## Warm Up

$$56 \div 8 =$$

$$84 \div 6 =$$

$$98 \div 14 =$$

$$40 \div 8 =$$

$$48 \div 4 =$$

$$72 \div 6 =$$

$$36 \div 3 =$$

$$18 \div 2 =$$

$$78 \div 13 =$$

$$45 \div 3 =$$

$$28 \div 7 =$$

$$55 \div 5 =$$

$$8 \div 8 =$$

$$140 \div 10 =$$

$$54 \div 6 =$$

$$143 \div 13 =$$

$$150 \div 10 =$$

$$64 \div 8 =$$

$$65 \div 13 =$$

$$5 \div 1 =$$

$$3 \div 1 =$$

$$18 \div 6 =$$

$$24 \div 8 =$$

$$70 \div 5 =$$

$$21 \div 7 =$$

$$77 \div 7 =$$

$$42 \div 3 =$$

$$35 \div 5 =$$

$$182 \div 14 =$$

$$28 \div 14 =$$

$$9 \div 9 =$$

$$36 \div 6 =$$

$$30 \div 6 =$$

$$81 \div 9 =$$

$$30 \div 15 =$$

$$28 \div 2 =$$

$$96 \div 12 =$$

$$24 \div 4 =$$

$$108 \div 9 =$$

$$36 \div 4 =$$

$$40 \div 5 =$$

$$7 \div 7 =$$

$$72 \div 8 =$$

$$20 \div 10 =$$

$$48 \div 12 =$$

$$80 \div 10 =$$

$$75 \div 15 =$$

$$14 \div 7 =$$

$$70 \div 7 =$$

$$10 \div 1 =$$

$$120 \div 8 =$$

$$12 \div 12 =$$

$$24 \div 2 =$$

$$6 \div 1 =$$

$$12 \div 6 =$$

$$12 \div 4 =$$

$$7 \div 1 =$$

$$120 \div 15 =$$

$$52 \div 4 =$$

$$100 \div 10 =$$

$$16 \div 4 =$$

$$54 \div 9 =$$

$$195 \div 13 =$$

### Warm Up Answers

$$56 \div 8 = 7$$

$$8 \div 1 = 8$$

$$84 \div 6 = 14$$

$$98 \div 14 = 7$$

$$40 \div 8 = 5$$

$$48 \div 4 = 12$$

$$72 \div 6 = 12$$

$$36 \div 3 = 12$$

$$18 \div 2 = 9$$

$$78 \div 13 = 6$$

$$45 \div 3 = 15$$

$$28 \div 7 = 4$$

$$55 \div 5 = 11$$

$$8 \div 8 = 1$$

$$140 \div 10 = 14$$

$$54 \div 6 = 9$$

$$143 \div 13 = 11$$

$$150 \div 10 = 15$$

$$64 \div 8 = 8$$

$$65 \div 13 = 5$$

$$5 \div 1 = 5$$

$$3 \div 1 = 3$$

$$18 \div 6 = 3$$

$$24 \div 8 = 3$$

$$70 \div 5 = 14$$

$$21 \div 7 = 3$$

$$77 \div 7 = 11$$

$$42 \div 3 = 14$$

$$35 \div 5 = 7$$

$$182 \div 14 = 13$$

$$28 \div 14 = 2$$

$$9 \div 9 = 1$$

$$36 \div 6 = 6$$

$$30 \div 6 = 5$$

$$81 \div 9 = 9$$

$$30 \div 15 = 2$$

$$28 \div 2 = 14$$

$$96 \div 12 = 8$$

$$24 \div 4 = 6$$

$$108 \div 9 = 12$$

$$36 \div 4 = 9$$

$$40 \div 5 = 8$$

$$7 \div 7 = 1$$

$$72 \div 8 = 9$$

$$20 \div 10 = 2$$

$$48 \div 12 = 4$$

$$80 \div 10 = 8$$

$$75 \div 15 = 5$$

$$14 \div 7 = 2$$

$$70 \div 7 = 10$$

$$10 \div 1 = 10$$

$$120 \div 8 = 15$$

$$12 \div 12 = 1$$

$$24 \div 2 = 12$$

$$6 \div 1 = 6$$

$$12 \div 6 = 2$$

$$12 \div 4 = 3$$

$$7 \div 1 = 7$$

$$120 \div 15 = 8$$

$$52 \div 4 = 13$$

$$100 \div 10 = 10$$

$$16 \div 4 = 4$$

$$54 \div 9 = 6$$

$$195 \div 13 = 15$$

### Homework Answers

### 14.2 Record and Practice Journal

Tell whether the ratios form a proportion.

