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

Warm Up

1. $\frac{5}{2} - 2 \div 3$

6. $\frac{3}{5} \times \frac{8}{5} + 1$

11. $\frac{1}{2} + 10 - 4$

2. $\frac{1}{2} \div (1 \div 1)$

7. $\frac{3}{2} \times (7 - 5)$

12. $\left(6 - \frac{4}{3}\right) \times \frac{11}{2}$

3. $9 \times \frac{3}{2} - \frac{7}{2}$

8. $\frac{1}{6}^{\frac{8}{3} - \frac{2}{3}}$

13. $1 - \frac{5}{3} \times \frac{1}{6}$

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Warm Up Answers

1. $\frac{5}{2} - 2 \div 3$
   $= \frac{11}{6}$

6. $\frac{3}{5} \times \frac{8}{5} + 1$
   $= \frac{49}{25}$

11. $\frac{1}{2} + 10 - 4$
    $= \frac{13}{2}$

2. $\frac{1}{2} \div (1 \div 1)$
   $= \frac{1}{2}$

7. $\frac{3}{2} \times (7 - 5)$
   $= 3$

12. $\left(6 - \frac{4}{3}\right) \times \frac{11}{2}$
    $= \frac{77}{3}$

3. $9 \times \frac{3}{2} - \frac{7}{2}$
   $= 10$

8. $\frac{1\frac{8}{3} - \frac{2}{3}}{6}$
   $= \frac{1}{36}$

13. $1 - \frac{5}{3} \times \frac{1}{6}$
    $= \frac{13}{18}$

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

Lesson 5.4   December 3, 2014

Essential Question:

How can you compare two ratios?

Lesson 5.4

December 3, 2014

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.

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.

December 3, 2014 Period 4 Lesson 5.4

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

$\dfrac{3}{1}$ $\dfrac{5}{3}$

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 3 drops of red food coloring for every 5 drops of blue food coloring.

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

Your Frosting	
Drops of Red	Drops of Blue
1	3
2	6
3	9
4	12
5	15

Your Teacher's Frosting	
Drops of Red	Drops of Blue
3	5
6	10
9	15
12	20
15	25

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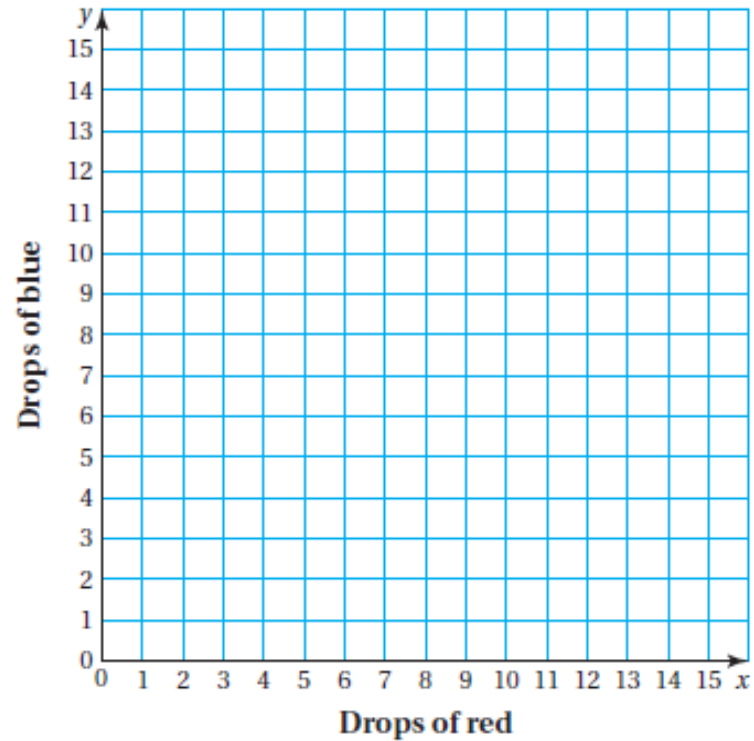
Learning Objective: Students will be able to compare and graph ratios.

