

Solving Equations

Solve each equation:

$$1) \text{ a) } x + 3 = 10$$

$$-3 \quad -3$$

$$x = 7$$



$$\text{b) } x - 4 = 8$$

$$+ 4 \quad + 4$$

$$x = 12 \quad \checkmark$$

$$c) \quad x - 7 = 0$$

$$+7 \quad +7$$

$$x = 7 \quad \checkmark$$

$$d) \quad 2x = 12$$

$$\div 2 \quad \div 2$$

$$x = 6$$



2) a)

$$3x + 4 = 10$$

$$\overset{-4}{3x} = \overset{-4}{6} \quad \checkmark$$

$$\overset{\div 3}{x} = \overset{\div 3}{2} \quad \checkmark$$

b)

$$2x - 5 = 3$$

$$+5 \quad +5$$

$$2x = 8 \quad \checkmark$$

$$\div 2 \quad \div 2$$

$$x = 4 \quad \checkmark$$

c)

$$4x + 7 = 31$$

$$\begin{array}{r} -7 \quad -7 \\ 4x + 7 = 31 \\ \hline 4x = 24 \end{array}$$

$$4x = 24 \quad \checkmark$$

$$\begin{array}{r} \div 4 \quad \div 4 \\ 4x = 24 \\ \hline x = 6 \end{array}$$

$$x = 6 \quad \checkmark$$

$$3) \text{ a) } 5x + 3 = 2x + 9$$

$-2x$

$-2x$

$$3x + 3 = 9 \quad \checkmark$$

-3

-3

$$3x = 6 \quad \checkmark$$

$\div 2$

$\div 2$

$$x = 2 \quad \checkmark$$

$$\text{b)} \quad 7x - 2 = 3x - 10$$

$$\quad \quad -3x \quad \quad \quad -3x$$

$$4x - 2 = -10 \quad \checkmark$$

$$\quad \quad +2 \quad \quad +2$$

$$4x = -8 \quad \checkmark$$

$$\quad \quad \div 4 \quad \quad \div 4$$

$$x = -2 \quad \checkmark$$

$$c) \quad 6x - 12 = x - 2$$

$$\begin{array}{r} -x \\ 6x - 12 = x - 2 \end{array}$$

$$5x - 12 = -2$$

✓

$$\begin{array}{r} +12 \\ 5x - 12 = -2 \end{array}$$

$$5x = 10$$

✓

$$\begin{array}{r} \div 5 \\ 5x = 10 \end{array}$$

$$x = 2$$

✓

$$4) a) \quad 2(x + 3) = 8$$

$$2x + 6 = 8 \quad \checkmark$$

$$\quad -6 \quad -6$$

$$2x = 2 \quad \checkmark$$

$$\quad \div 2 \quad \div 2$$

$$x = 1 \quad \checkmark$$

$$\text{b) } 3(2x - 1) = 21$$

$$6x - 3 = 21 \quad \checkmark$$

$+3 \qquad +3$

$$6x = 24 \quad \checkmark$$

$\div 6 \qquad \div 6$

$$x = 4 \quad \checkmark$$

$$c) \quad 5(x + 2) = 2(2x + 9)$$

$$5x + 10 = 4x + 18 \quad \checkmark$$

$-4x$

$-4x$

$$x + 10 = 18 \quad \checkmark$$

-10

-10

$$x = 8 \quad \checkmark$$

5) Remember to simplify the algebra before balancing!

a) $4(2x + 1) - 3 = 17$

$$\underline{8x + 4 - 3 = 17}$$

Simplify

$$8x + 1 = 17$$

$$\begin{array}{r} -1 \quad -1 \\ 8x = 16 \end{array}$$

$$\begin{array}{r} \div 8 \quad \div 8 \end{array}$$

$$x = 2$$

$$\text{b) } 5(x + 3) + 2(2x - 5) = 23$$

$$5x + 15 + 4x - 10 = 23$$

Simplify

$$9x + 5 = 23$$

$$\begin{array}{r} -5 \\ 9x = 18 \end{array}$$

$$\begin{array}{r} \div 9 \\ x = 2 \end{array}$$