

YÖS

EN DENEME

DENEME SINAVI

*YÖS-OBCEK
YÖS-A
YÖS-101
YÖS-102
YÖS-103
YÖS-104
YÖS-105*

EN DENEME & INTYÖS

İŞBİRLİĞİ İLE
ÜNİVERSİTELERİN
YÖS SINAVLARINA UYGUN
YENİ NESİL 5'Lİ DENEME

4

INTERNATIONAL
OR
YÖS

02030203

1. $124! + 123!$

toplamının sondan kaç basamağı sıfırdır?
How many last digits of the sum of $124! + 123!$ are zero?

- A) 29 **B) 31** C) 28 D) 30 E) 32

$$= 124 \cdot 123! + 1 \cdot 123!$$

$$= 123! (124 + 1)$$

$$= 125 \cdot 123!$$

$$= 5^3 \cdot 123!$$

sondan 31 basamağı sıfır $\rightarrow 28+3$

$$\begin{array}{r} 123 \overline{) 125} \\ \underline{24} \\ 4 \end{array}$$

(28) tane

+ 3 tane daha
(31) adet

3. $(abaaba_5) \in N, (aba) \in N$

$$\begin{array}{r} \overset{111}{abaaba_5} \\ \underline{x} \\ y \end{array} \Rightarrow x+y = ?$$

$$= 10010 + 5 = 10015$$

- A) 1005 B) 10005 C) 10150

D) 10015

E) 10010

$$\begin{array}{r} \overset{111}{abaaba_5} \\ \underline{aba} \\ 000aba \\ \underline{aba} \\ 0005 \end{array} \rightarrow y$$

$$\begin{array}{r} \overset{111}{aba} \\ \underline{aba} \\ 10010 \end{array} \rightarrow x$$

02040102

2. $a, b, c, d \in \mathbb{Z}^+$

$$2+1+1+5 = (9)$$

$$\frac{28}{11} = a + \frac{1}{b + \frac{1}{c + \frac{1}{d}}} \Rightarrow a + b + c + d = ?$$

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

$$\frac{28}{11} = 2 + \frac{6}{11} = 2 + \frac{1}{\frac{11}{6}}$$

$$= 2 + \frac{1}{1 + \frac{5}{6}}$$

$$= 2 + \frac{1}{1 + \frac{1}{\frac{6}{5}}}$$

$$= 2 + \frac{1}{1 + \frac{1}{1 + \frac{1}{5}}}$$

$$\begin{array}{r} 28 \overline{) 11} \\ \underline{22} \\ 6 \end{array} \quad \begin{array}{r} 11 \overline{) 6} \\ \underline{6} \\ 0 \end{array}$$

02020201

4. $x, A \in \mathbb{N}$

$$(1023)_x + (2x01)_5 = A_{(10)} \Rightarrow A = ?$$

- A) 326 B) 396 **C) 426** D) 456 E) 514

$$(1023)_4 = 3 \cdot 4^0 + 2 \cdot 4^1 + 0 \cdot 4^2 + 1 \cdot 4^3$$

$$= 3 + 8 + 0 + 64 = 75 \checkmark$$

$$(2401)_5 = 1 \cdot 5^0 + 0 \cdot 5^1 + 4 \cdot 5^2 + 2 \cdot 5^3$$

$$= 1 + 0 + 100 + 250 = 351 \checkmark$$

$$A = 75 + 351 = 426$$

$$x > 3 \wedge x < 5 \Rightarrow 3 < x < 5 \Rightarrow x = 4$$

24'ten x'e kadar olan doğal sayılardan 13 tanesi 11 ile bölünebildiğine göre, x en çok kaçtır?

As 13 of the natural numbers from 24 to x are divisible by 11, what is x at most?

24'x → 33, 44, ..., 11k; k ∈ Z

A) 176 B) 170 C) 175

D) 172 E) 181

terim sayısı = $\frac{\text{son-ilk}}{\text{Arkm}} + 1 \Rightarrow 13 = \frac{11k-33}{11} + 1$

$\Rightarrow 13 = k - 3 + 1$
 $\Rightarrow 15 = k$

$x = 11 \cdot 15 = 165 //$

Fakat x'in 11 ile bölünebilme iddiası yok. Bu halde, $165 + 10 = 175$

$x_{\max} = 175$

2,625 sayısı aşağıdakilerden hangisiyle çarpılırsa sonuç bir tam sayıya eşit olur?

If the number 2,625 is multiplied by which of the following, the result will be equal to an integer?

$0,625 \cdot 2 \in \mathbb{Z}$ olmalı.

A) 10 B) 8 C) 6 D) 4 E) 2

$0,625 = \frac{625}{1000} = \frac{5^4}{10^3} = \frac{5^4}{2^3 \cdot 5^3} = \frac{5}{2^3}$

alsun ki

$\frac{5}{2^3} \cdot 8 \in \mathbb{Z}$ olabilir.

020604

6. $\left. \begin{array}{l} 10^x = 4 \\ 4^y = 5 \end{array} \right\} \Rightarrow 10^{2x-xy} = ?$

$4^y = (4^1)^y$

A) $\frac{4}{5}$ B) $\frac{4}{25}$ C) $\frac{25}{16}$ D) $\frac{5}{16}$ E) $\frac{16}{5}$

$(10^x)^2 = 5 \Rightarrow 10^{2x} = 5$

$\Rightarrow 10^{2x-xy} = \frac{10^{2x}}{10^{xy}} = \frac{10^{2x}}{5} = \frac{(10^x)^2}{5} = \frac{4^2}{5} = \frac{16}{5}$

020806

8. $9x^2 + 5y^2 + 12xy - 6y + 9 = 0 \Rightarrow 2x + 3y = ?$

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

$9x^2 + 12xy + 4y^2 + y^2 - 6y + 9 = 0$

$\underbrace{9x^2 + 12xy + 4y^2}_{(3x+2y)^2} + \underbrace{y^2 - 6y + 9}_{(y-3)^2} = 0$

$\Rightarrow (3x+2y)^2 + (y-3)^2 = 0$

$3x+2y=0$

$\Rightarrow 3x+6=0$
 $x=-2$

$y-3=0$
 $\Rightarrow y=3$

020808

$\frac{x^2 - 8x + 15}{x^2 - 25} : \frac{1 - 2x}{2x^2 + 9x - 5} = ?$

- A) $x + 2$ B) $2 - x$ C) $x + 3$
 D) $x + 5$ E) $3 - x$

$\frac{(x-3)(x-5)}{(x-5)(x+5)} \cdot \frac{(2x-1)(x+5)}{1-2x} = \underline{\underline{-x+3}}$

020901

10. $\frac{x-2}{3} + \frac{x+1}{2} - \frac{x+2}{6} = \frac{3}{2} \Rightarrow x = ?$

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

$\Rightarrow 2x = 4 + 3x + 3 - x - 2 = 9$
 $\Rightarrow 4x - 3 = 9$
 $\Rightarrow 4x = 12$
 $\Rightarrow \underline{\underline{x = 3}}$

02040201

12. $\frac{0,00025 - 0,0004}{0,000018 - 0,00003} = ?$

- A) 50 B) 2^6 C) 10^2 D) 125 E) 2^7

$\frac{25 \cdot 10^{-5} - 4 \cdot 10^{-4}}{18 \cdot 10^{-7} - 3 \cdot 10^{-6}} = \frac{25 \cdot 10^{-5} \cdot 10^{+7} - 4 \cdot 10^{-4} \cdot 10^{+7}}{18 \cdot 10^{-7} \cdot 10^{+7} - 3 \cdot 10^{-6} \cdot 10^{+7}}$
 $= \frac{25 \cdot 10^2 - 4 \cdot 10^3}{18 \cdot 10^0 - 3 \cdot 10^1} = \frac{10^2(25 - 40)}{18 - 30}$
 $= \frac{10^2 \cdot (-15)}{-12} = \frac{100 \cdot 5}{4} = \underline{\underline{125}}$

11. $x \in \mathbb{Z}$
 021102
 antınmı
 deđre.

