

2.7 Literal Equations WS

Name Key

Write the following equations so that y is a function of x.

1. $y + 10x = 3$
 $\quad \quad \quad -10x \quad -10x$

$$y = -10x + 3$$

2. $4x + 2y = -14$
 $\quad \quad \quad -4x \quad \quad -4x$

$$\frac{2y}{2} = \frac{-4x - 14}{2}$$

$$y = -2x - 7$$

3. $4y - 4x + 4 = 0$
 $\quad \quad \quad -4 \quad -4$

$$4y - 4x = -4$$

$$\frac{4y}{4} = \frac{4x - 4}{4}$$

$$y = x - 1$$

Solve the literal equations.

4. $C = 2\pi r$ for r
 $\quad \quad \quad 2\pi \quad 2\pi$

$$r = \frac{C}{2\pi}$$

5. $A = \frac{1}{2}bh$ for b

$$\frac{2A}{h} = \frac{bh}{h}$$

$$b = \frac{2A}{h}$$

6. $y = mx + b$ for m
 $\quad \quad \quad -b \quad -b$

$$\frac{y - b}{x} = \frac{mx}{x}$$

$$m = \frac{y - b}{x}$$

7. $A = \frac{1}{2}h(b_1 + b_2)$ for h

$$\frac{2A}{b_1 + b_2} = \frac{h(b_1 + b_2)}{b_1 + b_2}$$

$$h = \frac{2A}{b_1 + b_2}$$

8. $A = \frac{1}{2}d_1d_2$ for d_1

$$\frac{2A}{d_2} = \frac{d_1d_2}{d_2}$$

$$d_1 = \frac{2A}{d_2}$$

9. $Ax + By = C$ for y
 $\quad \quad \quad -Ax \quad -Ax$

$$\frac{By}{B} = \frac{C - Ax}{B}$$

$$y = \frac{C - Ax}{B}$$

10. You practice playing your guitar every day. You spend 15 minutes practicing chords and the rest of the time practicing a new song. So the total number of minutes y you practice for the week is given by $y = 7(15 + x)$, where x is the number of minutes you spend on practicing a new song.

a.) Solve the equation for x.

$$\frac{y}{7} = \frac{7(15 + x)}{7}$$

$$\frac{y}{7} = 15 + x$$

$$x = \frac{y}{7} - 15$$

b.) How many minutes did you spend on a new song if you practiced 210 minutes?

$$x = \frac{210}{7} - 15$$

$$= 30 - 15$$

$$x = 15 \text{ minutes}$$

11. Currently, you have \$80 and your sister has \$145. You decide to save \$6 of your allowance each week, while your sister decides to spend her whole allowance plus \$7 each week. How long will it be before you have as much money as your sister?

$$\text{You: } 80 + 6w$$

$$\text{Sister: } 145 - 7w$$

$$80 + 6w = 145 - 7w$$

$$\begin{array}{r} 80 + 6w = 145 \\ -80 \quad -80 \\ \hline 6w = 65 \end{array}$$

$$\frac{6w}{6} = \frac{65}{6}$$

$$w = 5 \text{ weeks}$$

12. Solve $4(-4x) = \frac{5}{4}$

$$\frac{-16x}{-16} = \frac{5}{-16}$$

$$x = \frac{-5}{16}$$