- 1.  $\frac{1}{5}$ ,  $\frac{5}{15}$  2.  $\frac{2}{3}$ ,  $\frac{12}{18}$  3.  $\frac{15}{2}$ ,  $\frac{4}{30}$  4.  $\frac{56}{21}$ ,  $\frac{8}{3}$

no

yes

no

yes

5.  $\frac{5}{8}$ ,  $\frac{62.5}{100}$  6.  $\frac{17}{20}$ ,  $\frac{90.1}{106}$  7.  $\frac{3.2}{4}$ ,  $\frac{16}{24}$  8.  $\frac{34}{50}$ ,  $\frac{6.8}{10}$ 

ves

ves

Tell whether the two rates form a proportion.

- 9. 28 points in 3 games; 112 points in 12 games
- 10. 32 notes in 4 measures; 12 notes in 2 measures

ves

no

11. You can type 105 words in two minutes. Your friend can type 210 words in four minutes. Are these rates proportional? Explain.

yes

Lesson 14.3

January 17, 2017

## Essential Question:

How can you write a proportion that solves a problem in real life?

Lesson 14.3

January 17, 2017

## Lesson Objective:

Students will be able to:

write proportions to represent real life situations, and solve by using cross multiplication and inverse operations.

### Self-Evaluation Scale

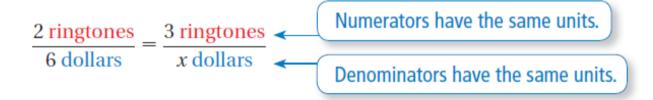
Score	Description
4	I can teach other students how to write proportions to represent real life situations, and solve by using cross multiplication and inverse operations.
3	I can write proportions to represent real life situations, and solve by using cross multiplication and inverse operations.
2	I recognize, but still need help to write proportions to represent real life situations, and solve by using cross multiplication and inverse operations.
1	I do not know how to write proportions to represent real life situations, and solve by using cross multiplication and inverse operations.

One way to write a proportion is to use a table.

	Last Month	This Month
Purchase	2 ringtones	3 ringtones
Total Cost	6 dollars	x dollars

Use the columns or the rows to write a proportion.

#### Use columns:



#### Use rows:



### 1

### **Writing a Proportion**

#### Black Bean Soup

1.5 cups black beans

0.5 cup salsa

2 cups water

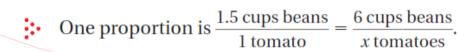
1 tomato

2 teaspoons seasoning

A chef increases the amounts of ingredients in a recipe to make a proportional recipe. The new recipe has 6 cups of black beans. Write a proportion that gives the number x of tomatoes in the new recipe.

Organize the information in a table.

	Original Recipe	New Recipe
Black Beans	1.5 cups	6 cups
Tomatoes	1 tomato	x tomatoes



### 2 Solving Proportions Using Mental Math

Solve 
$$\frac{3}{2} = \frac{x}{8}$$
.

**Step 1:** Think: The product of 2 and what number is 8?

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

$$2 \times ? = 8$$

The solution is x = 12.

**Step 2:** Because the product of 2 and 4 is 8, multiply the numerator by 4 to find *x*.

$$3 \times 4 = 12$$

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

$$2 \times 4 = 8$$

3 Solving Proportions Using ...

cross multiplication and inverse operations.

Solve 
$$\frac{3}{2} = \frac{x}{8}$$
.

### Reduce, then use mental math

$$\frac{14}{2I} = \frac{35}{X}$$

$$\frac{5}{9} = \frac{3}{w}$$

## Inverse Operation

The operation that reverses the effect of another operation.

Example: Addition and subtraction are inverse operations. Start with 7, then add 3 we get 10, now subtract 3 and we get back to 7.

Another Example: Multiplication and division are inverse operations. Start with 6, multiply by 2 we get 12, now divide by 2 and we get back to 6.

$$\frac{5}{9} = \frac{3}{w}$$

$$\frac{22}{t} = \frac{2}{7}$$

# Assignment

Complete problems:

8, 10, 16, 18, 20, 22, & 24

on pages 618 - 619 in your Big Ideas Text Book.

# Assignment Answers

8. 
$$\frac{12 \text{ points}}{14 \text{ shots}} = \frac{18 \text{ points}}{w \text{ shots}}$$

10. 
$$\frac{15 \text{ miles}}{2.5 \text{ hours}} = \frac{m \text{ miles}}{4 \text{ hours}}$$

**16.** 
$$z = 5$$

**18.** 
$$k = 15$$

**20.** 
$$b = 20$$

22. a. 
$$\frac{1 \text{ trombone}}{3 \text{ violas}} = \frac{t \text{ trombones}}{9 \text{ violas}}$$

**b.** 3 trombones

24. no; The solution of that equation is x = 1.5, but using mental math, you can see that the solution of the proportion is x = 24.

### Homework

In your Big Ideas Record and Practice Journal page 316.