

Name: Answer Key

### Solving Linear Equations

#### Two-Step Linear Equations

Solve each of the following two-step linear equations. Some of the answers will be rational (aka fractional) numbers. Simplify where possible.

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

$$x = 15$$

(b)  $4x + 3 = -17$

$$x = -5$$

(c)  $5x + 12 = 87$

$$x = 15$$

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

$$x = -1$$

(e)  $-6(x-1) = 18$

$$x = -2$$

(f)  $8x + 2 = -2$

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

(g)  $\frac{3}{4}x - 5 = 4$

$$x = 12$$

(h)  $-\frac{5}{2}x + 6 = 1$

$$x = 2$$

(i)  $6x + 3 = -1$

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

#### Linear Equations That Require the Distributive Property

Solve each of the equations. The distributive property will be the first step in order to "get rid of" the parentheses.

(j)  $5(x-2) + 2x = 4(x+3)$

$$x = \frac{22}{3}$$

(k)  $7(x-2) - 3(x+3) = 5(x-3) + x$

$$x = -4$$

### Linear Equations Where Distributive Property May or May Not Be Needed

Solve each for  $x$ .

(l)  $\frac{5(x-3)}{8} + 2 = 7$

$$x = 11$$

(m)  $\frac{5(x+1)+4}{6} = 4$

$$x = 3$$

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

$$x = 4$$

### Application

A tile warehouse has Inventory at hand and can put in for a back order from a supplier of bundles of tiles. Currently they have 38 tiles of a certain kind in stock, and can only order more in groups of 12 tiles per bundle. The equation that represents this order is as follows:

The number of tiles =  $12b + 38$ , where  $b$  is the number of bundles ordered.

- (a) If a customer needs 150 tiles, how many bundles will need to be ordered? Explain how you got your answer. Why do we need to round our answer up in this problem?

$9.3 \Rightarrow 10$  bundles are necessary to have at least 150 tiles

- (b) If the store wants to have 30 tiles *after* they've solve the 150 tiles to the customer, how many more bundles do they need to order? Think about how many tiles there were left over from the customer who ordered 150 tiles in part (a).  $158 - 150 = 8$  tiles

need  $30 - 8 = 22$  tiles, so 2 bundles

**Analysis:** Look through the following work, find the mistake, and circle it. Then, to the side, show the appropriate work.

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

$$5 \cdot \frac{-2(x-3)}{5} = 4 \cdot 5$$

$$-2(x-3) = 20$$

$$-2x - 6 = 20$$

$$-2x - 6 + 6 = 20 + 6$$

$$-2x = 26$$

$$\frac{-2x}{-2} = \frac{26}{-2}$$

$$x = -13$$

$\rightarrow$  should be  $-2x + 6 = 20$

$$-2x = 14$$

$$x = -7$$