

$$1. \begin{cases} a.x + 2.y = 7 \\ (a + 2).x + (b - 1).y = 14 \end{cases} \left. \begin{array}{l} \text{denklem sisteminin sonsuz} \\ \text{çözümü var ise;} \end{array} \right\}$$

$$\frac{a}{a+2} = \frac{2}{b-1} = \frac{7}{14} = \frac{1}{2}$$

$$\left. \begin{array}{l} \frac{a}{a+2} = \frac{1}{2} \Rightarrow 2a = a + 2 \Rightarrow \boxed{a=2} \\ \frac{2}{b-1} = \frac{1}{2} \Rightarrow b - 1 = 4 \Rightarrow \boxed{b=5} \end{array} \right\} \Rightarrow a.b = 2.5 = \boxed{10}$$

Cevap: D

$$2. \frac{2}{x} + \frac{x}{x+1} + \frac{x-2}{x} = \frac{5}{4}$$

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

$$\Rightarrow \frac{x}{x+1} = \frac{1}{4}$$

$$\Rightarrow 4x = x + 1$$

$$\Rightarrow 3x = 1 \Rightarrow \boxed{x = \frac{1}{3}}$$

Cevap: B

$$3. \begin{cases} \frac{1}{x} - 3 = y \Rightarrow \frac{1-3x}{x} = y \Rightarrow 1-3x = x.y \\ \frac{1}{y} - 5 = x \Rightarrow \frac{1-5y}{y} = x \Rightarrow 1-5y = x.y \end{cases} \Rightarrow$$

$$\Rightarrow x - 3x = x - 5y \Rightarrow 3x = 5y \Rightarrow x = 5k, y = 3k$$

$$\Rightarrow \frac{x+y}{x-y} = \frac{5k+3k}{5k-3k} = \frac{8k}{2k} = \boxed{4}$$

Cevap: D

$$4. \begin{cases} b - a = 4 \\ y + x + b = 51 \\ c + y = 51 \\ a + x + 23 = 51 \end{cases} \Rightarrow c = ?$$

$$\left. \begin{array}{l} y + x + b = c + y \Rightarrow -1/x + b = c \\ a + x + 23 = 51 \Rightarrow x + a = 28 \end{array} \right\} \Rightarrow \begin{array}{l} -x - b = -c \\ + x + a = 28 \\ \hline a - b = 28 - c \end{array}$$

$$b - a = 4 \Rightarrow a - b = -4 = 28 - c \Rightarrow \boxed{c = 32}$$

Cevap: D

$$5. \begin{cases} 2\sqrt{x} + 3\sqrt{y} = 16 \\ 4x - 9y = 64 \end{cases} \Rightarrow x.y = ?$$

$$4x - 9y = (2\sqrt{x} - 3\sqrt{y}).\underbrace{(2\sqrt{x} + 3\sqrt{y})}_{16} = 64 \quad (\text{iki kare farkı})$$

$$\Rightarrow \begin{array}{l} 2\sqrt{x} - 3\sqrt{y} = 4 \\ + 2\sqrt{x} + 3\sqrt{y} = 16 \end{array}$$

$$4\sqrt{x} = 20 \Rightarrow \sqrt{x} = 5 \Rightarrow \boxed{x = 25}$$

$$2\sqrt{x} - 3\sqrt{y} = 4 \Rightarrow 2.5 - 3\sqrt{y} = 4 \Rightarrow 3\sqrt{y} = 6$$

$$\Rightarrow \sqrt{y} = 2$$

$$\boxed{y = 4}$$

$$\Rightarrow x.y = 25.4 = \boxed{100}$$

Cevap: A

$$\left. \begin{array}{l} 2a + b - c = -7 \\ a + b - 2c = -6 \\ 3a - 2b + c = -9 \end{array} \right\} \Rightarrow a = ?$$

$$\begin{array}{r} 2a + b - c = -7 \\ + 3a - 2b + c = -9 \\ \hline 5a - b = -16 \end{array} \qquad \begin{array}{r} a + b - 2c = -6 \\ 2/ 3a - 2b + c = -9 \\ \hline -8a + 3c = -24 \end{array}$$

$$\begin{array}{r} a + b - 2c = -6 \\ + 6a - 4b + 2c = -18 \\ \hline 7a - 3b = -24 \end{array}$$

$$\Rightarrow \left. \begin{array}{l} -3/ 5a - b = -16 \\ 7a - 3b = -24 \end{array} \right\} \Rightarrow \begin{array}{r} -15a + 3b = 48 \\ + 7a - 3b = -24 \\ \hline -8a = 24 \\ \hline a = -3 \end{array}$$

Cevap: A

$$\left. \begin{array}{l} x - 2y = -1 \\ 2/ 2x + y = 3 \end{array} \right\} \Rightarrow \begin{array}{r} x - 2y = -1 \\ + 4x + 2y = 6 \\ \hline 5x = 5 \Rightarrow x = 1 \end{array}$$

