

Solve each of the following equations. Show all work!!

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

$$5x + 15 - 3x + 3 = 4x - 4$$

$$2x + 18 = 4x - 4$$

$$18 = 2x - 4$$

$$22 = 2x$$

$$11 = x$$

3. $4(x+1) + 2(3x+1) = 4(x-3)$

$$4x + 4 + 6x + 2 = 4x - 12$$

$$10x + 6 = 4x - 12$$

$$6x + 6 = -12$$

$$6x = -18 \quad x = -3$$

5. $6(x+2) + 4(x+1) = 2(4x-3)$

$$6x + 12 + 4x + 4 = 8x - 6$$

$$10x + 16 = 8x - 6$$

$$2x + 16 = -6$$

$$2x = -22$$

$$x = -11$$

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

$$\frac{3}{4}x = 6 \quad \text{OR}$$

$$3x = 24$$

$$x = 8$$

By another method

$$\frac{3}{4}x + 2 = 8$$

$$3x + 8 = 32$$

$$3x = 24$$

$$x = 8$$

2. $-6(x+1) - 3(x+2) = 5(x-1)$

$$-6x - 6 - 3x - 6 = 5x - 5$$

$$-9x - 12 = 5x - 5$$

$$-14x - 12 = -5$$

$$+12 \quad +12$$

$$\frac{-14x = 7}{-14 \quad -14} \quad x = -\frac{1}{2}$$

4. $3(x+2) + 2(x+1) = 4(x+4)$

$$3x + 6 + 2x + 2 = 4x + 16$$

$$5x + 8 = 4x + 16$$

$$x + 8 = 16$$

$$x = 8$$

6. $5(x+3) + 3(x+2) = 6(x+1)$

$$5x + 15 + 3x + 6 = 6x + 6$$

$$8x + 21 = 6x + 6$$

$$2x + 21 = 6$$

$$2x = -15$$

$$x = -\frac{15}{2}$$

8. $\frac{5}{3}x - 3 = 12$ By another method

$$\frac{5}{3}x = 15 \quad \text{OR} \quad \frac{5}{3}x - 3 = 12$$

$$5x = 45$$

$$x = 9$$

$$5x - 9 = 36$$

$$5x = 45$$

$$x = 9$$

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

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

$$4\left[\frac{1}{4}x\right] = \left[\frac{3}{2}x\right]4 - 5(4)$$

$$x = 6x - 20$$

$$20 = 5x$$

$$4 = x$$

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

$$10\left[\frac{1}{2}x\right] + 5(10) = 10\left[\frac{3}{5}x\right] + 4(10)$$

$$5x + 50 = 6x + 40$$

$$50 = x + 40$$

$$10 = x$$