

Exercise - 14A

Solve the equations:-

1. $5(z+4) = 35$

$\Rightarrow 5z + 20 = 35$

$\Rightarrow 5z = 35 - 20$

$\Rightarrow z = \frac{15}{5}$

$\Rightarrow z = 3.$

② $2(y - \frac{5}{2}) = 3.$

$\Rightarrow 2y - 5 = 3$

$\Rightarrow 2y = 5 + 3$

$\Rightarrow 2y = 8$

$\Rightarrow y = \frac{8}{2}$

$\Rightarrow y = 4.$

③ $\frac{5}{8}x - 6 = 9$

$\Rightarrow \frac{5x}{8} = 9 + 6$

$\Rightarrow \frac{5x}{8} = 15$

$\Rightarrow x = \frac{15 \times 8}{5}$

$\Rightarrow x = 24.$

④ $3x - \frac{5}{3} = x - 3$

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

$\Rightarrow 2x = \frac{5-9}{3}$

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

$\Rightarrow x = -\frac{2}{3}.$

⑤ $0.6x - 1.9 = 0.2x + 0.5$

$\Rightarrow 0.6x - 0.2x = 0.5 + 1.9$

$\Rightarrow 0.4x = 2.4$

$\Rightarrow x = \frac{2.4}{.4}$

$\Rightarrow x = 6$

⑥ $2(3y-2) - 4(2y-5) = 9$

$\Rightarrow 6y - 4 - 8y + 20 = 9$

$\Rightarrow 6y - 8y = 9 + 4 - 20$

$\Rightarrow -2y = -7$

$\Rightarrow y = \frac{7}{2}.$

check:-

LHS = $0.6x - 1.9$

$= 0.6 \times 6 - 1.9$

$= 3.6 - 1.9$

$= 1.7$

RHS = $0.2x + 0.5$

$= 0.2 \times 6 + 0.5$

$= 1.2 + 0.5$

$= 1.7$

$\therefore \text{LHS} = \text{RHS}$

Hence checked.

check

LHS = $2(3y-2) - 4(2y-5)$

$= 2 \{ 3 \times \frac{7}{2} - 2 \} - 4 \{ 2 \times \frac{7}{2} - 5 \}$

$= 2 \times (\frac{21}{2} - 2) - 4(7 - 5)$

$= 2 \times \frac{17}{2} - 8$

$= \frac{34}{2} - 8$

$= \frac{34-16}{2} = \frac{18}{2} = 9$

$= \text{RHS}$

Hence checked.