$-4 < |2x - 3| < 7 \Rightarrow \Sigma x = ? = -1 + 0 + 1 + 2 + 3 + 4 = 9$

- A) 11 B) 10 C) 9 D) 6 E) 4

$|2x - 3| < 7$
 $\Rightarrow -7 < 2x - 3 < 7$
 $+3 \Rightarrow -4 < 2x < 10$
 $\cdot \frac{1}{2} \Rightarrow -2 < x < 5 \Rightarrow x \in (-2, 5)$

DENEME-4

$$x_1 + x_2 = 4$$

$$x_1 \cdot x_2 = 1$$

13. $x^2 - 4x + 1 = 0$, $\mathcal{C}, K = \{x_1, x_2\}$

$ax^2 + bx + c = 0$, $\mathcal{C}, K = \{x_1 - 2, x_2 - 2\}$

$\Rightarrow a + b - c = ? = 1 + 0 - (-3) = 4$

- (A) 4 B) 5 C) 2 D) -2 E) -4

$$x^2 - [(x_1 - 2) + (x_2 - 2)] \cdot x + (x_1 - 2)(x_2 - 2) = 0$$

$$\Rightarrow x^2 - (x_1 + x_2 - 4) \cdot x + x_1 \cdot x_2 - 2(x_1 + x_2) + 4 = 0$$

$$\Rightarrow x^2 - 3x - 3 = 0$$

$a=1, b=0, c=-3$

$$\sin x - \cos x > 0$$



$$\sin x + \cos x < 0$$

YÖS / TÖBT

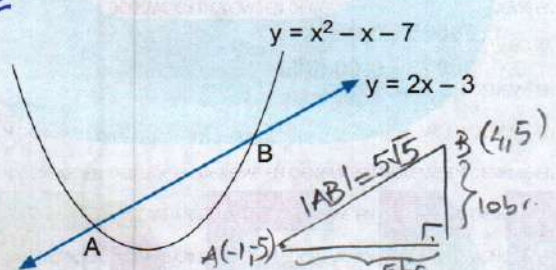
15 $x \in \left(\frac{\pi}{2}, \frac{3\pi}{2}\right)$

$\cot x = \frac{3}{4} \Rightarrow \frac{\sin x - \cos x}{\sin x + \cos x} = ? = \frac{-\frac{4}{5} - (-\frac{3}{5})}{-\frac{4}{5} + (-\frac{3}{5})} = \frac{-\frac{1}{5}}{-\frac{7}{5}} = \frac{1}{7}$

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

cotanjantın pozitif olması $x \in (\pi, \frac{3\pi}{2})$ olmasını gerektirir

022303



$|AB| = ?$

- A) $3\sqrt{5}$ B) $4\sqrt{5}$ C) $5\sqrt{5}$ D) $6\sqrt{5}$ E) $7\sqrt{5}$

$y=y$ tartışması ile A ve B'nin apsislerini atayalım

$$\Rightarrow x^2 - 3x - 4 = 0$$

$$-4 \hat{+} 1 \Rightarrow x_1 = 1 \rightarrow y_1 = -5$$

$$x_2 = 4 \rightarrow y_2 = 5$$

$A(-1, -5), B(4, 5)$

$|AB|^2 = 5^2 + 10^2 = 125$

$\Rightarrow |AB| = 5\sqrt{5}$

02230

Demek 15'in katı \rightarrow Para = 15k TL

16. Bir miktar parayı 15 kişi eşit olarak paylaşmak istiyor. Daha sonra bu gruba 3 kişi katılıyor ve kişi başına düşen miktar 5 TL azalıyor.

Buna göre, para kaç TL'dir?

15 people would like to share some money equally. Three more people join this group later and the amount per person reduces by 5 TL. According to this, how much is the money?

- A) 400 B) 600 C) 550 D) 500 E) 450

3 kişi daha gelince kişi sayısı: 18

$\frac{15k}{15} = \frac{15k}{18} + 5$ kişi başı 5 TL azalmıştı.

$\Rightarrow k = \frac{5k}{6} + 5$

$\Rightarrow k - \frac{5k}{6} = 5$

$\Rightarrow k = 30$

Para $\rightarrow 15k$ idi $\rightarrow 15 \cdot 30 = 450$ TL

DENEME-4

$A \cap B = \{x \mid -13 < x < 205; x = 6k \mid k \in \mathbb{Z}\} = \{6, 12, 18, \dots, 204\}$
YÖS / TÖBT

17. $x \in \left[0, \frac{3\pi}{2}\right)$
 $\alpha + \beta = \frac{\pi}{2} \Rightarrow \sin \alpha = \cos \beta$
 $\sin\left(2x - \frac{2\pi}{9}\right) = \cos\left(x - \frac{\pi}{9}\right) \Rightarrow \Sigma x = ?$
 A) $\frac{7\pi}{4}$ B) $\frac{8\pi}{3}$ C) $\frac{6\pi}{5}$ D) $\frac{11\pi}{6}$ E) $\frac{9\pi}{4}$
 $2x - \frac{2\pi}{9} = \frac{\pi}{2} - \left(x - \frac{\pi}{9}\right) \Rightarrow 2x - \frac{2\pi}{9} = \frac{\pi}{2} - x + \frac{\pi}{9}$
 $\Rightarrow 2x - \frac{2\pi}{9} = \frac{\pi}{2} - x + \frac{\pi}{9} \Rightarrow 3x = \frac{\pi}{2} + \frac{\pi}{3} \Rightarrow x_1 = \frac{5\pi}{18}$
 $2x - \frac{2\pi}{9} = \pi - \left[\frac{\pi}{2} - \left(x - \frac{\pi}{9}\right)\right] \Rightarrow 2x - \frac{2\pi}{9} = \pi - \frac{\pi}{2} + x - \frac{\pi}{9}$
 $\Rightarrow 2x - \frac{2\pi}{9} = \frac{\pi}{2} + x - \frac{\pi}{9} \Rightarrow x_2 = \frac{11\pi}{18}$
 $\Sigma x = x_1 + x_2 = \frac{5\pi}{18} + \frac{11\pi}{18} = \frac{16\pi}{18} = \frac{8\pi}{9}$

19. $A = \{x \mid -18 < x \leq 205\}$ $x = 3k, k \in \mathbb{Z} = \{-15, -12, \dots, 204\}$
 $B = \{x \mid -13 < x \leq 210\}$ $x = 2k, k \in \mathbb{Z} = \{-2, 2, 4, \dots, 210\}$
 $n(A \cup B) = ?$
 A) 140 B) 145 C) 150 D) 153 E) 157
 Term Sayısı = $\frac{\text{Son ilh} - \text{Ar ilh}}{\text{Arlık}} + 1$
 $S(A) = \frac{204 - (-15)}{3} + 1 = 74$
 $S(B) = \frac{210 - (-2)}{2} + 1 = 105$
 $S(A \cap B) = \frac{204 - 6}{6} + 1 = 34$
 $S(A \cup B) = S(A) + S(B) - S(A \cap B) = 74 + 105 - 34 = 145$

18. $\frac{x \cdot P(2x-1) - 2}{x-5+Q(x+1)} = x^2 - x - 2$
 $\frac{P(x-2)}{-7} \Big|_{x=3} \begin{matrix} x+3 \\ B(x) \end{matrix} \frac{Q(x-1)}{k} \Big|_{x=3} \begin{matrix} x \\ L(x) \end{matrix} \Rightarrow k = ?$
 A) 10 B) 8 C) 7 D) 6 E) 4
 $P(x-2) = (x+3) \cdot B(x) - 7$
 $Q(x-1) = x \cdot L(x) + k$
 $\Rightarrow P(-5) = -7$
 $\Rightarrow Q(-1) = k$
 $\frac{(-2) \cdot P(-5) - 2}{(-2) - 5 + Q(-1)} = (-2)^2 - (-2) - 2$
 $\frac{14 - 2}{-7 + k} = 4 + 2 - 2$
 $\frac{12}{4} = k - 7$
 $3 = k - 7$
 $10 = k$

20. a ve b sayılarının geometrik ortalaması $2\sqrt{3}$, (a - 3) ile (b + 2) sayılarının geometrik ortalaması $3\sqrt{2}$ 'dir.
 Buna göre, $2a - 3b$ ifadesinin değeri kaçtır?
 Geometric mean of a and b is $2\sqrt{3}$, (a - 3) and geometric mean of (a - 3) and (b + 2) is $3\sqrt{2}$.
 According to this data given, What is the value of $2a - 3b$?
 A) 8 B) 14 C) 16 D) 10 E) 12
 $\sqrt{ab} = 2\sqrt{3} \Rightarrow ab = 12$
 $\sqrt{(a-3)(b+2)} = 3\sqrt{2} \Rightarrow 2b + 2a - 3b - 6 = 18$
 $\Rightarrow 2a - 3b - 6 = 18$
 $\Rightarrow 2a - 3b = 24$

021905

21. 4 evli çift arkadaşlarının düğününde çember şeklinde halay çekeceklerdir.