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?
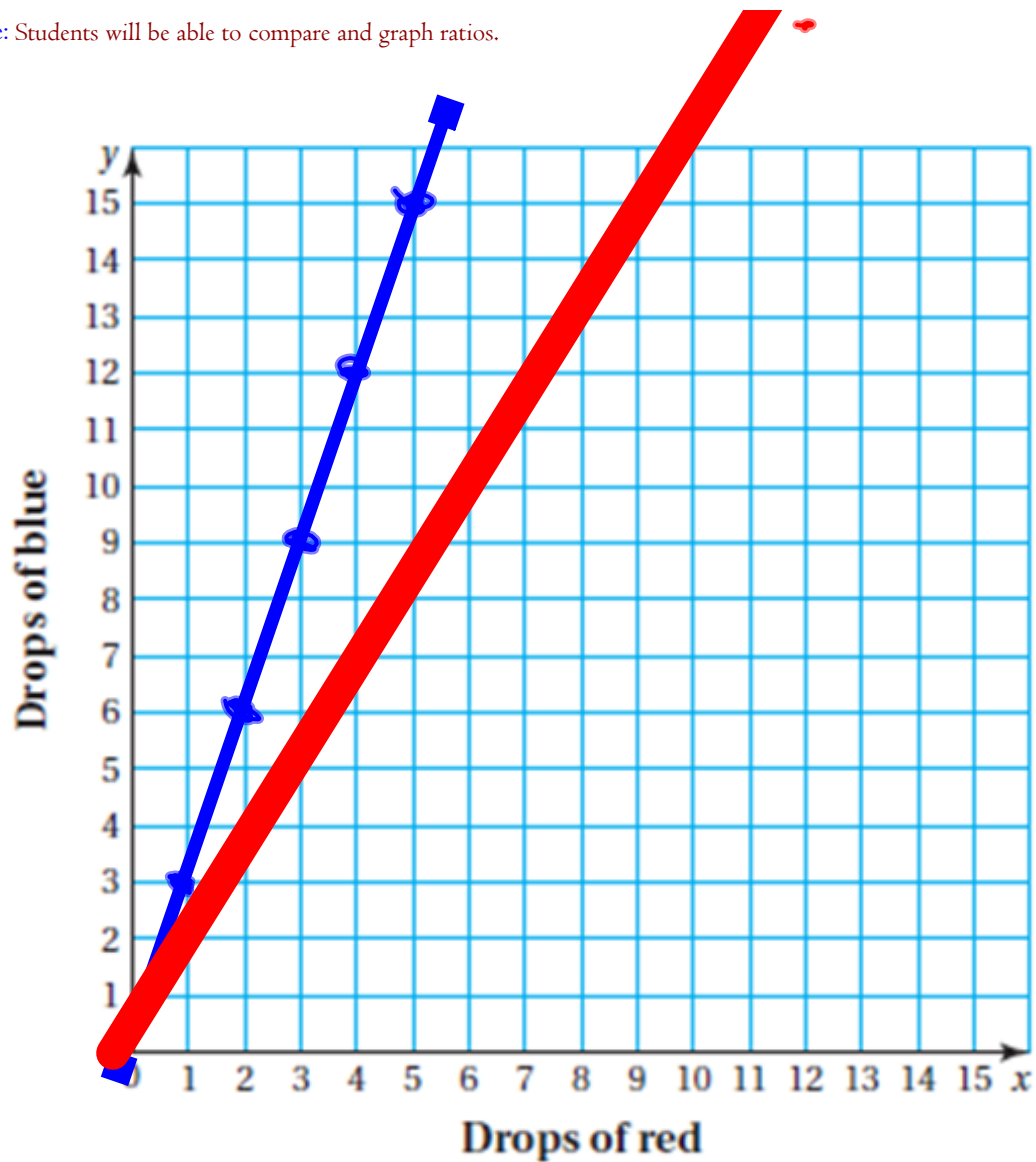
c. What does the line represent?

es.

