LINEAR EQUATIONS WORKSHEET-E

1. $\frac{2}{5x} - \frac{5}{3x} = \frac{1}{15}$

2. $\frac{x+2}{3} - \frac{x+1}{5} = \frac{x-3}{4} - 1$

3. $\frac{3x-2}{3} + \frac{2x+3}{2} = x + \frac{7}{6}$

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

5. $\frac{9x+7}{2} - \left(x - \frac{x-2}{7}\right) = 36$

6. $\frac{6x+1}{2} + 1 = \frac{7x-3}{3}$

7. Prove that LHS = RHS
$2y + \frac{5}{3} = \frac{26}{3} - y$

8. $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$

9. $\frac{(3t-2)}{4} - \frac{(2t+3)}{3} = \frac{2}{3} - t$

10. $m - \frac{(m-1)}{2} = 1 - \frac{(m-2)}{3}$

ANSWER

1. $\frac{2}{5x} - \frac{5}{3x} = \frac{1}{15}$

$\frac{2\times3}{5x\times3} - \frac{5\times5}{3x\times5} = \frac{1}{15}$

$\frac{6-25}{15x} = \frac{1}{15}$

$\frac{-19}{15x} = \frac{1}{15}$

$\frac{-19}{x} = \frac{15}{15}$

$-19 = x$

$x = -19$

2. $\frac{x+2}{3} - \frac{x+1}{5} = \frac{x-3}{4} - 1$

(L.C.M. of 3 and 5 = 15)

$\frac{5(x+2)-3(x+1)}{15} = \frac{x-3-4}{4}$

$\frac{5x+10-3x-3}{15} = \frac{x-7}{4}$

$\frac{2x+7}{15} = \frac{x-7}{4}$

$4(2x + 7) = 15(x - 7)$

$8x + 28 = 15x - 105$

$8x - 15x = -105 - 28$

$-7x = -133$

$x = \frac{-133}{-7}$

$x = 19$

3. $\frac{3x-2}{3} + \frac{2x+3}{2} = x + \frac{7}{6}$

$\frac{2(3x-2)+3(2x+3)}{6} = x + \frac{7}{6}$

$\frac{6x-4+6x+9}{6} = \frac{6x+7}{6}$

$\frac{12x+5}{6} = \frac{6x+7}{6}$

$6(12x + 5) = 6(6x + 7)$

$72x + 30 = 36x - 42$

$72x - 36x = 42 - 30$

$36x = 12$

$x = \frac{12}{36}$

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

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

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

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

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

$3(x + 1) = 2(5 - x)$

$3x + 3 = 10 - 2x$
$3x + 2x = 10 - 3$
$5x = 7$
$x = \frac{7}{5}$

5. $\frac{9x+7}{2} - \left(x - \frac{x-2}{7}\right) = 36$
$\frac{9x+7}{2} - \left(\frac{7\times x-1(x-2)}{7}\right) = 36$
$\frac{9x+7}{2} - \left(\frac{7x-x-2}{7}\right) = 36$
$\frac{9x+7}{2} - \left(\frac{6x-2}{7}\right) = 36$
$\frac{7(9x+7)+2(-6x+2)}{14} = 36$
$\frac{63x+49-12x+4}{14} = 36$
$\frac{51x+53}{14} = 36$
$51x + 53 = 14 \times 36$
$51x = 504 - 53$
$51x = 459$
$x = \frac{459}{51}$
$x = 9$

6. $\frac{6x+1}{2} + 1 = \frac{7x-3}{3}$
$\frac{(6x+1)+1\times 2}{2} = \frac{7x-3}{3}$
$\frac{6x+1+2}{2} = \frac{7x-3}{3}$
$\frac{6x+3}{2} = \frac{7x-3}{3}$
$3(6x + 3) = 2(7x - 3)$
$18x + 9 = 14x - 6$
$18x - 14x = -6 - 9$
$4x = -15$
$x = \frac{-15}{4}$

7. $2y + \frac{5}{3} = \frac{26}{3} - y$
$\Rightarrow 2y + y = \frac{26}{3} - \frac{5}{3}$
$\Rightarrow 3y = \frac{(26-5)}{3}$
$\Rightarrow 3y = \frac{21}{3}$
$\Rightarrow 3y = 7$
$\Rightarrow y = \frac{7}{3}$
Putting the value of y inn RHS and LHS we get,
$\Rightarrow \left(2 \times \frac{7}{3}\right) + \frac{5}{3} = \frac{26}{3} - \frac{7}{3}$
$\Rightarrow \frac{14}{3} + \frac{5}{3} = \frac{26}{3} - \frac{7}{3}$
$\Rightarrow \frac{(14+5)}{3} = \frac{(26-7)}{3}$
$\Rightarrow \frac{19}{3} = \frac{19}{3}$
$\Rightarrow$ LHS = RHS

8. $x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$

$\Rightarrow x - \frac{8x}{3} + \frac{5x}{2} = \frac{17}{6} - 7$

$\Rightarrow \frac{(6x - 16x + 15x)}{6} = \frac{(17 - 42)}{6}$

$\Rightarrow \frac{5x}{6} = -\frac{25}{6}$

$\Rightarrow 5x = -25$

$\Rightarrow x = -5$

9. $\frac{(3t-2)}{4} - \frac{(2t+3)}{3} = \frac{2}{3} - t$

$\Rightarrow \frac{(3t-2)}{4} - \frac{(2t+3)}{3} - \frac{2}{3} + t = 0$

$\Rightarrow \frac{3(3t-2)-4(2t+3)-4(2)+12t}{12} = 0$

$\Rightarrow \frac{9t - 6 - 8t - 12 - 8 + 12t}{12} = 0$

$\Rightarrow \frac{9t + 12t - 8t - 6 - 12 - 8}{12} = 0$

$\Rightarrow 13t - 26 = 0$

$\Rightarrow 13t = 26$

$\Rightarrow t = \frac{26}{13}$

$\Rightarrow t = 2$

10. $m - \frac{(m-1)}{2} = 1 - \frac{(m-2)}{3}$

$\Rightarrow m - \frac{m}{2} - \frac{1}{2} = 1 - \left(\frac{m}{3} - \frac{2}{3}\right)$

$\Rightarrow m - \frac{m}{2} + \frac{1}{2} = 1 - \frac{m}{3} + \frac{2}{3}$

$\Rightarrow m - \frac{m}{2} + \frac{m}{3} = 1 + \frac{2}{3} - \frac{1}{2}$

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

$\Rightarrow (3m + 2m)/6 = (3 + 4)/6$

$\Rightarrow \frac{5m}{6} = \frac{7}{6}$

$\Rightarrow m = \frac{7}{6} \times \frac{6}{5}$

$\Rightarrow m = \frac{7}{5}$