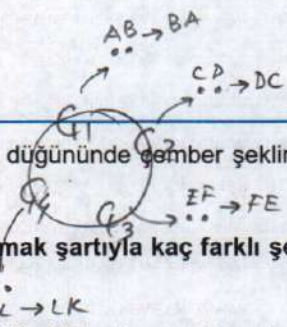
Evli çiftler yan yana olmak şartıyla kaç farklı şekilde halay çekerler?

Four married couples will hold the hands of each other and form a circle altogether to perform a traditional Turkish group dance. How many different ways can they make a circle on condition that each spouse is holding his or her spouse's hands?

- A) 24 B) 48 C) 54 **D) 96** E) 124

$(4-1)!$ şekilde yuvaya otururlar. Her bir çift kendi arasında $2!$ şekilde sıralar. Bu halde sıralanış:

$$(4-1)! \cdot 2! \cdot 2! \cdot 2! \cdot 2! = 3! \cdot 16 = 96$$



0221

22. $(\sqrt[3]{x^2} - \frac{2}{\sqrt{x}})^6 = x^4 + \dots + A \cdot x^{\frac{5}{3}} + \dots \Rightarrow A = ?$

- A) -60 B) -40 C) 30 D) 40 **E) 60**

Baştan $r+1$ ninci elemanı;

$$\binom{6}{r} \cdot (\frac{2}{\sqrt{x}})^{6-r} \cdot (-2x)^r = A \cdot x^{\frac{5}{3}}$$

$$\frac{2}{3}(6-r) - \frac{1}{2}r = \frac{5}{3}$$

$$\Rightarrow 4 - \frac{2r}{3} - \frac{r}{2} = \frac{5}{3}$$

$$\Rightarrow \frac{7}{3} = \frac{7r}{6}$$

$$\Rightarrow r = 2$$

$$A = \binom{6}{2} \cdot (-2)^2 = 15 \cdot 4 = 60$$

02320101

23. $(a_n) \in \mathbb{Z}$

$$(a_n) = \left(\frac{2n^2 - 5n + 6}{n+2} \right) \Rightarrow \sum_{n=1}^{\infty} a_n = ? = 1+2+4+6+10+22 = 45$$

- A) 42 B) 44 **C) 45** D) 46 E) 47

I. Yol

$$\frac{2n^2 - 5n + 6}{2n^2 + 4n} = \frac{n+2}{2n-9}$$

$$\frac{-9n+6}{-9n-18} = \frac{24}{2n-9}$$

II. Yol Pay kısmında paydayı arayalım

$$a_n = \frac{2n^2 + 4n - 9n - 18 + 24}{n+2}$$

$$= \frac{2n(n+2) - 9(n+2) + 24}{n+2}$$

$$= 2n - 9 + \frac{24}{n+2}$$

\mathbb{Z} olmalıdır.

$n+2 = -1, -2, -3, -4, 6, 8, 12, 24$

$n+2 = 1, 2, 3, 4, 6, 8, 12, 24$

$n+2=1 \Rightarrow n=-1$ (X)

$n+2=2 \Rightarrow n=0$ (X)

$n+2=3 \Rightarrow n=1$

$n+2=4 \Rightarrow n=2$

$n+2=6 \Rightarrow n=4$

$n+2=8 \Rightarrow n=6$

$n+2=12 \Rightarrow n=10$

$n+2=24 \Rightarrow n=22$

02370103

24. $f(x) = x^2 - 3x + 5$ fonksiyonu veriliyor.

$$A = \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix} \Rightarrow f(A) = A^2 - 3A + 5 =$$

ise $f(A)$ aşağıdakilerden hangisidir?

$f(x) = x^2 - 3x + 5$ function is given. If $A = \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix}$, what is $f(A)$?

- A)** $\begin{bmatrix} 18 & -9 \\ -3 & 6 \end{bmatrix}$ B) $\begin{bmatrix} 18 & 9 \\ -3 & 6 \end{bmatrix}$ C) $\begin{bmatrix} -18 & 9 \\ 3 & -6 \end{bmatrix}$

- D) $\begin{bmatrix} -18 & -9 \\ 3 & 6 \end{bmatrix}$ E) $\begin{bmatrix} 18 & -9 \\ -3 & -6 \end{bmatrix}$

$$A^2 = \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix}^2 = \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix} \cdot \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 7 & 0 \\ 0 & 7 \end{bmatrix}$$

$$-3A = -3 \cdot \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 6 & -9 \\ -3 & -6 \end{bmatrix}$$

$$5I = 5 \cdot I = 5 \cdot \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix}$$

$$f(A) = A^2 - 3A + 5 = \begin{bmatrix} 18 & -9 \\ -3 & 6 \end{bmatrix}$$

$|B| = (-1) \cdot 1 - (-3) \cdot (-2)$

02270104

25. $A = \begin{bmatrix} 2 & -1 \\ 3 & -2 \end{bmatrix}, B = \begin{bmatrix} -1 & 3 \\ -2 & 1 \end{bmatrix}$

matrisleri veriliyor.

$B^{-1} \cdot A \cdot X = I_2$ olduğuna göre, X matrisinin elemanları toplamı kaçtır?

$A = \begin{bmatrix} 2 & -1 \\ 3 & -2 \end{bmatrix}, B = \begin{bmatrix} -1 & 3 \\ -2 & 1 \end{bmatrix}$

matrices are given. Since $B^{-1} \cdot A \cdot X = I_2$, what is the sum of the elements of matrix "x"?

$B^{-1} \cdot A = \begin{bmatrix} 1/5 & -3/5 \\ 2/5 & -1/5 \end{bmatrix} \cdot \begin{bmatrix} 2 & -1 \\ 3 & -2 \end{bmatrix} = \begin{bmatrix} -7/5 & 1 \\ 1/5 & 0 \end{bmatrix} \Rightarrow |B^{-1}A| = 1/5 \neq 0$

$(B^{-1} \cdot A) \cdot X = I \Rightarrow X$ matrisi $(B^{-1} \cdot A)$ nin tersidir

$\Rightarrow X = \frac{1}{1/5} \cdot \begin{bmatrix} 0 & 1 \\ 1/5 & 7/5 \end{bmatrix} = \begin{bmatrix} 0 & 5 \\ 1 & 7 \end{bmatrix} \rightarrow \sum a_{ij} = 0+5+1+7 = 13$

0229040

26. $Z_1 = 4 \cdot (\cos 43^\circ + i \sin 43^\circ)$

$Z_2 = 6 \cdot (-\cos 77^\circ + i \sin 77^\circ)$

olduğuna göre $|Z_1 + Z_2|$ kaçtır?

Since, $\rightarrow Z_2 = 6 \text{cis } 103^\circ, Z_1 = 4 \text{cis } 43^\circ$

$Z_1 = 4 \cdot (\cos 43^\circ + i \sin 43^\circ), Z_2 = 6 \cdot (-\cos 77^\circ + i \sin 77^\circ)$

What is $|Z_1 + Z_2|$?

A) $\sqrt{19}$

B) $2\sqrt{19}$

C) $3\sqrt{17}$

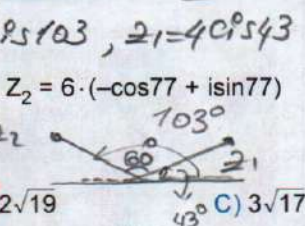
D) $4\sqrt{19}$

E) $4\sqrt{17}$

$|Z_1 + Z_2|^2 = |Z_1|^2 + |Z_2|^2 + 2|Z_1||Z_2|\cos\theta$
 $= 4^2 + 6^2 + 2 \cdot 4 \cdot 6 \cdot \cos 60^\circ$
 $= 16 + 36 + 2 \cdot 24 \cdot \frac{1}{2}$
 $= 76$

$\Rightarrow |Z_1 + Z_2| = 2\sqrt{19}$

$\cos 77^\circ = \cos 103^\circ$
 Böyle olmaz!!
 II. bölge 94,151 derece.
 $180 - \theta = 77$
 $\theta = 103$ olmaz



$|B| = (-1) \cdot 1 - (-3) \cdot (-2) = 5 + 0 = 5$
 olduğundan B tersidir

$B^{-1} = \frac{1}{5} \cdot \begin{bmatrix} 1 & -3 \\ 2 & -1 \end{bmatrix} = \begin{bmatrix} 1/5 & -3/5 \\ 2/5 & -1/5 \end{bmatrix}$

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

$x = (x+1)^3 + 7x + 1 \rightarrow x-1 = (x+1)^3 + 7(x-1) + 1$
 $= x^3 + 7x + 6$

fonksiyonları veriliyor.