Drops of blue (y-axis), Drops of red (x-axis)

December 3, 2014 Period 4 Lesson 5.4

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

Your Frosting	
Drops of Red	Drops of Blue
1	3
2	6
3	9
4	12
5	15

Your Teacher's Frosting	
Drops of Red	Drops of Blue
3	5
6	10
9	15
12	20
15	25

Drops of blue

Drops of red

$2\frac{2}{3}$ $\frac{3}{1}$

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

$2\frac{2}{3}$

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

×4

Orange Bowl   ×3

$\frac{3}{1}$

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

×3
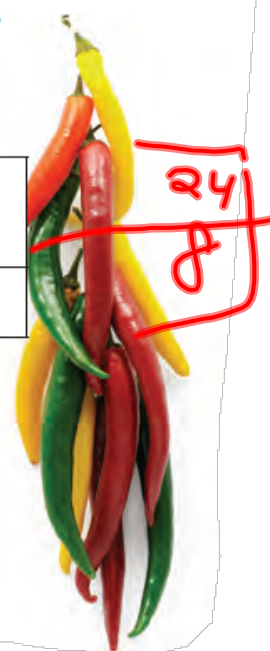
The tables show that for a larger batch of each mixture using 12 cups of salsa, the orange bowl would have $36 - 32 = 4$ more tablespoons of hot sauce.

So, the mixture in the orange bowl is hotter.

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

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.

December 3, 2014 Period 4 Lesson 5.4

(X, Y)

3 Graphing Values from Ratio Tables

A hot-air balloon rises 9 meters every 3 seconds. A blimp rises 7 meters every 2 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.
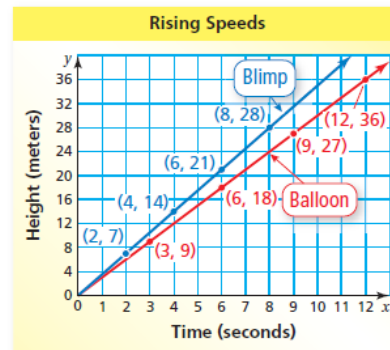
So, the blimp rises faster.

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.

Rising Speeds

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

Rises 9 meters every 3 seconds.

$\dfrac{9}{3}$ $\dfrac{3}{1}$

$\dfrac{7}{2}$

$\dfrac{7}{2} = 3\dfrac{1}{2}$

$\dfrac{3\frac{1}{2}}{1}$

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.

$$\frac{\$}{cans} \qquad \frac{15}{18} \qquad \frac{9}{12}$$

$$\frac{5}{6} \quad \frac{10}{12} \qquad \frac{3}{4} \quad \frac{9}{12}$$

$$\frac{1}{1} \qquad \frac{1}{1}$$

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

Assignment Answers

4. A

6. A

8. B

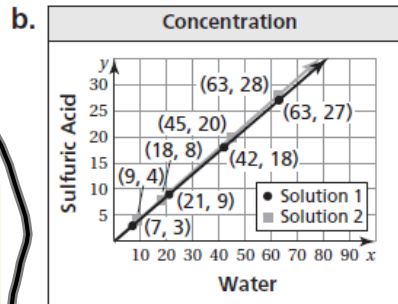**10.** B

14. whole milk

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

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.
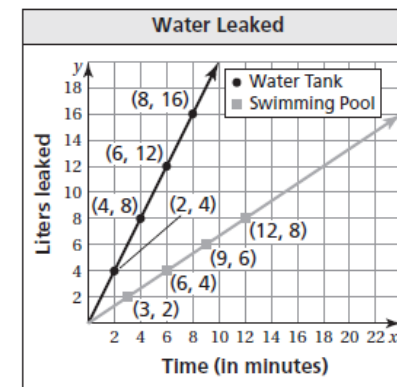
b.

Concentration

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.

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

Water Leaked

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

December 3, 2014

Essential Question:

How can you compare two ratios?

Lesson 5.4

December 3, 2014

Lesson Objective:

Students will be able to:

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Self-Evaluation Scale

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December 3, 2014 Period 4 Lesson 5.4

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Homework

In your Big Ideas Record and Practice Journal page 112.