⑦

$$5(3-x) + 1 = 3(x+4)$$

$$\Rightarrow 15 - 5x + 1 = 3x + 12$$

$$\Rightarrow -5x - 3x = 12 - 15 - 1$$

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

$$\Rightarrow x = \frac{4}{8}$$

$$\Rightarrow x = \frac{1}{2}$$

$$⑧ \quad 7 - 2(5 - 3x) = 4(x - 3) + 5$$

$$\Rightarrow 7 - 10 + 6x = 4x - 12 + 5$$

$$\Rightarrow 6x - 4x = -12 + 5 + 10 - 7$$

$$\Rightarrow 2x = -4$$

$$\Rightarrow x = -2$$

$$⑨ \quad 6(3x+2) - 5(6x-1) = 3(x-8) - 5(7x+6) + 9x$$

$$\Rightarrow 18x + 12 - 30x + 5 = 3x - 24 - 35x + 30 + 9x$$

$$\Rightarrow 18x - 30x - 3x + 35x - 9x = -24 + 30 - 12 - 5$$

$$\Rightarrow 53x - 42x = 30 - 41$$

$$\Rightarrow 11x = -11 \Rightarrow x = -1$$

$$⑩ \quad p - (2p+5) - 5(1-2p) = 2(3+4p) - 3(p-4)$$

$$\Rightarrow p - 2p - 5 - 5 + 10p = 6 + 8p - 3p + 12$$

$$\Rightarrow p - 2p + 10p - 8p + 3p = 6 + 12 + 5 + 5$$

$$\Rightarrow 14p - 10p = 28$$

$$\Rightarrow 4p = 28$$

$$\Rightarrow p = 7$$

check :-

$$\text{LHS} = /$$

$$p - (2p+5) - 5(1-2p)$$

$$= 7 - (2 \times 7 + 5) - 5(1 - 2 \times 7)$$

$$= 7 - 19 + 5 \times 13$$

$$= -12 + 65$$

$$= 53$$

$$\text{RHS} =$$

$$2(3+4p) - 3(p-4)$$

$$= 2(3+4 \times 7) - 3(7-4)$$

$$= 2 \times 31 - 9$$

$$= 62 - 9$$

$$= 53$$

$\therefore \text{LHS} = \text{RHS}$

Hence checked.

$$(11) \frac{2x+3}{3+x} = \frac{3}{2}$$

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

$$\Rightarrow 4x+6 = 9+3x$$

$$\Rightarrow 4x-3x = 9-6$$

$$\Rightarrow x = 3$$

$$(12) \frac{x}{3} + \frac{x}{4} = 14$$

$$\Rightarrow \frac{4x+3x}{12} = 14$$

$$\Rightarrow 7x = 168$$

$$\Rightarrow x = 24$$

$$(13) \frac{2x}{3} + 4x = 42$$

$$\Rightarrow \frac{2x+12x}{3} = 42$$

$$\Rightarrow 14x = 42 \times 3$$

$$\Rightarrow x = \frac{42 \times 3}{14}$$

$$\Rightarrow x = 9$$

$$(14) x - 24\% \text{ of } x = 38$$

$$\Rightarrow x - \frac{24x}{100} = 38$$

$$\Rightarrow \frac{100x - 24x}{100} = 38$$

$$\Rightarrow 76x = 3800$$

$$\Rightarrow x = \frac{3800}{76} = 50$$

$$\Rightarrow x = 50$$

check

$$\text{LHS} = x - 24\% \text{ of } x$$

$$= 50 - \frac{24}{100} \times 50$$

$$= 50 - 12$$

$$= 38 = \text{RHS}$$

Hence checked.

$$(15) \frac{x+5}{2} + \frac{x}{3} = 20$$

$$\Rightarrow \frac{3(x+5) + 2x}{6} = 20$$

$$\Rightarrow 3x+15+2x = 120$$

$$\Rightarrow 5x = 105$$

$$\Rightarrow x = 21$$

check :-

$$\text{LHS} = \frac{x+5}{2} + \frac{x}{3}$$

$$= \frac{21+5}{2} + \frac{21}{3}$$

$$= 13 + 7$$

$$= 20 = \text{RHS}$$

Hence checked.

$$(17) \frac{2x+3}{3} - \frac{3x-2}{4} = 1$$

$$\Rightarrow \frac{4(2x+3) - 3(3x-2)}{12} = 1$$

$$\Rightarrow 8x+12-9x+6 = 12$$

$$\Rightarrow 8x-9x = 12-12-6$$

$$\Rightarrow -x = -6 \Rightarrow x = 6$$

$$(18) \frac{3y-2}{7} - \frac{5y-8}{4} = \frac{1}{14}$$

$$\Rightarrow \frac{4(3y-2) - 7(5y-8)}{28} = \frac{1}{14}$$

$$\Rightarrow 12y-8-35y+56 = \frac{28}{14} \cdot 2$$

$$\Rightarrow 12y-35y = 2+8-56$$

$$\Rightarrow -23y = -46$$

$$\Rightarrow y = 2$$

$$(19) \frac{x-2}{3} + \frac{x-3}{4} = \frac{x-1}{2}$$

$$\Rightarrow \frac{4(x-2) + 3(x-3)}{12} = \frac{x-1}{2}$$

$$\Rightarrow \frac{4x-8+3x-9}{12} = \frac{x-1}{2}$$

$$\Rightarrow \frac{7x-17}{12} = \frac{x-1}{2}$$

$$\Rightarrow 2(7x-17) = 12(x-1)$$

$$\Rightarrow 14x-34 = 12x-12$$

$$\Rightarrow 2x = 22 \Rightarrow x = 11$$

check

$$\text{LHS: } \frac{x-2}{3} + \frac{x-3}{4}$$

$$= \frac{11-2}{3} + \frac{11-3}{4}$$

$$= \frac{9}{3} + \frac{8}{4}$$

$$= 3 + 2$$

$$= 5$$

$$\text{RHS} = \frac{x-1}{2}$$

$$= \frac{11-1}{2}$$

$$= \frac{10}{2}$$

$$= 5$$

\therefore LHS = RHS
Hence checked.