$x = x-1$

$\Rightarrow x^3 + 2x^2 = x^3 + 7x + 6$
 $\Rightarrow 2x^2 - 7x + 6 = 0$
 $\Rightarrow x = 3/2, 2$

denkleminin pozitif tam sayı olan kökleri'dir.

Buna göre, ayrıtları $(a+2), (a+7)$ ve $(a+5)$ birim olan bir dikdörtgenler prizmasının hacmi kaç br³ tür?
 4, 9, 7

$x = x^3 + 2x^2$ $x = (x+1)^3 + 7x + 1$

functions are given. The positive integer root of equation

$x = x-1$ is a. $\sqrt{4 \cdot 9 \cdot 7} = 252$

According to this data given, how many cubic units is the volume of a cuboid whose edges are $(a+2), (a+7)$ and $(a+5)$?

- A) 216 B) 238 C) 252 D) 296 E) 312

022902

28. $i = \sqrt{-1}$

$z = x + iy \Rightarrow \bar{z} = x - iy$ dir olsun

$ziz - 3i + 1 = \bar{z} \cdot (1 - 2i) \Rightarrow \text{Re}(z) - \text{Im}(z) = ? = 1 - 1 = 0$

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

$\Rightarrow 2i \cdot (x + iy) - 3i + 1 = (x - iy)(1 - 2i)$

$\Rightarrow 2xi^2 - 2y - 3i + 1 = x - 2xi - y^2 - 2iy$

$\Rightarrow 1 + (2x-3)i^2 = x + (-2x-y)i^2$

$\Rightarrow 1 - (2x-3) = x - (-2x-y)$

$\Rightarrow 1 - 2x + 3 = x + 2x + y$

$\Rightarrow 4 - 2x = 3x + y$

$\Rightarrow 4 - 2x = 3x + y$

$\Rightarrow 4 - 2x = 3x + y$

$\Rightarrow 4 - 2x = 3x + y$

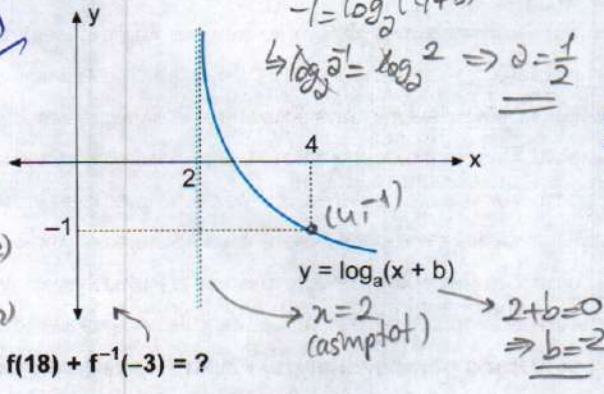
$\Rightarrow 4 - 2x = 3x + y$

$\Rightarrow 4 - 2x = 3x + y$

$\Rightarrow 4 - 2x = 3x + y$

$\Rightarrow 4 - 2x = 3x + y$

0223009



- A) 3 B) 4 C) 6 D) 8 E) 9
- Demek, $f(x) = \log_{\frac{1}{2}}(x-2)$
- $f(18) = \log_{\frac{1}{2}}(18-2) = \log_{\frac{1}{2}} 2^4 = -4$
 $f^{-1}(-3) = 10$
 $f(18) + f^{-1}(-3) = 6$

31. Hakan 3 yıl sonra, Erkan 3 yıl önce doğsaydı ikisinin yaşları eşit olacaktı. Yaş farkları: 6'dır. $3 \times 1 = 3$ yıl \uparrow \downarrow $\left. \begin{matrix} H \\ E \end{matrix} \right\} 6 \text{ yıl}$

Hakan ile Erkan'ın şimdiki yaşları toplamı, yaşları farkının 3 katına eşit olduğuna göre, Erkan'ın şimdiki yaşı kaçtır? Erkan $\rightarrow E$ dsm.
 \rightarrow Hakan = $E+6$ dir

Their ages would be the same if Hakan had been born three years later and Erkan had been born two years earlier. Since the sum of Hakan and Erkan's current ages equals to the three times as much as the difference in their ages, how old is Erkan? $H+E$ yani $E+6+E = 3 \cdot 6$
 $\Rightarrow 2E+6=18$
 $\Rightarrow 2E=12$
 $\Rightarrow E=6$

A) 3 B) 5 C) 6 D) 9 E) 12

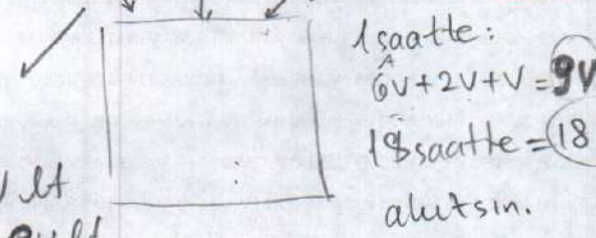
Barış, Can'ın 2 katı hızlı ise Ali Can'ın 6 katı daha hızlıdır.
 en hızlı orta en yavaş

30. Ali'nin çalışma hızı, Barış'ın çalışma hızının 3 katı, Barış'ın çalışma hızı, Can'ın çalışma hızının 2 katıdır.

Üçünün birlikte 18 saat saatte bitirebildikleri bir işi, Ali tek başına kaç saatte bitirebilir?

Ali's working speed is three times as much as Barış's working speed. Barış's working speed is twice as much as Can's. How many hours does it take for Ali alone to do the work they can do in 18 hours altogether?

- A) 162 B) 135 C) 81 D) 54 E) 27



Ali:
 1sa 6v lt
 x 18.9v lt
 $t = \frac{18 \cdot 9v}{6v} = 27 \text{ sa}$

0223007

32. $\log_2(\log_3(x-2)) < 1, x \in \mathbb{N}^+ \Rightarrow \sum x = ?$

A) 45 B) 49 C) 50 D) 52 E) 60

$\log_2(\log_3(x-2)) < 1 = \log_2 2$
 $\Rightarrow \log_3(x-2) < 2 = \log_3 3^2$
 $\Rightarrow x-2 < 9$
 $\Rightarrow x < 11$

$\log_3(x-2) > 0 = \log_3 1$
 $\Rightarrow x-2 > 1$
 $\Rightarrow x > 3$

$3 < x < 11$
 \downarrow
 4, 5, 6, 7, 8, 9, 10
 $\Rightarrow \sum x = 49$

DENEME-4

$|x^2-4| = \begin{cases} x^2-4; & -2 > x > 2 \\ -x^2+4; & -2 < x < 2 \end{cases}$
YÖS / TÖBT

02340703

$\lim_{x \rightarrow 0} \cot 2x \cdot (e^{3x} - 1) = ? (\infty \cdot 0)$

- A) $\frac{3}{2}$ B) 1 C) $\frac{5}{3}$ D) $\frac{5}{2}$ E) 0

$\lim_{x \rightarrow 0} \cot 2x \cdot (e^{3x} - 1) = \lim_{x \rightarrow 0} \frac{e^{3x} - 1}{\tan 2x} \rightarrow \left(\frac{0}{0}\right)$

L'H $\lim_{x \rightarrow 0} \frac{3e^{3x}}{2(1+\tan^2 2x)} = \frac{3 \cdot e^0}{2(1+0)} = \frac{3}{2}$

02360203

$\int_{-3}^3 |x^2-4| dx = ?$

- A) $\frac{41}{3}$ B) $\frac{43}{32}$ C) $\frac{46}{3}$ D) $\frac{43}{4}$ E) $\frac{43}{53}$

$\int_{-3}^3 |x^2-4| dx = \int_{-3}^{-2} (x^2-4) dx + \int_{-2}^2 (-x^2+4) dx + \int_2^3 (x^2-4) dx$

$= \left[\frac{x^3}{3} - 4x \right]_{-3}^{-2} + \left[4x - \frac{x^3}{3} \right]_{-2}^2 + \left[\frac{x^3}{3} - 4x \right]_2^3$
 $= \frac{1}{3}(-2^3 - (-3)^3) - 4(-2 - (-3)) + 4(2 - (-2)) - \frac{1}{3}(2^3 - (-2)^3)$
 $+ \frac{1}{3}(3^3 - 2^3) - 4(3 - 2)$

