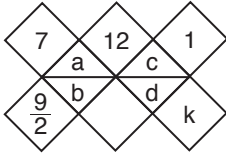


1.



$$a - b = 7,$$

$$\frac{a}{b} = \frac{9}{2}$$

$$a = 9, \quad b = 2,$$

$$k = \frac{3}{2} \text{ bulunur.}$$

$$a + c = 12,$$

$$k = \frac{c}{d}$$

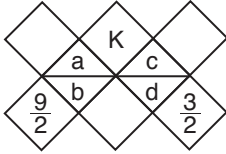
$$c = 3,$$

$$c - d = 1$$

$$d = 2$$

Cevap: C

2.



$$a + c = k$$

$$\frac{a}{b} = \frac{9}{2}$$

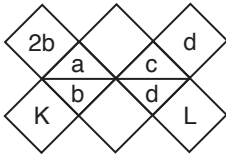
$$\frac{c}{d} = \frac{3}{2}$$

$$a = 9, \quad b = 2, \quad c = 3, \quad d = 2$$

$$k = a + c = 9 + 3 = 12 \text{ bulunur.}$$

Cevap: A

3.



$$K + L = ?$$

$$a - b = 2b,$$

$$c - d = d$$

$$\frac{a}{b} = K,$$

$$\frac{c}{d} = L$$

$$a = 3b$$

$$c = 2d$$

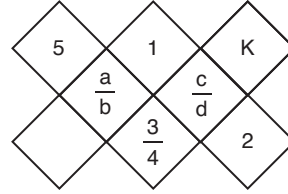
$$K = \frac{a}{b} = \frac{3b}{b} = 3$$

$$L = \frac{c}{d} = \frac{2d}{d} = 2$$

$$K + L = 3 + 2 = 5$$

Cevap: D

4.



$$a + b = 5, \quad \frac{c-a}{4} = 1, \quad \frac{c}{d} = k$$

$$\frac{b}{d} = \frac{3}{4}$$

$$c - d = 2$$

$$b = 3, \quad d = 4, \quad c = 6$$

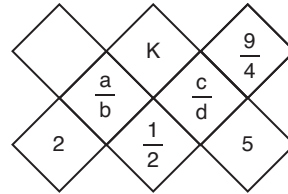
$$c - a = 4 \Rightarrow 6 - a = 4$$

$$2 = a$$

$$k = \frac{c}{d} = \frac{6}{4} = \frac{3}{2}$$

Cevap: B

5.



$$a \cdot b = 2,$$

$$\frac{b}{d} = \frac{1}{2}$$

$$c - d = 5$$

$$\frac{c}{d} = \frac{9}{4}$$

$$\frac{c-a}{4} = k$$

$$c = 9, \quad 4 = 4$$

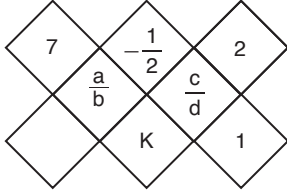
$$\frac{b}{d} = \frac{1}{2} = \frac{2}{4} \Rightarrow b = 2$$

O halde  $a = 1$  olur.

$$K = \frac{c-a}{4} = \frac{9-1}{4} = 2 \text{ bulunur.}$$

Cevap: B

6.



$$a + b = 7, \quad \frac{c-a}{4} = -\frac{1}{2}, \quad \frac{c}{d} = 2, \quad c - d = 1$$

$$\frac{b}{d} = K \quad c - a = -2$$

$$\frac{c}{d} = 2 \Rightarrow c = 2, \quad d = 1$$

$$c - a = -2 \Rightarrow 2 - a = -2$$

$$4 = a \quad \text{ise} \quad a + b = 7$$

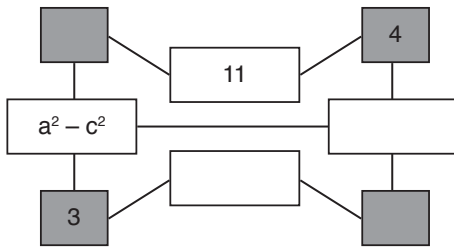
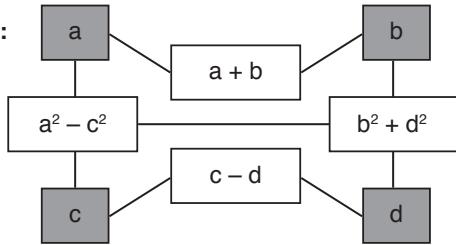
$$4 + b = 7$$

$$b = 3$$

$$K = \frac{b}{d} = \frac{3}{1} = 3$$

Cevap: C

7. Örnek:



