January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to compare and graph ratios.

Warm Up

1. $2\frac{3}{5} \div \left(\frac{9}{4} \div \frac{5}{8}\right)$

2. $\frac{1}{5} \div \left(1\frac{3}{8} \div \frac{11}{6}\right)$

4. $\frac{4}{3} \div \frac{9}{10} \div \frac{7}{9}$

5. $\frac{2}{9} \div \frac{2}{3} \div 2\frac{6}{7}$

7. $\frac{1}{6} \div \left(2\frac{6}{7} \div \frac{3}{2}\right)$

8. $\frac{15}{8} \div \left(\frac{18}{5} \div \frac{2}{5}\right)$

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Warm Up Answers

1. $2\frac{3}{5} \div \left(\frac{9}{4} \div \frac{5}{8}\right)$

$= \frac{13}{18}$

2. $\frac{1}{5} \div \left(1\frac{3}{8} \div \frac{11}{6}\right)$

$= \frac{4}{15}$

4. $\frac{4}{3} \div \frac{9}{10} \div \frac{7}{9}$

$= \frac{40}{21} = 1\frac{19}{21}$

5. $\frac{2}{9} \div \frac{2}{3} \div 2\frac{6}{7}$

$= \frac{7}{60}$

7. $\frac{1}{6} \div \left(2\frac{6}{7} \div \frac{3}{2}\right)$

$= \frac{7}{80}$

8. $\frac{15}{8} \div \left(\frac{18}{5} \div \frac{2}{5}\right)$

$= \frac{5}{24}$

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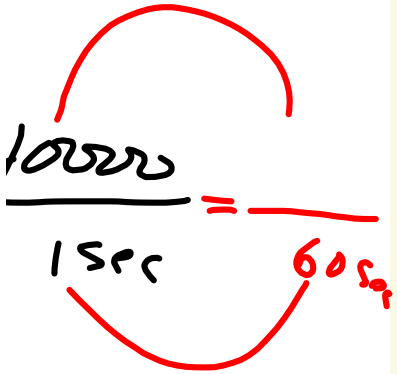
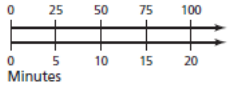
Homework Answers



5.3 Record and Practice Journal

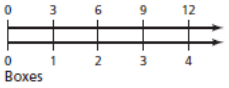
Write a rate that represents the situation.

1. Calories



100 calories for every 20 minutes

2. Dollars



$3 for every box

Write a unit rate for the situation.

3. 9 strikes in 3 innings

3 strikes : 1 inning

4. 117 points in 13 minutes

9 points : 1 minute

Decide whether the rates are equivalent.

5. 30 beats per 20 seconds,
   90 beats per 60 seconds

yes

6. 15 pages in 20 minutes,
   10 pages in 15 minutes

no

7. One of the valves on the Hoover Dam releases 40,000 gallons of water per second. What is the rate in gallons per minute?

2,400,000 gallons per minute

January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to compare and graph ratios.

Lesson 5.4 January 11 & 12, 2016

Essential Question:

How can you compare two ratios?

Lesson 5.4

January 11 & 12, 2016

Lesson Objective:

Students will be able to:

compare and graph ratios.

Self-Evaluation Scale

Score	Description
4	I can teach other students how to compare and graph ratios.
3	I can compare and graph ratios.
2	I recognize, but still need help to compare and graph ratios.
1	I do not know how to compare and graph ratios.

January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to compare and graph ratios.

Activity 1 & 2

Work with a partner on Activity 1 & 2 on page 109 & 110 of your (soft cover) Record and Practice Journal.

January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to compare and graph ratios.

1 ACTIVITY: Comparing Ratio Tables

Work with a partner.

- **You make purple frosting by adding 1 drop of red food coloring for every 3 drops of blue food coloring.**
- **Your teacher makes purple frosting by adding 5 drops of red food coloring for every 3 drops of blue food coloring.**

a. Copy and complete the ratio table for each frosting mixture.