$= \frac{19}{3} - 4 + 16 - \frac{16}{3} + \frac{19}{3} - 4 = \frac{22}{3} + 8 = \frac{46}{3}$

02350211

34. $y = \arctan^2(x^2) \Rightarrow \frac{dy}{dx} \Big|_{x=1} = ?$

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

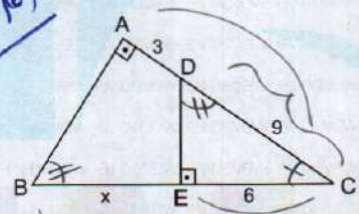
$\frac{dy}{dx} = 2 \arctan(x^2) \cdot \frac{2x}{1+(x^2)^2} \Big|_{x=1}$

$= 2 \arctan(1) \cdot \frac{2 \cdot 1}{1+1^2}$

$= 2 \cdot \frac{\pi}{4} \cdot \frac{2}{2}$

$= \frac{\pi}{2}$

0300101



- [AB] \perp [AC]
- [DE] \perp [BC]
- |AD| = 3 cm
- |EC| = 6 cm
- |DC| = 9 cm

Verilenlere göre, |BE| = x kaç cm'dir?

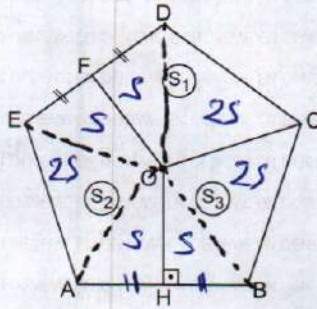
According to the data given, how many cm is |BE| = x

$\triangle DEC \sim \triangle BAC$ dir

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

$\frac{6}{12} = \frac{9}{x+6} \Rightarrow x+6=18$
 $\Rightarrow x=12$

37.



ABCDE
düzgün beşgen
O, beşgenin merkezi
 $|EF| = |FD|$
 $[OH] \perp [AB]$
 $A(FOCD) = S_1$
 $A(COHB) = S_3$
 $A(FEAHO) = S_2$

Verilenlere göre, $\frac{S_1+S_3}{S_2}$ oranı kaçtır?

"ABCDE" is a regular pentagon. "O" is the center of the pentagon. $|EF| = |FD|$, $[OH] \perp [AB]$, $A(FOCD) = S_1$, $A(COHB) = S_3$, $A(FEAHO) = S_2$

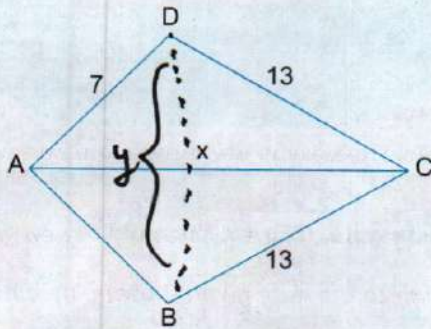
What is the ratio of $\frac{S_1+S_3}{S_2}$ according to the data given?

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

$S_1 = 3S$
 $S_2 = 4S$
 $S_3 = 3S$

$\frac{6S}{4S} = \frac{3}{2}$

38.



ABCD deltoid, $m(\widehat{ADC}) > 90^\circ$, $|BC| = |DC| = 13$
 $|AD| = 7$, $A(ABCD) = 84$

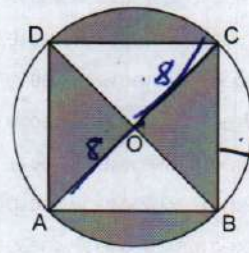
$|AC| = x = ?$

ABCD is a deltoid. $m(\widehat{ADC}) > 90^\circ$, $|BC| = |DC| = 13$
 $|AD| = 7$, $A(ABCD) = 84$ $|AC| = x = ?$

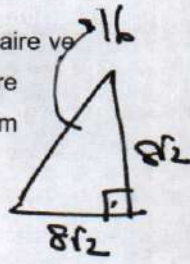
- A) 14 B) 15 C) $12\sqrt{2}$ D) $12\sqrt{3}$ E) $24\sqrt{5}$

$6 < x < 20$
 $7^2 + 13^2 < x^2$
 $218 < x^2 \Rightarrow 14 < x$
 $14 < x < 20$

39.



O merkezli daire ve
ABCD bir kare
 $|BC| = 8\sqrt{2}$ cm



Verilenlere göre, taralı bölgelerin alanları toplamı kaç cm^2 dir?

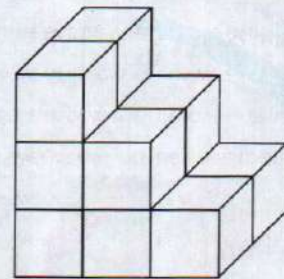
"O" centered circle and ABCD is a square.
 $|BC| = 8\sqrt{2}$ cm. How many square cm is the total area of the shaded areas?

- A) 16π B) 24π C) 32π D) 36π E) 48π

Taralı alan Dairenin yarısı

$\frac{\pi r^2}{2} = \frac{\pi \cdot 8^2}{2} = \frac{64\pi}{2} = 32\pi$

40.



$3 \times 2 = 6$
 $2 \times 2 = 4$
 $1 \times 2 = 2$
 $\frac{6+4+2}{2} = 12$

Yukarıdaki birim küplerden oluşan cismin hacmi kaç birimküptür?

How many unit cubes is the volume of the object consisting of unit cubes above?

- A) 12 B) 14 C) 16 D) 18 E) 20

$\frac{x \cdot y}{2} = 84$ $x \cdot y = 168$
 $0 < y < 14$
 $x \cdot y = 168$
 $\begin{matrix} 12 & 14 \\ 15 & 11,2 \\ 12\sqrt{2} & 7\sqrt{2} \end{matrix}$

41. YAA
 ABB
 BDD
 DNN
 NKK ⇒ BDD = ?

- A) BAA B) YDD
 D) DKK E) NBB

C) AYY

NKK → DKK

N → D

DNN → YDD

D → Y

YAA = NBB

ABB = BAA

BDD = AYY

DNN = YDD

NKK = DKK

42. KARALTI ALTIKAK
 FENERLİ - ?

- A) ERLINEF B) ERLIFEN C) LIRENEF
 D) FIRLEDE E) FEYDILE

* F sonda olmalı.

43.  = ?

- A) MIMR D) MERK E) ESEB C) MIBB

Aynı sembol
 olduğundan $MERE = ESEB$
 sıkki olur.

44. YYYYYY8
 + 0000009
 SYYYYY7

$Y + Ö = 17$
 $8 \quad 9$

$Ö - Y + S = ?$

$9 - 8 + 1 = 2$

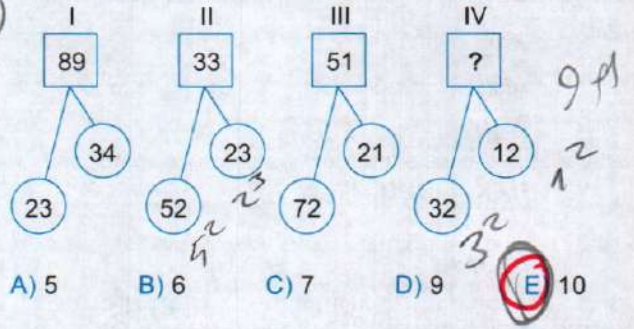
- A) 2 B) 4 C) 6 D) 7 E) 9

45. $AYA = 9$
 $YAY = 12$
 $AY = ?$

- A) 7 B) 8 C) 6 D) 5 E) 3

* Toplamları 9 oluyor
 $A + Y + A = 9$ ise $Y + A + Y = 12$
 $A \rightarrow 2$ $AY \Rightarrow 5 + 2 = 7$
 $Y \rightarrow 5$ olur.

47.



$3^2 + 1^2 = ?$
 $9 + 1 = 10$ olur.