$$a^2 - c^2 = ?$$

$$a + b = 11 \quad b = 4, \quad c = 3, \quad a^2 - c^2 = ?$$

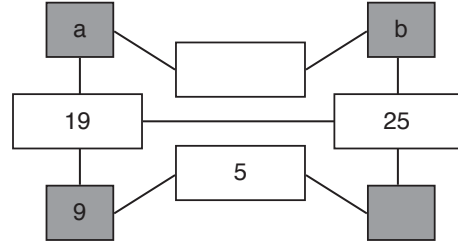
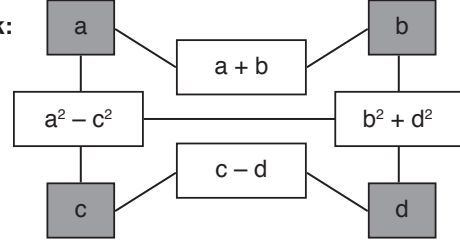
$$a + 4 = 11$$

$$a = 7$$

$$a^2 - c^2 = 7^2 - 3^2 = 49 - 9 = 40$$

Cevap: C

8. Örnek:



$$a, b > 0, \quad a - b = ?$$

$$a^2 - c^2 = 19,$$

$$b^2 + d^2 = 25,$$

$$c - d = 5$$

$$c = 9$$

$$a \cdot b > 0$$

$$a - b = ?$$

$$c - d = 5$$

$$b^2 + 4^2 = 25$$

$$a^2 - 9^2 = 19$$

$$9 - d = 5$$

$$b^2 = 25 - 16 = 9$$

$$a^2 = 19 + 81$$

$$4 = d$$

$$b = 3$$

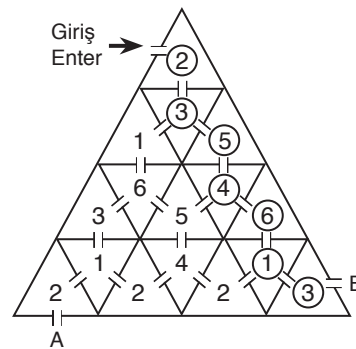
$$a^2 = 100$$

$$a = 10$$

$$a - b = 10 - 3 = 7 \text{ bulunur.}$$

Cevap: D

9.



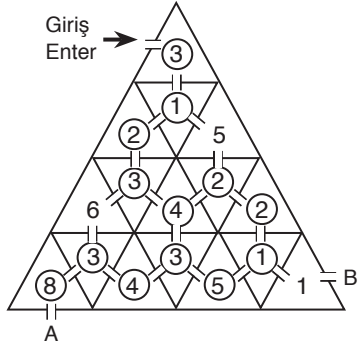
$$\text{Topladığı puanlar } 2 + 3 + 5 + 4 + 6 + 1 + 3 = 24$$

$$\text{giriş çıkış dahil 8 kapı } 8 \cdot 2 = 16 \text{ puan kayıp}$$

$$24 - 16 = 8 \text{ puan toplar}$$

Cevap: E

10.



Geçtiği odalardan topladığı puanlar

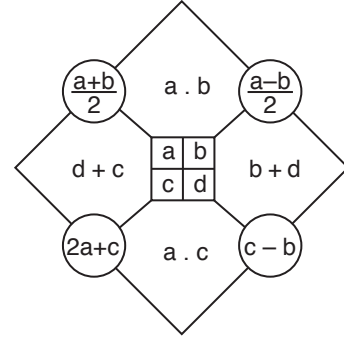
$$8 + 3 + 4 + 3 + 5 + 1 + 2 + 2 + 4 + 3 + 2 + 1 + 3 = 41 \text{ puan}$$

Kapı sayısı 14 adet  $14 \cdot 2 = 28 \text{ puan}$

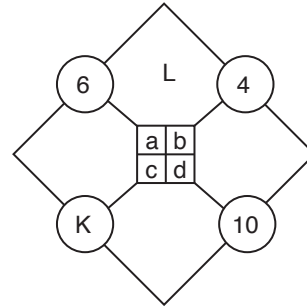
$$41 - 28 = 13 \text{ puan}$$

Cevap: B

Her soru birbirinden bağımsız cevaplanacaktır. (12-14)  
Each question is to be answered independently. (12-14)

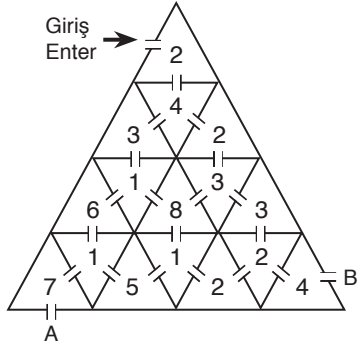


12.



$$\Rightarrow K + L = ?$$

11.



