

સ્વાધ્યાય 2.3

નીચેના સમીકરણોનો ઉકેલ મેળવો અને જવાબ ચકાસો :

1. $3x = 2x + 18$

જ. $3x = 2x + 18$

$$\Rightarrow 3x - 2x = 18$$

$$\Rightarrow x = 18$$

તાળો :

$$3x = 2x + 18$$

$$\Rightarrow 3 \times 18 = 2 \times 18 + 18$$

$$\Rightarrow 54 = 36 + 18$$

$$\Rightarrow 54 = 36 + 18$$

$$\Rightarrow \text{ડા.બા.} = \text{જ. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

2. $5t - 3 = 3t - 5$

$$5t - 3 = 3t - 5$$

$$\Rightarrow 5t - 3t = -5 + 3$$

$$\Rightarrow 2t = -2$$

$$\Rightarrow t = -1$$

તાળો :

$$5t - 3 = 3t - 5$$

$$\Rightarrow 5 \times (-1) - 3 = 3 \times (-1) - 5$$

$$\Rightarrow -5 - 3 = -3 - 5$$

$$\Rightarrow -8 = -8$$

$$\Rightarrow \text{ડા.બા.} = \text{જ. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

3. $5x + 9 = 5 + 3x$

$$5x + 9 = 5 + 3x$$

$$\Rightarrow 5x - 3x = 5 - 9$$

$$\Rightarrow 2x = -4$$

$$\Rightarrow x = -2$$

તલબો :

$$5x + 9 = 5 + 3x$$

$$\Rightarrow 5 \times (-2) + 9 = 5 + 3 \times (-2)$$

$$\Rightarrow -10 + 9 = 5 - 6$$

$$\Rightarrow -1 = -1$$

$$\Rightarrow \text{ડા.બા.} = \text{જા. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

4. $4z + 3 = 6 + 2z$

$$4z + 3 = 6 + 2z$$

$$\Rightarrow 4z - 2z = 6 - 3$$

$$\Rightarrow 2z = 3$$

$$\Rightarrow z = \frac{3}{2}$$

તલબો :

$$4z + 3 = 6 + 2z$$

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

$$\Rightarrow 2 \times 3 + 3 = 6 + 3$$

$$\Rightarrow 6 + 3 = 9$$

$$\Rightarrow 9 = 9$$

$$\Rightarrow \text{ડા.બા.} = \text{જા. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

5. $2x - 1 = 14 - x$

$$2x - 1 = 14 - x$$

$$\Rightarrow 2x + x = 14 + 1$$

$$\Rightarrow 3x = 15$$

$$\Rightarrow x = 5$$

તાળો :

$$2x-1=14-x$$

$$\Rightarrow 2 \times 5 - 1 = 14 - 5$$

$$\Rightarrow 10 - 1 = 9$$

$$\Rightarrow 9 = 9$$

$$\Rightarrow \text{ડા.બી.} = \text{જ. બી.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

6. $8x+4=3(x-1)+7$

$$8x+4=3(x-1)+7$$

$$\Rightarrow 8x+4=3x-3+7$$

$$\Rightarrow 8x+4=3x+4$$

$$\Rightarrow 8x-3x=4-4$$

$$\Rightarrow 5x=0$$

$$\Rightarrow x=0$$

તાળો :

$$8x+4=3(x-1)+7$$

$$\Rightarrow 8 \times 0 + 4 = 3(0-1) + 7$$

$$\Rightarrow 4 = 3(-1) + 7$$

$$\Rightarrow 4 = -3 + 7$$

$$\Rightarrow 4 = 4$$

$$\Rightarrow \text{ડા.બી.} = \text{જ. બી.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

7. $x = \frac{4}{5}(x+10)$

$$x = \frac{4}{5}(x+10)$$

$$\Rightarrow 5x = 4(x+10)$$

$$\Rightarrow 5x = 4x + 40$$

$$\Rightarrow 5x - 4x = 40$$

$$\Rightarrow x = 40$$

તપાસ :

$$x = \frac{4}{5}(x+10)$$

$$\Rightarrow 40 = \frac{4}{5}(40+10)$$

$$\Rightarrow 40 = \frac{4}{5} \times 50$$

$$\Rightarrow 40 = 4 \times 10$$

$$\Rightarrow 40 = 40$$

$$\Rightarrow \text{ડા.બા.} = \text{જ. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

$$8. \quad \frac{2x}{3} + 1 = \frac{7x}{15} + 3$$

$$\frac{2x}{3} + 1 = \frac{7x}{15} + 3$$

$$\Rightarrow \frac{2x}{3} - \frac{7x}{15} = 3 - 1$$

$$\Rightarrow \frac{10x - 7x}{15} = 2$$

$$\Rightarrow 3x = 30$$

$$\Rightarrow x = 10$$

તપાસ :

$$\frac{2x}{3} + 1 = \frac{7x}{15} + 3$$

$$\Rightarrow \frac{2 \times 10}{3} + 1 = \frac{7 \times 10}{15} + 3$$

$$\Rightarrow \frac{20}{3} + 1 = \frac{14}{3} + 3$$

$$\Rightarrow \frac{20+3}{3} = \frac{14+9}{3}$$

$$\Rightarrow \frac{23}{3} = \frac{23}{3}$$

$$\Rightarrow \text{ડા.બા.} = \text{જ. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.

$$\begin{aligned} 9. \quad 2y + \frac{5}{3} &= \frac{26}{3} - y \\ 2y + \frac{5}{3} &= \frac{26}{3} - y \\ \Rightarrow 2y + y &= \frac{26}{3} - \frac{5}{3} \\ \Rightarrow 3y &= \frac{26-5}{3} \\ \Rightarrow 3y &= \frac{21}{3} \\ \Rightarrow 3y &= 7 \\ \Rightarrow y &= \frac{7}{3} \end{aligned}$$

તાળો :

$$\begin{aligned} 2y + \frac{5}{3} &= \frac{26}{3} - y \\ \Rightarrow 2 \times \frac{7}{3} + \frac{5}{3} &= \frac{26}{3} - \frac{7}{3} \\ \Rightarrow \frac{14}{3} + \frac{5}{3} &= \frac{26}{3} - \frac{7}{3} \\ \Rightarrow \frac{14+5}{3} &= \frac{26-7}{3} \\ \Rightarrow \frac{19}{3} &= \frac{19}{3} \end{aligned}$$

$\Rightarrow$ ડા.બી. = જા. બી.

તેથી, આપેલું સમીકરણ સાચું છે.

$$\begin{aligned} 10. \quad 3m &= 5m - \frac{8}{5} \\ 3m &= 5m - \frac{8}{5} \\ \Rightarrow 3m - 5m &= -\frac{8}{5} \\ \Rightarrow -2m &= -\frac{8}{5} \end{aligned}$$

$$\Rightarrow m = \frac{-8}{5 \times (-2)}$$

$$\Rightarrow m = \frac{4}{5}$$

તાબે :

$$3m = 5m - \frac{8}{5}$$

$$\Rightarrow 3 \times \frac{4}{5} = 5 \times \frac{4}{5} - \frac{8}{5}$$

$$\Rightarrow \frac{12}{5} = 4 - \frac{8}{5}$$

$$\Rightarrow \frac{12}{5} = \frac{20}{5} - \frac{8}{5}$$

$$\Rightarrow \frac{12}{5} = \frac{20-8}{5}$$

$$\Rightarrow \frac{12}{5} = \frac{12}{5}$$

$$\Rightarrow \text{ડા.બા.} = \text{જ. બા.}$$

તેથી, આપેલું સમીકરણ સાચું છે.