$$(20) \quad \frac{x-4}{7} - \frac{x+4}{5} = \frac{x+3}{7}$$

$$\Rightarrow \frac{5(x-4) - 7(x+4)}{35} = \frac{x+3}{7}$$

$$\Rightarrow \frac{5x-20-7x-28}{35} = \frac{x+3}{7}$$

$$\Rightarrow \frac{-2x-48}{35} = \frac{x+3}{7}$$

$$\Rightarrow 7(-2x-48) = 35(x+3)$$

$$\Rightarrow -14x - 336 = 35x + 105$$

$$\Rightarrow -14x - 35x = 336 + 105$$

$$\Rightarrow -49x = 441$$

$$\Rightarrow x = -\frac{441}{49} \Rightarrow x = -9$$

Check:- L.H.S = $\frac{x-4}{7} - \frac{x+4}{5}$

$$= \frac{-9-4}{7} - \frac{-9+4}{5}$$

$$= \frac{-13}{7} - \frac{-5}{5}$$

$$= \frac{-65+35}{35} = \frac{-30}{35} = \frac{-6}{7}$$

$$\text{R.H.S} = \frac{x+3}{7}$$

$$= \frac{-9+3}{7}$$

$$= \frac{-6}{7}$$

\therefore L.H.S = R.H.S. Hence Checked.

$$\textcircled{21} \quad \frac{2}{3}(3x-2) = \frac{4}{5}(2x-3) - \frac{4}{3}$$

$$\Rightarrow \frac{6x-4}{3} = \frac{8x-12}{5} - \frac{4}{3}$$

$$\Rightarrow \frac{6x-4}{3} = \frac{3(8x-12) - 4 \times 5}{15}$$

$$\Rightarrow \frac{6x-4}{3} = \frac{24x-36-20}{15}$$

$$\Rightarrow \frac{6x-4}{3} = \frac{24x-56}{15}$$

$$\Rightarrow 15(6x-4) = 3(24x-56)$$

$$\Rightarrow 90x - 60 = 72x - 168$$

$$\Rightarrow 90x - 72x = -168 + 60$$

$$\Rightarrow 18x = -108 \quad \Rightarrow x = \frac{-108}{18} = -6$$

$$\Rightarrow x = -6$$

check

$$\text{L.H.S.} = \frac{2}{3}(3x-2)$$

$$= \frac{2}{3}\{3 \times (-6) - 2\}$$

$$= \frac{2}{3} \times \{-18 - 2\}$$

$$= \frac{2}{3} \times (-20)$$

$$= \frac{-40}{3}$$

$$\text{R.H.S.} = \frac{4}{5}(2x-3) - \frac{4}{3}$$

$$= \frac{4}{5}\{2 \times (-6) - 3\} - \frac{4}{3}$$

$$= \frac{4}{5}\{-12 - 3\} - \frac{4}{3}$$

$$= \frac{4}{5} \times (-15) - \frac{4}{3}$$

$$= \frac{-60}{5} - \frac{4}{3}$$

$$= \frac{-180 - 20}{5 \times 3}$$

$$= \frac{-200}{15} = \frac{-40}{3}$$

\(\therefore\) L.H.S. = R.H.S.