En kısa yoldan A kapısından çıktığında topladığı puan

$$2 + 4 + 3 + 1 + 6 + 1 + 7 = 24 \text{ puan}$$

8 kapı  $8 \cdot 2 = 16 \text{ puan}$

$m = 24 - 16 = 8 \text{ puan toplar}$

B kapısından çıktığında topladığı puanlar

$$2 + 4 + 2 + 3 + 3 + 2 + 4 = 20 \text{ puan}$$

8 kapı  $8 \cdot 2 = 16 \text{ puan}$

$$n = 20 - 16 = 4$$

$$m - n = 8 - 4 = 4$$

Cevap: D

$$\frac{a+b}{2} = 6, \quad a \cdot b = L, \quad \frac{a-b}{2} = 4$$

$$2a + c = k, \quad c - b = 10$$

$$\begin{array}{r} a + b = 12 \\ + \quad a - b = 8 \\ \hline 2a = 20 \\ a = 10 \Rightarrow b = 2 \text{ bulunur.} \end{array}$$

buradan  $c - 2 = 10 \Rightarrow c = 12$  olur.

O halde

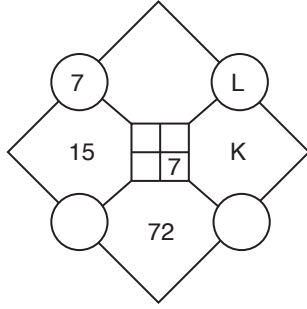
$$L = a \cdot b = 10 \cdot 2 = 20$$

$$K = 2a + c = 2 \cdot 10 + 12 = 20 + 12 = 32$$

$$K + L = 20 + 32 = 52$$

Cevap: B

13.

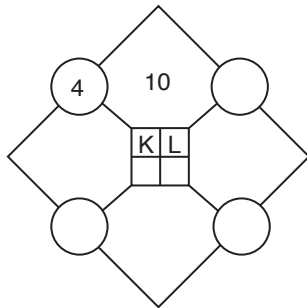


$$\Rightarrow K + L = ?$$

$$\begin{aligned} \frac{a+b}{2} &= 7, & \frac{a-b}{2} &= L, & d &= 7 \\ d+c &= 15 & b+d &= K \\ a \cdot c &= 72 \\ * \quad 7+c &= 15, & a \cdot 8 &= 72 \\ c &= 8 & a &= 9 \\ a+b &= 14, & L &= \frac{a-b}{2} = \frac{9-5}{2} = 2 \\ 9+b &= 14 & K &= b+d = 5+7 = 12 \\ b &= 5 \\ K+L &= 12+2 = 14 \end{aligned}$$

Cevap: D

14.



$$\Rightarrow K^2 + L^2 = ?$$

$$\begin{aligned} \frac{a+b}{2} &= 4, & a \cdot b &= 10 & K &= a, & L &= b \\ (a+b)^2 &= (8)^2 & a \cdot b &= 10 & k^2 &= a^2 & L^2 &= b^2 \\ \downarrow & & & & K^2 + L^2 &= ? \\ a^2 + b^2 + \underline{2ab} &= 64 \\ & 10 \\ K^2 + L^2 &= a^2 + b^2 = 64 - 20 = 44 \end{aligned}$$

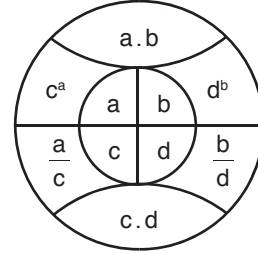
Cevap: C

15. – 17. soruları aşağıdaki şekle göre cevaplayınız.

Answer questions 15 – 17 in accordance with the figure given below.

Her soru birbirinden bağımsız olarak cevaplanacaktır.

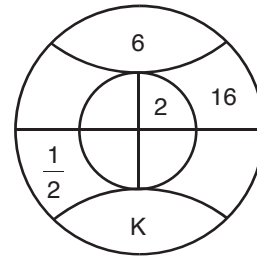
Each question is to be answered independently.



Yukarıdaki şekil a, b, c ve d harfleriyle gösterilen dört pozitif tam sayıyı içeren bazı işlemlere göre düzenlenmiştir. Harflerin gösterdiği sayılar her soruda farklı olabilir fakat, bunlarla yapılacak işlemler her soruda aynıdır.

The figure above has been organized according to various operations using four positive integers represented by the letters, a, b, c and d. The integers represented by the letters may change from question to question, but the operations to be done remain the same.

15.

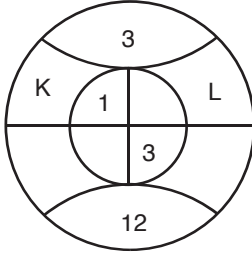


K = ?

$$\begin{aligned} a \cdot b &= 6, & b &= 2, & d^b &= 16, & \frac{a}{c} &= \frac{1}{2} \\ c \cdot d &= K \\ a \cdot 2 &= 6 & d^2 &= 4^2 & \frac{a}{c} &= \frac{1}{2} = \frac{3}{6} \\ a &= 3 & d &= 4 & c &= 6 \\ K &= c \cdot d = 6 \cdot 4 = 24 \end{aligned}$$

Cevap: E

16.