Your Frosting	
Drops of [blue]	Drops of [red]
1	
2	
3	
4	
5	

Your Teacher's Frosting	
Drops of [blue]	Drops of [red]
3	
6	
9	
12	
15	

b. Whose frosting is bluer? Whose frosting is redder? Justify your answers.

c. **STRUCTURE** Insert and complete a new column for each ratio table above that shows the total number of drops. How can you use this column to answer part (b)?

January 11 & 12, 2016 Math 6 Lesson 5.4

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2 ACTIVITY: Graphing from a Ratio Table

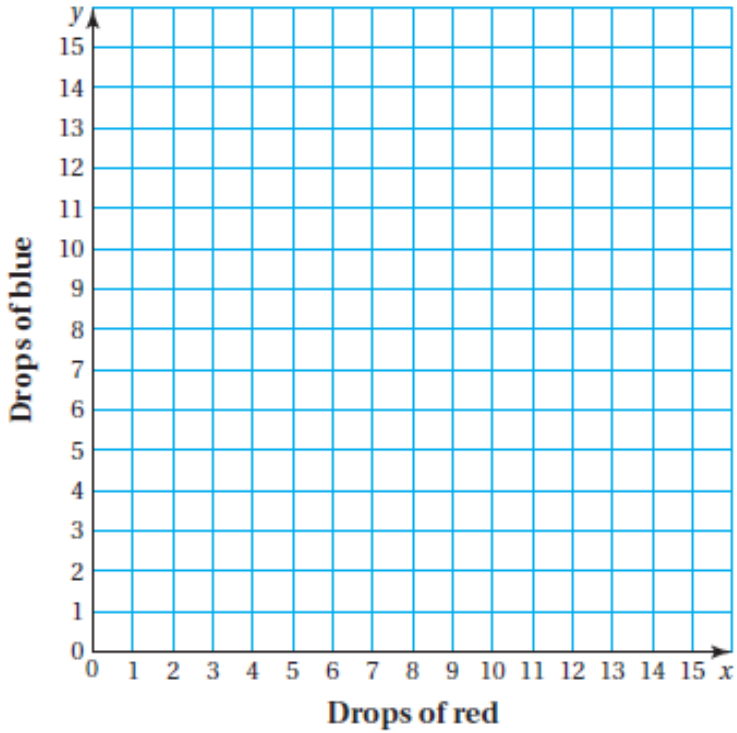
Work with a partner.

a. Explain how you can use the values from the ratio table for your frosting to create a graph in the coordinate plane.

b. Use the values in the table to plot the points. Then connect the points and describe the graph. What do you notice?

c. What does the line represent?

es.



January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to compare and graph ratios.

One way to compare ratios is by using ratio tables.

1 Comparing Ratios

You mix 8 tablespoons of hot sauce and 3 cups of salsa in a green bowl. You mix 12 tablespoons of hot sauce and 4 cups of salsa in an orange bowl. Which mixture is hotter?

Use ratio tables to compare the mixtures. Find a larger batch of each mixture in which the amount of hot sauce or salsa is the same.

Green Bowl

		×4	
Hot Sauce (tablespoons)	8	32	
Salsa (cups)	3	12	
		×4	

Orange Bowl

		×3	
Hot Sauce (tablespoons)	12	36	
Salsa (cups)	4	12	
		×3	

The tables show that for a larger batch of each mixture using 12 cups of salsa, the orange bowl would have $36 - 32 = 4$ more tablespoons of hot sauce.

∴ So, the mixture in the orange bowl is hotter.

January 11 & 12, 2016 Math 6 Lesson 5.4

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2 Comparing Unit Rates

Which bag of dog food is the better buy?

Use ratio tables to find and compare the unit costs.

20-Pound Bag

÷ 20

Cost (dollars)	17.20	0.86
Food (pounds)	20	1

÷ 20

30-Pound Bag

÷ 30

Cost (dollars)	25.20	0.84
Food (pounds)	30	1

÷ 30

The 20-pound bag costs \$0.86 per pound, and the 30-pound bag costs \$0.84 per pound.

∴ Because \$0.84 is less than \$0.86, the 30-pound bag is the better buy.