46. I. $9 \div 6 = 5$
 II. $6 \div 4 = 5$
 III. $7 \div 5 = 6$
 IV. $12 \div 6 = ?$

- A) 3 B) 5 C) 6 D) 7 E) 9

$\frac{9+6}{9-6} = \frac{15}{3} = 5$
 $\frac{7+5}{7-5} = \frac{12}{2} = 6$

$15 : 3 = 5$
 $10 : 2 = 5$
 $12 : 2 = 6$

$\frac{a+b}{a-b} = \frac{12+6}{12-6} = \frac{18}{6} = 3$

48. $17, 24, 26, 32, 35, ?, 44$
 A) 37 B) 38 C) 39 D) 40 E) 41

$17 + 7 = 24$
 $24 + 2 = 26$
 $26 + 8 = 32$
 $32 + 3 = 35$
 $35 + 5 = 40$

49. $m \odot n = 2 \cdot (n \odot m) - m$

$\Rightarrow 4 \odot 7 = ?$

- A) 5 **B) 6** C) 0 D) 7 E) -2

$4 \odot 7 = 2(7 \odot 4) - 4$

$7 \odot 4 = 2(4 \odot 7) - 7$

$(4 \odot 7) = 2(2(4 \odot 7) - 7) - 4$

$\odot = 3(4 \odot 7) - 18$

6 $= 2(4 \odot 7)$

51. $\blacksquare(\blacksquare x) = 4x + 9$

$\Rightarrow \blacksquare(\blacksquare 4) + \blacksquare 3 = ?$

- A) 23 B) 25 C) 31 D) 32 **E) 34**

$4 \cdot 4 + 9$ $2 \cdot 3 + 3$

$25 + 9 = 34$

$\square(\square x) = 2(2x + 3) + 3$

50. I. A = a o i

II. h = h e

III. N = N R

IV. b = B D m

DoReMi = ?

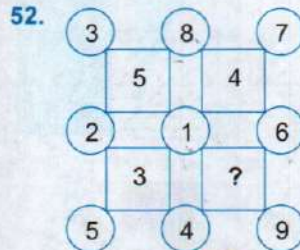
A) d O R e M i

B) d o r E m l

C) D o r E M i

D) d O R e m l

E) D O R e m l



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

Kaç etrafındaki sayıların toplamı ve çıkan sonucu rakamın toplama

$[5] \rightarrow 3+2+1+8=14 \Rightarrow 1+4=5$

$[4] \rightarrow 8+7+1+6=22 \Rightarrow 2+2=4$

$[3] \rightarrow 2+1+5+4=12 \Rightarrow 1+2=3$

$[2] \rightarrow 1+6+4+9=20 \Rightarrow 2+0=2$

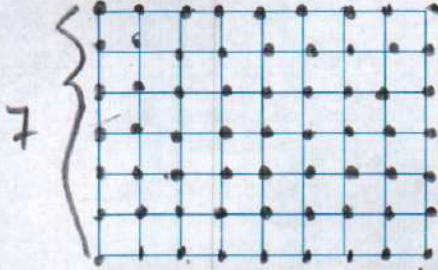
Görevler Sonuçları

İşaretler mi? ve eleştirilmeli. Soru harfleriyle yazılması o nedenle D şıkkı olur.

DENEME-4

YÖS / TÖBT

53. Aşağıda 1x1 birimlik karelere bölünmüş 6x8 kibrit izgara verilmiştir.



Bu kibrit izgarada kaç tane köşe vardır?

There are 6x8 square grids, equally divided into 1x1 square units. How many corners are there in these square grids?

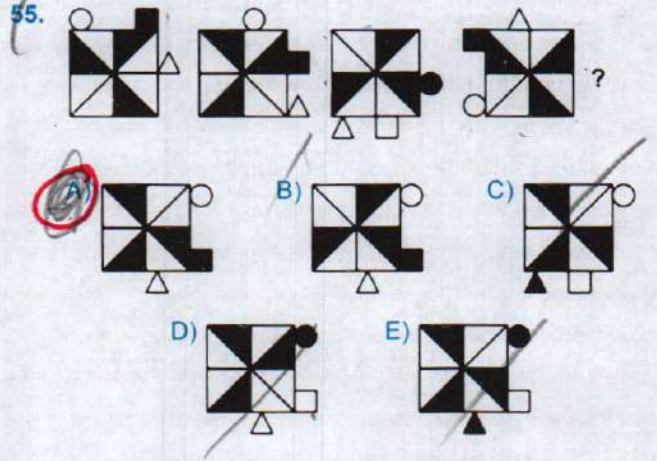
- A) 67 B) 66 C) 65 D) 64 E) 63

$7 \cdot 9 = 63$

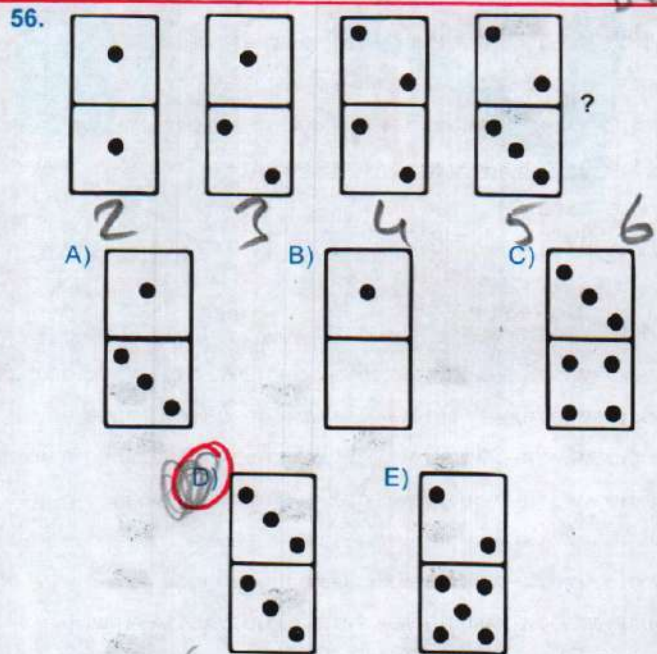


- A) B) C) D) E)

* 45° döndürülerek dış elde edilmiş 4. adımı A şekli uymaktadır.



* Şekillerin yer değiştirmelerine bakılarak
 $\Delta \rightarrow 1 + 2 + 3$ adım sonra 4. adım olmalı
 C ve E eleler
 $\circ \rightarrow$ ilk adımda 1 sayı oluyor
 D eleler
 * İstediği işlemler döndürüldükten sonra



6
 Topları 6 olsun

57.

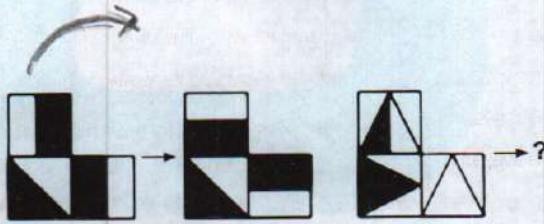


3, 4, 5, 2, 1, 6 3, 4, 6, 5, 1, 2 ?, ?, ?, ?, ?, ?

- A) 4, 5, 6, 1, 2, 3 B) 3, 1, 6, 5, 2, 4
 C) 4, 2, 3, 1, 6, 5 D) 3, 2, 4, 5, 1, 6
 E) 2, 3, 1, 6, 4, 5

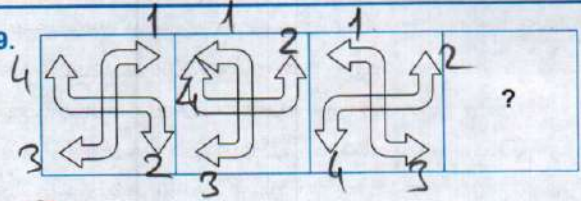
* Halkalara temas eden sıraya göre azalıyor.

58.



- A) B) C)
 D) E)

59.



- A) B) C)
 D) E)

Önce 1-2

Sonra 3-4

Zıt yönlere dönerler

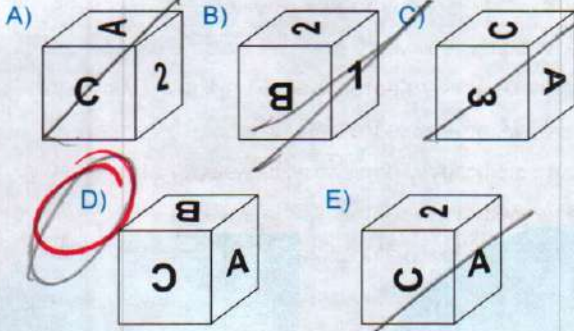
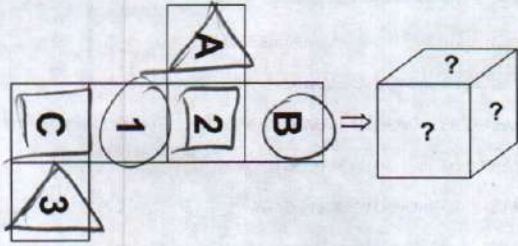
60.