$$(22) \quad \frac{3}{4}(2x-5) - \frac{5}{6}(7-5x) = \frac{7x}{3}$$

$$\Rightarrow \frac{6x-15}{4} - \frac{35+25x}{6} = \frac{7x}{3}$$

$$\Rightarrow \frac{6(6x-15) - 4(35+25x)}{4 \times 6} = \frac{7x}{3}$$

$$\Rightarrow 36x - 90 - 140 + 100x = 7x \times 8$$

$$\Rightarrow 136x = 56x + 90 + 140$$

$$\Rightarrow 136x - 56x = 230$$

$$\Rightarrow 80x = 230 \Rightarrow x = \frac{23}{8}$$

Check

$$L.H.S = \frac{3}{4}(2x-5) - \frac{5}{6}(7-5x)$$

$$= \frac{3}{4} \left\{ 2 \times \frac{23}{8} - 5 \right\} - \frac{5}{6} \left\{ 7 - 5 \times \frac{23}{8} \right\}$$

$$= \frac{3}{4} \left(\frac{23}{4} - 5 \right) - \frac{5}{6} \left(7 - \frac{115}{8} \right)$$

$$= \frac{3}{4} \times \frac{3}{4} - \frac{5}{6} \times \frac{-59}{8}$$

$$R.H.S = \frac{7x}{3}$$

$$= \frac{9}{16} + \frac{295}{48}$$

$$= \frac{7 \times 23}{8 \times 3}$$

$$= \frac{27+295}{48}$$

$$= \frac{161}{24}$$

$$= \frac{3 \times 2 \times 161}{48_{24}}$$

$$= \frac{161}{24}$$

$$\therefore R.H.S = L.H.S$$

Hence checked.

$$(23) \quad x - \left(2x - \frac{3x-4}{7}\right) = \frac{4x-27}{3} - 3$$

$$\Rightarrow x - \frac{14x-3x+4}{7} = \frac{4x-27-9}{3}$$

$$\Rightarrow \frac{7x-14x+3x-4}{7} = \frac{4x-36}{3}$$

$$\Rightarrow \frac{-4x-4}{7} = \frac{4x-36}{3}$$

$$\Rightarrow -12x-12 = 28x-252$$

$$\Rightarrow -12x-28x = -252+12$$

$$\Rightarrow -40x = -240$$

$$\Rightarrow x = 6$$

Check

$$\text{LHS} = x - \left(2x - \frac{3x-4}{7}\right)$$

$$= 6 - \left\{2 \times 6 - \frac{3 \times 6 - 4}{7}\right\}$$

$$= 6 - \left\{12 - \frac{14}{7}\right\}$$

$$= 6 - 10 = -4$$

$$\text{RHS} = \frac{4x-27}{3} - 3$$

$$= \frac{4 \times 6 - 27}{3} - 3$$

$$= \frac{-3}{3} - 3$$

$$= -1 - 3 = -4$$

$$\therefore \text{LHS} = \text{RHS}$$

Hence checked.

$$\textcircled{24} \quad \frac{3}{4}(7x-1) - \left(2x - \frac{1-x}{2}\right) = x + \frac{3}{2} \quad \textcircled{a}$$

$$\Rightarrow \frac{21x-3}{4} - \frac{4x-1+x}{2} = \frac{2x+3}{2}$$

$$\Rightarrow \frac{21x-3-2(5x-1)}{4} = \frac{2x+3}{2}$$

$$\Rightarrow 21x-3-10x+2 = (2x+3) \times 2$$

$$\Rightarrow \cancel{20x} \cancel{-10x} + 11x - 1 = 4x + 6$$

$$\Rightarrow 11x - 4x = 6 + 1$$

$$\Rightarrow 7x = 7 \Rightarrow x = 1$$

Check

$$\text{LHS} = \frac{3}{4}(7x-1) - \left(2x - \frac{1-x}{2}\right)$$

$$= \frac{3}{4}(7 \times 1 - 1) - \left(2 \times 1 - \frac{1-1}{2}\right)$$

$$= \frac{3}{4} \times 6 - (2 - 0)$$

$$= \frac{9}{2} - 2 = \frac{5}{2}$$

$$\text{RHS} = x + \frac{3}{2}$$

$$= 1 + \frac{3}{2}$$

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

$$\therefore \text{RHS} = \text{LHS}$$

Hence checked
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