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

$$\Rightarrow \frac{2x^2 - 3xy - 4y^2}{\frac{x}{3} + \frac{y}{2}} = \frac{2 \cdot 1^2 - 3 \cdot 1 \cdot 1 - 4 \cdot 1^2}{\frac{1}{3} + \frac{1}{2}} = \frac{2 - 3 - 4}{\frac{2}{6} + \frac{3}{6}} = \frac{-5}{\frac{5}{6}} = -5 \cdot \frac{6}{5} = -6$$

Cevap: D

8. $x, y \in \mathbb{Z}^+$

$$\left(\frac{1}{x-5} \right) + \left(\frac{1}{12-2y} \right) = 1 \Rightarrow x + y = ?$$

$$\downarrow \qquad \qquad \downarrow$$

$$\left(\frac{1}{2} \right) + \left(\frac{1}{2} \right) = 1$$

$$\Rightarrow \frac{1}{x-5} = \frac{1}{2} \Rightarrow x-5=2 \Rightarrow x=7$$

$$\frac{1}{12-2y} = \frac{1}{2} \Rightarrow 12-2y=2 \Rightarrow 2y=10 \Rightarrow y=5$$

$$\Rightarrow x + y = 7 + 5 = 12$$

Cevap: E

9. $a, b, c \in \mathbb{R}$

$$\left. \begin{array}{l} a + 2b - 3c = 10 \\ 3a + 6b + c = 20 \\ + a - 3b + 7c = 10 \end{array} \right\} \Rightarrow a + b + c = ?$$

$$\begin{array}{r} a + 2b - 3c = 10 \\ 3a + 6b + c = 20 \\ + a - 3b + 7c = 10 \\ \hline 5a + 5b + 5c = 40 \end{array} \Rightarrow 5(a + b + c) = 40$$

$$\Rightarrow a + b + c = 8$$

Cevap: E

10. $x, y \in \mathbb{R}$,

$$(x + y - 15)^2 + (x - y - 3)^2 = 0 \Rightarrow \frac{x}{y} = ?$$

$$x + y - 15 = 0 \Rightarrow x + y = 15$$

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

$$2x = 18$$

$$x = 9 \Rightarrow x + y = 15$$

$$9 + y = 15 \Rightarrow y = 6$$

$$\Rightarrow \frac{x}{y} = \frac{9}{6} = \frac{3}{2}$$

Cevap: E

11. $x, y \in \mathbb{Z}$

$$2x^3 - 5xy^2 = 4a \rightarrow x \cdot \frac{2x^2 - 5y^2}{x} = \frac{4a}{x}$$

$$5y^3 - 2x^2y = 9a \rightarrow y \cdot \frac{5y^2 - 2x^2}{y} = \frac{9a}{y}$$

$$\Rightarrow \frac{-x}{y} = \frac{4}{9} \Rightarrow \boxed{x = -4k}, \boxed{y = 9k}$$

$$\Rightarrow \frac{4x - y}{-4y + x} = \frac{-16k - 9k}{-36k - 4k} = \frac{-25k}{-40k} = \frac{5}{8}$$

Cevap: C

$$12. \left. \begin{aligned} x - \frac{3}{y} = 4 &\Rightarrow \frac{xy - 3}{y} = 4 \Rightarrow xy - 3 = 4y \\ y - \frac{3}{x} = 6 &\Rightarrow \frac{xy - 3}{x} = 6 \Rightarrow xy - 3 = 6x \end{aligned} \right\} \Rightarrow$$

$$\Rightarrow 4y = 6x \Rightarrow \begin{array}{l} 2y = 3x \\ \downarrow \quad \downarrow \\ 3k \quad 2k \end{array}$$

$$\Rightarrow \frac{x}{y} + \frac{y}{x} = \frac{2}{3} + \frac{3}{2} = \boxed{\frac{13}{6}}$$

Cevap: C

$$13. \frac{x+9}{x-2} - \frac{2x}{x+1} = 5 - \frac{11}{2-x} = 5 + \frac{11}{x-2}$$

$$\Rightarrow \frac{x+9}{x-2} - \frac{11}{x-2} - \frac{2x}{x+1} = 5$$

$$\Rightarrow \frac{x-2}{x-2} - \frac{2x}{x+1} = 5$$

$$\Rightarrow 1 - \frac{2x}{x+1} = 5$$

$$\Rightarrow \frac{2x}{x+1} = -4 \Rightarrow 2x = -4x - 4$$

$$\Rightarrow 6x = -4$$

$$\Rightarrow x = -\frac{4}{6} = \boxed{-\frac{2}{3}}$$

Cevap: A

14. $x, y \in \mathbb{Z}$

$$x\sqrt{5} + y\sqrt{5} = 3x - 2y + 20 \Rightarrow x = ?$$

$$\left. \begin{aligned} x\sqrt{5} + y\sqrt{5} &= 0 \\ 3x - 2y + 20 &= 0 \end{aligned} \right\} \Rightarrow \text{için verilen eşitlik sağlanır.}$$

$$\Rightarrow \left. \begin{aligned} 2/ \sqrt{5}x + \sqrt{5}y &= 0 \\ \sqrt{5}/ 3x - 2y &= -20 \end{aligned} \right\} \Rightarrow \begin{array}{l} 2\sqrt{5}x + 2\sqrt{5}y = 0 \\ + 3\sqrt{5}x - 2\sqrt{5}y = -20\sqrt{5} \\ \hline 5\sqrt{5}x = -20\sqrt{5} \\ \boxed{x = -4} \end{array}$$