- A) B) C)
 D) E)

Şekildeki anahtarın birde uynası için B şeklindeki kilit seçilmelidir.

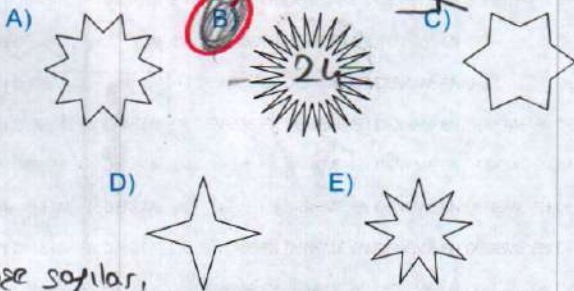
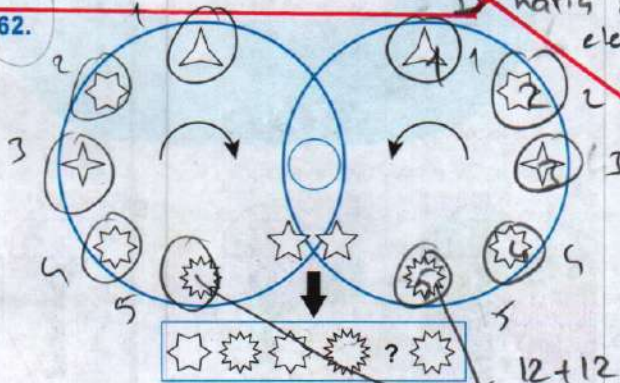
61.



A ↔ 3
C ↔ 2
1 ↔ B

zıt yüzler
yan yana
görünmemeli,
D haris sıklar
elerr.

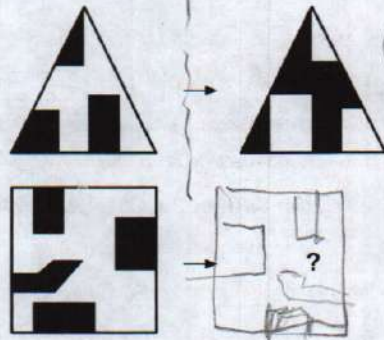
62.



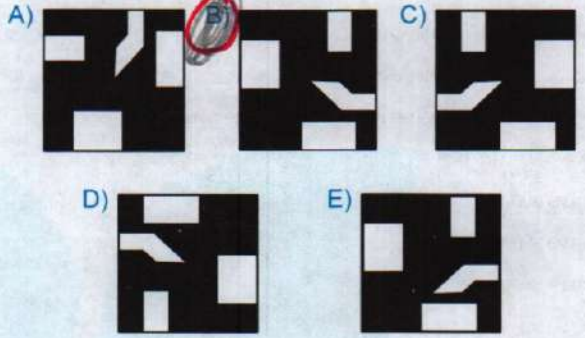
* Köşe sayılar,
toplamı sonucu yazılmış.

5. sıradaki şekli bulmak için artıkları
5'er kez çeviriyoruz ve görülen
şeklin köşesini topluyoruz.

63.



1
2
Renk
değiştir



64.

	12	22	8
18	4	9	5
10	1	7	2
14	7	6	1

Kakuro; Birbirini izleyen be-
yaz hücrelerin oluşturduğu
bloklarda (yatay da ve di-
key de) yazılı sayıların top-
lamı (aralarında sıfır olma-
mak kaydı ile) renkli üçgen-
lerin üzerine yazılır.

	5	a	b
8	b	c	5
3	d	e	1

Bu kurala göre verilen kakuroda $a + c + d - b - e$
işleminin sonucu nedir?

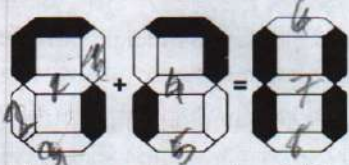
$$6 + 5 + 2 - 3 - 1 = 9$$

Kakuro; The sum of the numbers, written in the
blocks (vertically or horizontally) formed by
successive white cells, is written on the colored
triangles on the condition that there has to be 0
(zero) between each. According to this rule,
what is the result of $a + c + d - b - e$ in the
given Kakuro?





Dijital saat siyah segmentlerin yanması ile 0-9 kadar olan rakamlar elde edilmektedir.

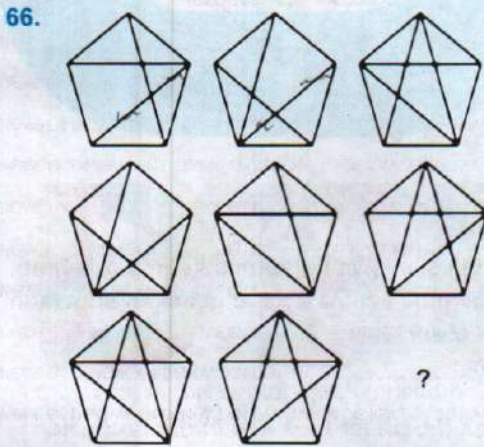


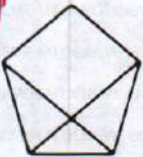

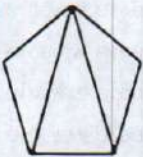
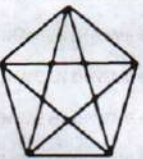
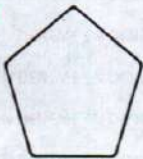
Verilen bu bilgilere göre yukarıdaki matematiksel işlemde eşitliğinin sağlanması için kaç tane segmentin yanması gerekir?

By lighting the black segments of a digital clock, we get numbers from 0 to 9. According to the data given, how many segments needed to be lit to get the mathematical equation above?

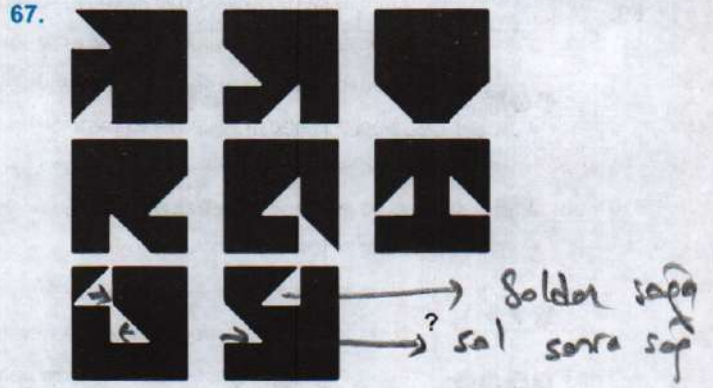
- A) 5 B) 6 C) 7 **D) 8** E) 9






$$\overline{\square} + \overline{\square} = \overline{\square}$$

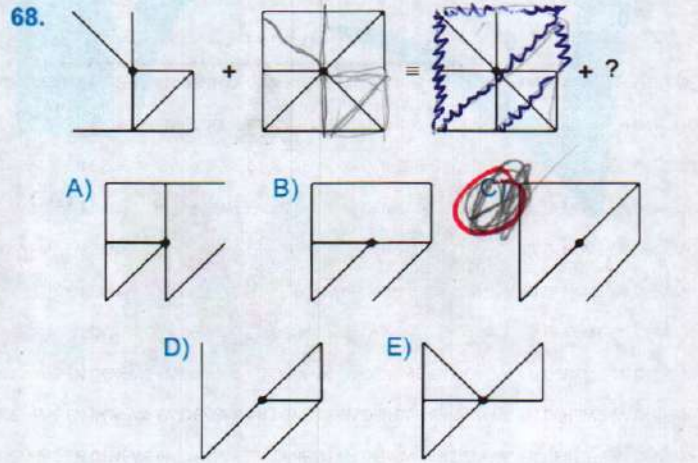


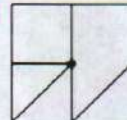
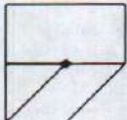

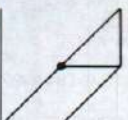
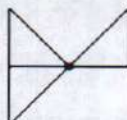
- A)**  B)  C) 
 D)  E) 

Atol çizgiler silmiyor.



