

## 8.2 Proportional Equations

## PRACTICE

Use the situation to answer the questions and fill in the table.

1. Sully does 3 out of every 5 problems correctly.

- a. Write an equation to represent this.

$$y = \frac{3}{5}x \quad \text{or} \quad y = 0.6x$$

- b. If Mr Sully takes a test with 50 problems, how many will he get correct? Use your equation.

$$y = 0.6(50)$$

$$y = 30 \text{ correct}$$

- c. If Mr Sully does a homework and gets 15 correct, how many problems were on the homework?

$$\frac{15}{0.6} = \frac{0.6x}{0.6}$$

$$25 = x$$

$$x = 25 \text{ problems}$$

$x$ # of problems	$y$ # done correctly
50	30
10	6
25	15
20	12

2. 10% of people are left handed.

- a. Write an equation to represent this.

$$y = 0.10x$$

- b. If there are group of 80 people, how many are left handed? Use your equation.

$$y = 0.1(80)$$

$$y = 8 \text{ left handed people}$$

- c. If a group of people has 9 left handed people, how many are in the group? Use your equation.

$$\frac{9}{0.1} = \frac{0.1x}{0.1}$$

$$90 = x$$

$$90 \text{ people}$$

$x$ People (#)	$y$ Left handed (#)
100	10
18	1.8
150	15
60	6

3. The recipe for "Crusty Lemonade" is 1 part concentrate for every 4 cups of water.

- a. Write an equation to represent this.

$$y = \frac{1}{4}x \quad \text{or} \quad y = 0.25x$$

- b. How much water should you use with 8 cups of concentrate? Use your equation.

$$\frac{8}{0.25} = \frac{0.25x}{0.25}$$

$$32 = x$$

$$x = 32 \text{ cups water}$$

- c. How much concentrate should you use with 12 cups of water? Use your equation.

$$y = 0.25(12)$$

$$y = 3 \text{ cups of concentrate}$$

$x$ Water (cups)	$y$ Concentrate (cups)
12	3
6	1.5
32	8
40	10

Use the equation to answer the questions and fill in the table.

4. Equation:  $y = -2x + 4$

a. Find  $y$  when  $x = 6$

$$y = -2(6) + 4$$

$$y = -12 + 4$$

$$y = -8$$

b. Find  $x$  when  $y = 6$

$$6 = -2x + 4$$

$$-4 = -2x$$

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

$$2 = x$$

$$-2(1) + 4$$

$$-2(3) + 4$$

x	y
1	2
3	-2
-9	22
7	-10

c. Is the equation proportional? YES or **NO**

$$22 = -2x + 4$$

$$-4 = -2x$$

$$18 = -2x$$

$$-9 = x$$

$$-10 = -2x + 4$$

$$-4 = -2x$$

$$-14 = -2x$$

$$7 = x$$

5. Equation:  $y = 1.2x$

a. Find  $y$  when  $x = 6$

$$y = 1.2(6)$$

$$y = 7.2$$

b. Find  $x$  when  $y = 6$

$$6 = 1.2x$$

$$\frac{6}{1.2} = \frac{1.2x}{1.2}$$

$$5 = x$$

$$1.2(0)$$

$$1.2(-6)$$

x	y
0	0
-6	-7.2
$8.\bar{3}$	10
-20	-24

c. Is the equation proportional? **YES** or NO

$$10 = 1.2x$$

$$\frac{10}{1.2} = \frac{1.2x}{1.2}$$

$$8.\bar{3} = x$$

$$-24 = 1.2x$$

$$\frac{-24}{1.2} = \frac{1.2x}{1.2}$$

$$-20 = x$$

6. Equation:  $m = 6h + 4$

a. Find  $m$  when  $h = 6$

$$m = 6(6) + 4$$

$$m = 36 + 4$$

$$m = 40$$

b. Find  $h$  when  $m = 6$

$$6 = 6h + 4$$

$$-4 = 6h$$

$$\frac{-4}{6} = \frac{6h}{6}$$

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

$$6(3) + 4$$

$$6(-4) + 4$$

h	m
3	22
-4	-20
1	10
2	16

c. Is the equation proportional? YES or **NO**

$$10 = 6h + 4$$

$$-4 = 6h$$

$$\frac{6}{6} = \frac{6h}{6}$$

$$1 = h$$

$$16 = 6h + 4$$

$$-4 = 6h$$

$$\frac{12}{6} = \frac{6h}{6}$$

$$2 = h$$

7. Equation:  $d = \frac{3}{4}t$

a. Find  $t$  when  $d = 6$

$$4 \cdot 6 = \frac{3}{4}t \cdot 4$$

$$\frac{24}{3} = \frac{3t}{3}$$

$$8 = t$$

b. Find  $d$  when  $t = 6$

$$d = \frac{3}{4}(6)$$

$$d = \frac{18}{4}$$

$$d = \frac{9}{2} \text{ or } 4.5$$

$$\frac{3}{4}(0)$$

$$\frac{3}{4}(-7)$$

t	d
0	0
-8	-6
12	9
$13.\bar{3}$	10

c. Is the equation proportional? **YES** or NO

$$4 \cdot 9 = \frac{3}{4}t \cdot 4$$

$$\frac{36}{3} = \frac{3t}{3}$$

$$12 = t$$

$$10 = \frac{3}{4}t \cdot 7$$

$$\frac{40}{3} = \frac{3t}{3}$$

$$13.\bar{3} = t$$