$K + L = ?$

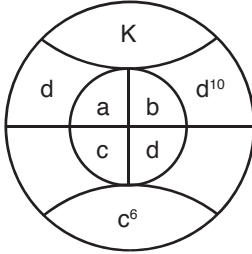
$$\begin{aligned} a \cdot b &= 3, & c^a &= k, \\ c \cdot d &= 12 & d &= 3 \\ 1 \cdot b &= 3 & c \cdot 3 &= 12 \\ b &= 3 & c &= 4 \end{aligned}$$

$K + L = 4 + 27 = 31$

$$\begin{aligned} a &= 1, & L &= d^b \\ K &= c^a = 4^1 = 4 \\ L &= d^b = 3^3 = 27 \end{aligned}$$

Cevap: B

17.



$K = ?$

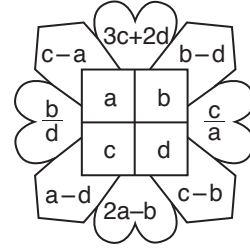
$$\begin{aligned} a \cdot b &= k, & c^a &= d, \\ c^6 &= c \cdot d \\ c^5 &= d \\ c^a &= c^5 \Rightarrow a = 5 \\ K &= 5 \cdot 10 = 50 \text{ bulunur.} \end{aligned}$$

$$\begin{aligned} d^{10} &= d^b \\ b &= 10 \end{aligned}$$

Cevap: C

Her soru birbirinden bağımsız olarak cevaplanacaktır. (18-20)

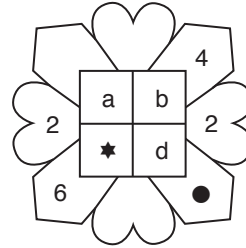
Each question is to be answered independently (18-20)



Yukarıdaki şekil a, b, c ve d harfleriyle gösterilen dört pozitif sayı ve bu sayıları içeren bazı işlemlere göre düzenlenmiştir. Harflerin gösterdiği sayılar her soruda farklı olabilir.

In the figure above, a, b, c ve d stand for four positive integers and various operations concerning these integers are shown. The numerical value of the letters may change from question to question.

18.



$$\Rightarrow \star + \bullet = ?$$

$$b - d = 4, \quad \frac{c}{a} = 2, \quad \frac{b}{d} = 2$$

$$a - d = 6, \quad c = \star, \quad c - b = \bullet$$

$$\star \frac{b}{d} = 2 \Rightarrow b = 2d$$

$$2d - d = 4$$

$$d = 4 \text{ ve } b = 8$$

$$a - 4 = 6 \Rightarrow a = 10$$

$$\frac{c}{a} = 2 \Rightarrow c = 2a = 2 \cdot 10 = 20$$

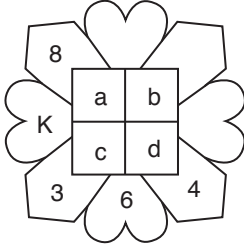
$$\star = c = 20$$

$$\bullet = c - b = 20 - 8 = 12$$

$$\star + \bullet = 20 + 12 = 32$$

Cevap: D

19.



$$\Rightarrow K + a = ?$$

$$c - a = 8, \quad \frac{b}{d} = k, \quad c - b = 4$$

$$2a - b = 6, \quad a - d = 3$$

$$c = 8 + a, \quad 8 + a - b = 4$$

$$a - b = -4$$

$$2a - b = 6$$

$$\begin{array}{r} -1/ \\ a - b = -4 \end{array}$$

$$2a - b = 6$$

$$-a + b = 4$$

$$a = 10 \quad \Rightarrow \quad b = 14 \text{ bulunur.}$$

$$a - d = 3$$

$$10 - d = 3$$

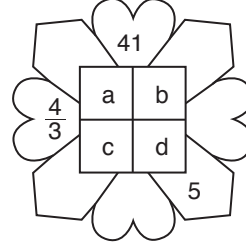
$$7 = d$$

$$K = \frac{b}{d} = \frac{14}{7} = 2$$

$$K + a = 2 + 10 = 12$$

Cevap: E

20.



$$\Rightarrow b + c + d = ?$$

$$3c + 2d = 33, \quad \frac{b}{d} = \frac{4}{3}, \quad c - b = 5$$

$$c = 5 + b$$



$$3(5 + b) + 2d = 41$$

$$15 + 5b + 2d = 41$$

$$15 + 5.4k + 2.3k = 41$$

$$15 + 20k + 6k = 41$$

$$26k = 26$$

$$k = 1$$

$$b = 4, \quad d = 3, \quad c = 5 + 4 = 9$$

$$b + c + d = 4 + 9 + 3 = 16$$

Cevap: C