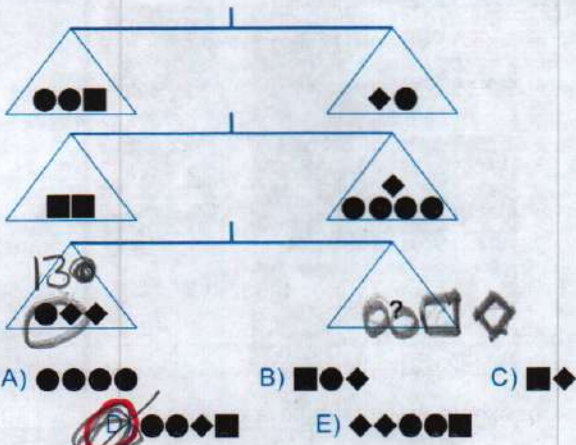
- A)  B)  **C)** 
 D)  E) 



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

iki şekildeki toplanan çizgilerin etkileri III te çizilmi olup sonradan çizilmeli IV'e alınır.

69.

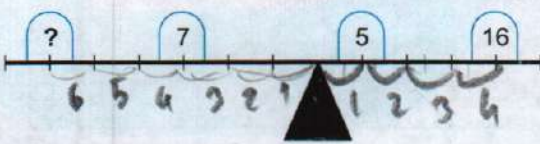


- A) ●●●●● B) ■●●◆ C) ■◆
 D) ●●◆ E) ◆◆●●■

$\square = 5 \bullet$
 $\diamond = 6 \bullet$

$\diamond \circ = \circ \circ \square$

70.



- A) 9 B) 8 C) 14 D) 3 E) 11

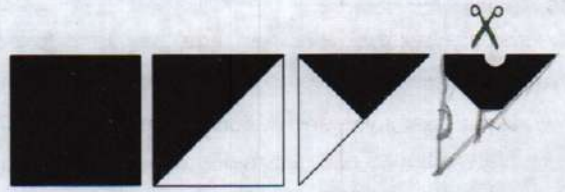
$7 \times 3 = 21$
 $? \times 6 = ?$
 $\hline 69$

$5 \times 1 = 5$
 $16 \times 4 = 64$
 $\hline 69$

$? \times 6 = 48$
 $? = 8$

$? \cdot 6 + 7 \cdot 3 = 1 \cdot 5 + 4 \cdot 16$
 $? = 8$

71.



Şekildeki gibi katlanan kağıt, belirtildiği bölgelerden kesildikten sonra açılıyor.

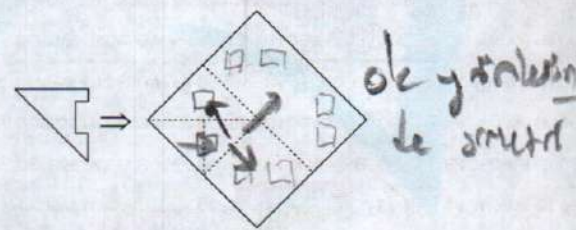
Kağıdın son hali nasıl olur?

As shown in the figure above; After having been folded and cut at where was indicated, some paper is unfolded. What does the paper look like in the end?

- A) B) C)
 D) E)

Şey 2 bölgeye doğru simetri

72.



Şekildeki kesilmiş ve katlanmış kağıt parçasının, belirtildiği gibi açılmasıyla oluşan kağıdın son hali nasıl olur?

After having been cut and folded like in the figure, what does the paper look like in the end when unfolded as indicated?

- A) B) C)
 D) E)

ok yanlısın ke simetri

73.



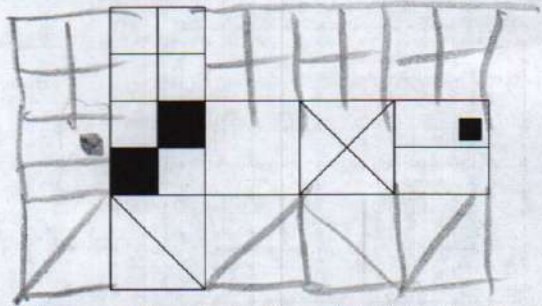
Seklin üç boyutlu olarak tuğlalar ile tamamlanması durumunda kaç tuğlaya ihtiyaç duyulur?

How many bricks do we need when we complete the figure with 3-D bricks?

- A) 15 B) 60 C) 120 D) 165 E) 180

~~YİPTAL~~

75.



Prizmanın kapalı hali aşağıdakilerden hangisidir?

GİTT cevap

What is the closed form of the prism above?

- A) B) C) D) E)

74.

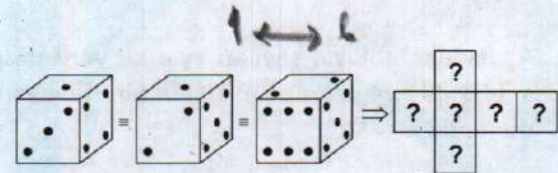


Tangram parçalarının birleştirilmiş hali aşağıdakilerden hangisidir?

What is the combined form of Tangram pieces?

- A) B) C) D) E)

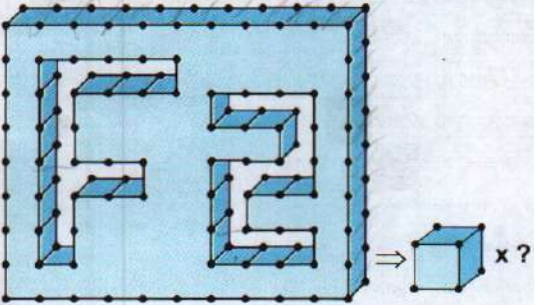
76.



- A) B) C) D) E)

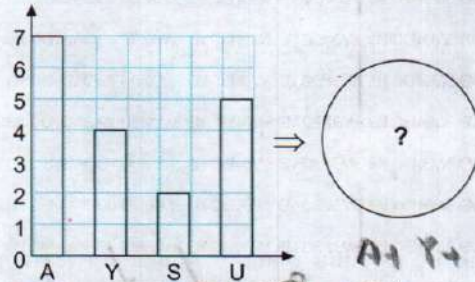
2 ile 5 zıt olmaz

R. 1 ↔ 6 zıt
2 ile 5 te zıt olmaması
gerektiğinden B, C, D, E olur

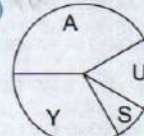
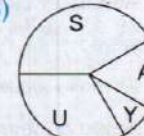
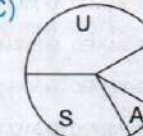
77. 

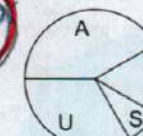
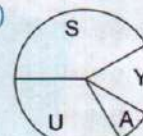
A) 55 B) 56 C) 57 **D) 58** E) 59

80-11-58
 $8 \cdot 10 = 80$
 $80 - 22 = 58$

79. 

$A + Y + S + U = 18x$
 $7x + 4x + 2x + 5x = 36x$
 $6 = 2x$
 $x = 3$

A)  B)  C) 

D)  E) 

$A = 140^\circ$
 $Y = 80^\circ$
 $S = 60^\circ$
 $U = 100^\circ$

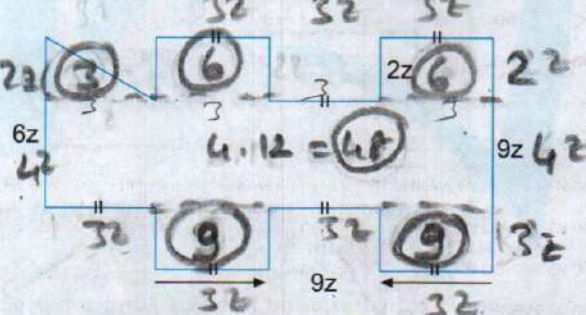
A) U > Y > S

78. Aşağıdaki tabloya, sayıları öyle bir yerleştirin ki satır-sütün ve çapraz toplamları birbirine eşit olduğunda $x = ?$

73	72	x
98	79	60
66	86	85

What is " $x = ?$ " when you put the numbers in the table in such a way that the sums are equal horizontally, vertically and diagonally?

- A) 86 B) 87 C) 88 D) 89 **E) 92**

80. 

Şeklin alanı = $7z^2$

What is the area of the figure in z^2 ?

- A) $81z^2$** B) $82z^2$ C) $83z^2$
 D) $84z^2$ E) $85z^2$

$48 + 9 + 9 + 3 + 6 + 6 = 81z^2$

Cevap 81z^2 yanlıs yazılmış
 Anlatır...