January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to compare and graph ratios.

3 Graphing Values from Ratio Tables

A hot-air balloon rises 9 meters every 3 seconds. A blimp rises 7 meters every 2 seconds.

Rises 9 meters every 3 seconds.

a. Complete the ratio table for each aircraft. Which rises faster?

Balloon	
Time (seconds)	Height (meters)
3	9
6	18
9	27
12	36

×2, ×3, ×4

Blimp	
Time (seconds)	Height (meters)
2	7
4	14
6	21
8	28

×2, ×3, ×4

Every 6 seconds, the balloon rises 18 meters and the blimp rises 21 meters.

∴ So, the blimp rises faster.

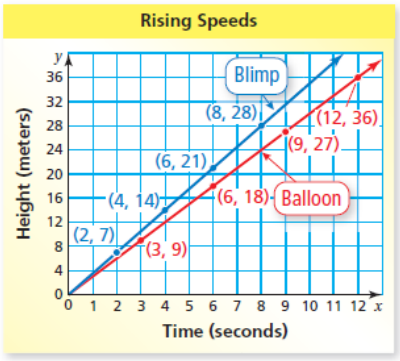
b. Graph the ordered pairs (time, height) from the tables in part (a). What can you conclude?

Write the ordered pairs.

Balloon: (3, 9), (6, 18), (9, 27), (12, 36)

Blimp: (2, 7), (4, 14), (6, 21), (8, 28)

Plot and label each set of ordered pairs. Then draw a line through each set of points.



∴ Both graphs begin at (0, 0). The graph for the blimp is steeper,

January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to make ratio tables and use them to solve problems.

Assignment

Complete problems:

4, 6, 8, 10, 12, 14, 16, & 18

on pages 214 - 215 in your Big Ideas Text Book.

January 11 & 12, 2016 Math 6 Lesson 5.4

Learning Objective: Students will be able to make ratio tables and use them to solve problems.

Assignment Answers

4. A

6. A

8. B

10. B

14. whole milk

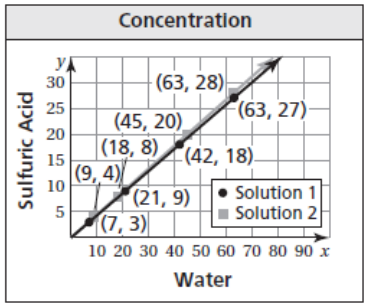
16. a. *Sample answer:*

Solution 1	
Water	Sulfuric Acid
7	3
21	9
42	18
63	27

Solution 2	
Water	Sulfuric Acid
9	4
18	8
45	20
63	28

Solution 2 has the greater concentration of acid.

b.



Both graphs begin at (0, 0). The graph for solution 2 is slightly steeper, so solution 2 has a greater concentration of acid.

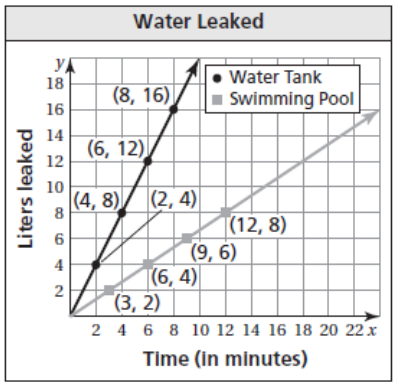
c. *Sample answer:* A graph is preferable because the rates are visible more quickly.

18. In general, all points on the graph will be of the form (kp, kq) where k is any positive number. *Sample answer:* $(2p, 2q)$

12.

Water Tank	
Time (min)	Liters Leaked
2	4
4	8
6	12
8	16

Swimming Pool	
Time (min)	Liters Leaked
3	2
6	4
9	6
12	8



Both graphs begin at (0, 0). The graph for the water tank is steeper, so the water tank leaks faster than the swimming pool.

Learning Objective: Students will be able to compare and graph ratios.

Lesson 5.4

January 11 & 12, 2016

Essential Question:

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Homework

In your Big Ideas Record and Practice Journal page 112.