Cevap: D

$$15. \left. \begin{aligned} x + y - z &= 0 \\ 3x - y + z &= 4 \\ 2x + 2y - z &= 9 \end{aligned} \right\} \Rightarrow \begin{array}{l} x + y - z = 0 \\ + 3x - y + z = 4 \\ \hline 4x = 4 \Rightarrow \boxed{x = 1} \end{array}$$

$$3x - y + z = 4 \Rightarrow 3 - y + z = 4 \Rightarrow -y + z = 1$$

$$2x + 2y - z = 9 \Rightarrow 2 + 2y - z = 9 \Rightarrow + 2y - z = 7$$

$$\boxed{y = 8}$$

Cevap: B

$$16. \left. \begin{aligned} x - y + 2z &= 2 \\ x - y + z &= 2 \\ x + y - z &= 0 \end{aligned} \right\} \Rightarrow \begin{array}{l} x - y + z = 2 \\ + x + y - z = 0 \\ \hline 2x = 2 \Rightarrow \boxed{x = 1} \end{array}$$

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

$$x - y + z = 2 \Rightarrow 1 - y + z = 2 \Rightarrow -2/ -y + z = 1$$

$$-y + 2z = 1$$

$$+ 2y - 2z = -2$$

$$\boxed{y = -1}$$

Cevap: E

$$17. \frac{x}{z+5} = \frac{y}{x+1} = \frac{z}{y-2} = \frac{3}{5} \Rightarrow x+y+z=?$$

$$\frac{x}{z+5} = \frac{3}{5} \Rightarrow 5x = 3z + 15 \Rightarrow 5x - 3z = 15$$

$$\frac{y}{x+1} = \frac{3}{5} \Rightarrow 5y = 3x + 3 \Rightarrow 5y - 3x = 3$$

$$\frac{z}{y-2} = \frac{3}{5} \Rightarrow 5z = 3y - 6 \Rightarrow + \underline{5z - 3y = -6}$$

$$2x + 2y + 2z = 12$$

$$2.(x + y + z) = 12$$

$$\boxed{x + y + z = 6}$$

Cevap: A

$$18. 3 - \frac{5}{3-x} = x + \frac{1}{x-3} \Rightarrow 3 + \frac{5}{x-3} = x + \frac{1}{x-3}$$

$$\Rightarrow \frac{5}{x-3} - \frac{1}{x-3} = x - 3$$

$$\Rightarrow \frac{4}{x-3} = x - 3$$

$$\Rightarrow (x-3)^2 = 4$$

$$\Rightarrow x-3=2 \rightarrow \boxed{x=5} \rightarrow \text{D şıkkı}$$

$$x-3=-2 \rightarrow \boxed{x=1} \rightarrow \text{Şıklarda yok}$$

Cevap: D

$$19. x + y + z = 4 \Rightarrow y + z = 4 - x$$

$$xy + xz = 4 \Rightarrow x.(y + z) = 4$$

$$\Rightarrow x.(4 - x) = 4$$

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

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

$$\Rightarrow (x-2)^2 = 0$$

$$\Rightarrow x-2=0 \Rightarrow \boxed{x=2}$$

Cevap: D

$$20. \left. \begin{array}{l} x - y + z = 2 \\ 3x - y + 2z = 10 \\ 2x - 6y + z = 5 \end{array} \right\} x + y + z = ?$$

$$\left. \begin{array}{l} x - y + z = 2 \\ + 2x - 6y + z = 5 \\ \hline 3x - 7y + 2z = 7 \end{array} \right\} \Rightarrow \begin{array}{r} 3x - y + 2z = 10 \\ -1/ \quad 3x - 7y + 2z = 7 \\ \hline \quad \quad 3x - y + 2z = 10 \\ + \quad -3x + 7y - 2z = -7 \\ \hline \quad \quad \quad \quad 6y = 3 \end{array}$$

$$\boxed{y = \frac{1}{2}}$$

$$x - y + z = 2 \Rightarrow x + z = 2 + \frac{1}{2} = \left(\frac{5}{2}\right)$$

$$\Rightarrow x + y + z = \frac{5}{2} + \frac{1}{2} = \frac{6}{2} = \boxed{3}$$

Cevap: C