LINEAR EQUATIONS WORKSHEET-D

1. $0.25 + \frac{1.95}{x} = 0.9$
2. $5x - \left(4x + \frac{5x-4}{7}\right) = \frac{4x-14}{3}$
3. $\frac{1}{3}x - 6 = \frac{5}{2}$
4. $\frac{2x}{3} - \frac{3x}{8} = \frac{7}{12}$
5.
6. $\frac{1}{10} - \frac{7}{x} = 35$
7.
8. $x + 7 - \frac{8x}{3} = \frac{17x}{6} - \frac{5x}{8}$
9. $\frac{3x-2}{4} - \frac{2x+3}{3} = \frac{2}{3} - x$
10. $\frac{x+2}{6} - \left(\frac{11-x}{3} - \frac{1}{4}\right) = \frac{3x-4}{12}$

ANSWER

1. $0.25 + \frac{1.95}{x} = 0.9$

$0.25x + 1.95 = 0.9x$

$\Rightarrow 0.9x - 0.25x = 1.95$

$\Rightarrow 0.65x = 1.95$

$\Rightarrow x = \frac{1.95}{0.65} = 3$

Hence, $x = 3$

2. $5x - \left(4x + \frac{5x-4}{7}\right) = \frac{4x-14}{3}$

$5x - \left(4x + \frac{5x-4}{7}\right) = \frac{4x-14}{3}$

$5x - \left(\frac{28x+5x-4}{7}\right) = \frac{4x-14}{3}$

$\frac{35x-33x+4}{7} = \frac{4x-14}{3}$

$3 \times (2x + 4) = 7 \times (4x - 14)$

$6x + 12 = 28x - 98$

$22x = 98 + 12$

$x = \frac{110}{22} = 5$

3. $\frac{1}{3}x - 6 = \frac{5}{2}$

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

$= \frac{1}{3}x = \frac{5}{2} + \frac{6}{1}$

$= \frac{1}{3}x = \frac{5\times1}{2\times1} + \frac{6\times2}{1\times2}$

$= \frac{1}{3}x = \frac{5}{2} + \frac{12}{2}$

$= \frac{1}{3}x = \frac{5+12}{2}$

$= \frac{1}{3}x = \frac{17}{2}$

$= \boldsymbol{x} = \frac{17\times3}{2\times1} = \frac{51}{2} = 25\frac{1}{2}$

4. $\frac{2x}{3} - \frac{3x}{8} = \frac{7}{12}$

2	3, 8
2	3, 4
2	3, 2
3	3, 1
	1

L.C and $8 = 2 \times 2 \times 2 \times 3 = 24$

$\frac{2x\times8}{3\times8} - \frac{3x\times3}{8\times3} = \frac{7}{12}$

$= \frac{16x}{24} - \frac{9x}{24} = \frac{7}{12}$

$= \frac{16x}{24} - \frac{9x}{24} = \frac{7}{12}$

$= \frac{16x-9x}{24} = \frac{7}{12}$

$= \frac{7x}{24} = \frac{7}{12}$

$= x\frac{7\times24}{12\times7} = 2$
$\therefore x = 12$

5.
$(x+2)(x+3) + (x-3)(x-2) - 2x(x+1) = 0$
$(x+2)(x+3) + (x-3)(x-2) - 2x(x+1) = 0$
$[x^2 + (2+3)x + 2\times3] + [x^2 + (-3-2)x + (-3)(2)] - 2x^2 - 2x = 0$
$x^2 + 5x + 6 + x^2 - 5x + 6 - 2x^2 - 2x = 0$
$x^2 + x^2 - 2x^2 + 5x - 5x - 2x + 6 + 6 = 0$
$-2x + 12 = 0$
Subtracting 12 from both sides,
$-2x + 12 - 12 = 0 - 12 \Rightarrow -2x = -12$
Dividing by -2
$\frac{-2x}{-2} = \frac{-12}{-2} \Rightarrow x = 6$
$\therefore x = 6$
Verification
L.H.S. $= (x+2)(x+3) + (x-3)(x-2) - 2x(x+1)$
$= (6+2)(6+3) + (6-3)(6-2) - 2\times6(6+1)$
$= 8\times9 + 3\times4 - 12\times7$
$= 72 + 12 - 84 = 84 - 84 = 0 = R.H.S$

6. $\frac{1}{10} - \frac{7}{x} = 35$
$\frac{-7}{x} = 35 - \frac{1}{10}$
$\frac{-7}{x} = \frac{35\times10}{1\times10} - \frac{1\times1}{10\times1}$
$\frac{-7}{x} = \frac{350-1}{10}$
$\frac{1}{x} = \frac{350-1}{10\times(-7)}$
$x = \frac{349}{(-70)} = \frac{-70}{349}$

7.
$13(x-4) - 3(x-9) - 5(x+4) = 0$
$13x - 52 - 3x + 27 - 5x - 20 = 0$
$13x - 3x - 5x - 52 + 27 - 20 = 0$
$13x - 8x - 72 + 27 = 0$
$5x - 45 = 0$
Dividing by 5,
$\frac{5x}{5} = \frac{45}{5} = 0 \Rightarrow x - 9 = 0 \Rightarrow x = 9$
Verification,
L.H.S. $= 13(x-4) - 3(x-9) - 5(x+4)$
$= 13(9-4) - 3(9-9) - 5(9+4)$
$= 13\times5 - 3\times0 - 5\times13$
$= 65 - 0 - 65 = 0 = R.H.S.$

8. $x+7-\frac{8x}{3}=\frac{17x}{6}-\frac{5x}{8}$

$\frac{3(x+7)-8x}{3}=\frac{17x\times14-5x\times3}{24}$

$\frac{3x+21-8x}{3}=\frac{68x\times15x}{24}$

$\frac{-5x+21}{3}=\frac{53x}{24}$

$3\times53x=24(-5x+21)$

$159x=-120x+504$

$159x+120x=504$

$279x=504$

$x=\frac{504}{279}=\frac{168}{93}=\frac{56}{61}$

$x=1\frac{25}{31}$

9. $\frac{3x-2}{4}-\frac{2x+3}{3}=\frac{2}{3}-x$

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

$=\frac{3(3x-2)-4(2x+3)}{12}=\frac{2\times1}{3\times1}-\frac{x\times3}{1\times3}$

$=\frac{9x-6-8x-12}{12}=\frac{2-3x}{3}$

$=\frac{(x-18)}{12}=\frac{2-3x}{3}$

$=3(x-18)=12(2-3x)$

$=3x-54=24-36x$

$=3x+36x=24+54$

$=39x=78$

$x=\frac{78}{39}=2$

$\therefore x=2$

10. $\frac{x+2}{6}-\left(\frac{11-x}{3}-\frac{1}{4}\right)=\frac{3x-4}{12}$

$\frac{x+2}{6}-\left(\frac{4(11-x)-1\times3}{12}\right)=\frac{3x-4}{12}$

$\frac{x+2}{6}-\frac{44+4x+3}{12}=\frac{3x-4}{12}$

$\frac{2(x+2)-41+4x}{12}=\frac{3x-4}{12}$

$\frac{2x+4-41+4x}{12}=\frac{3x-4}{12}$

$\frac{6x-37}{12}=\frac{3x-4}{12}$

$12(6x-37)=12(3x-4)$

$72x-444=36x-48$

$72x-36x=-48+444$

$36x=396$

$\Rightarrow x=\frac{396}{36}=11$

$\therefore x=11$