a - b$
- D) $8a - 5b$ E) $\frac{a+2b}{8}$

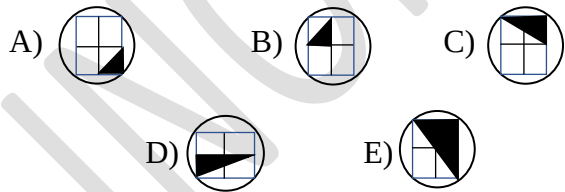
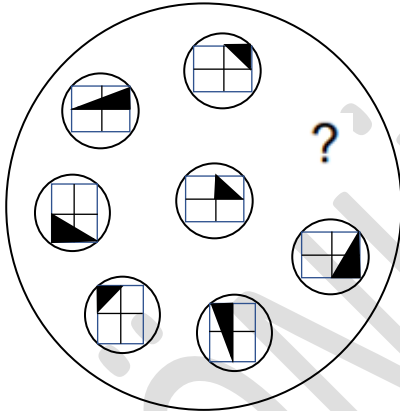
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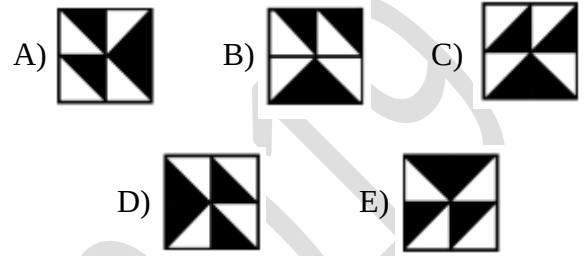
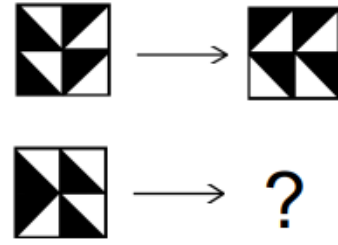
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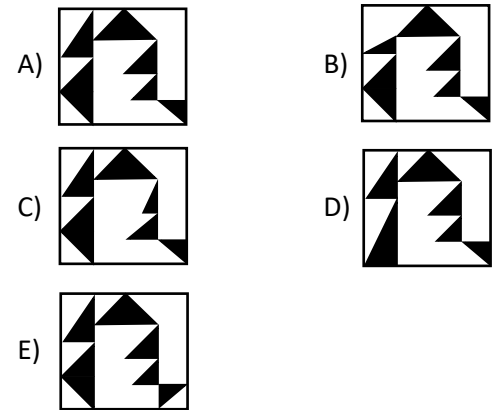
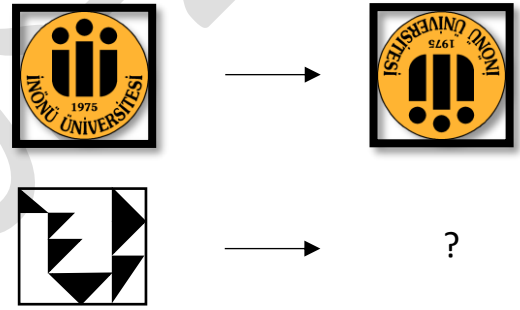
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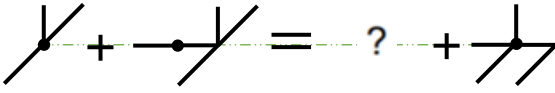
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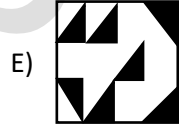
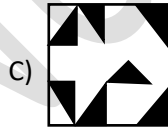
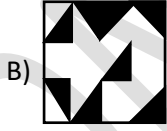
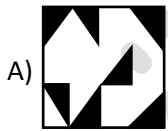
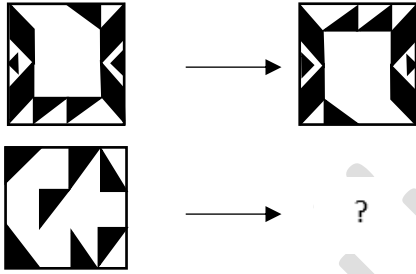
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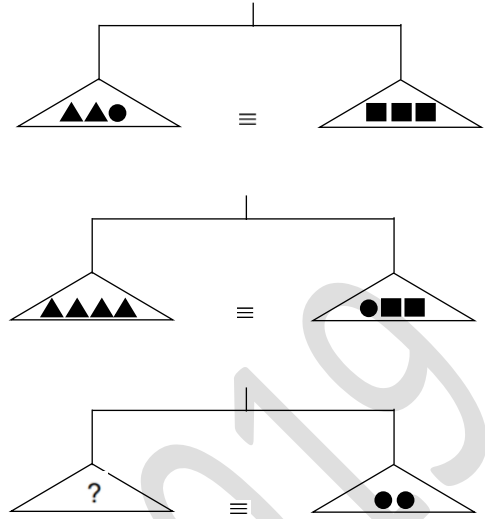
38.



39.



40.



TEST BİTTİ. LÜTFEN CEVAPLARINIZI
KONTROL EDİNİZ.

TEST IS COMPLETED. PLEASE CHECK
YOUR ANSWERS.

انتهت أسئلة الاختبار