

6TH GRADE MATH

Unit 7

Ratios

Date:

Extra! Extra! Read all about it!

We are going to start Unit 7 (Ratios). Here is a list of IXL topics, for every topic you complete you will earn some extra credit. Here are the possible points you can earn on each topic. The extra credit will be due by _____.

Smart Score on IXL

- 100% - 5 extra points
- 95% - 4 extra points
- 90% - 3 extra points
- 85% - 2 extra points
- 80% - 1 extra point

Unit 7 Topics – You can earn up to 75 extra credit points! You got this 😊

6.R.P.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

1. Write a ratio: word problems (6-R.3)
2. Write a ratio (6-R.1)
3. Which model represents the ratio? (6-R.)

6.R.P.A.3.a Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

4. Identify equivalent ratios (6-R.4)
5. Write an equivalent ratio (6-R.5)
6. Equivalent ratios: word problems (6-R.7)
7. Ratio tables (6-R.6)
8. Ratios and rates: complete a table and make a graph (6-R.)

6.R.P.A.3.d Use ratio reasoning to convert customary and metric measurement units (within the same system); manipulate and transform units appropriately when multiplying or dividing quantities.

9. Convert and compare customary units (6-T.3)
10. Convert, compare, add, and subtract mixed customary units (6-T.4)
11. Customary unit conversions involving fractions and mixed numbers (6-T.6)
12. Convert and compare metric units (6-T.7)
13. Convert between customary and metric systems (6-T.8)
14. Multiply and divide mixed customary units (6-T.5)
15. Unit prices with customary unit conversions (6-V.4)

Ratios

Name: _____

Date: _____

Daily Target: I can identify and model different ratios.

Ratios:

A _____ of _____ or more numbers. It can be written _____ different ways.

1. Using a colon $\rightarrow 5 : 4$
2. Using a Fraction $\rightarrow \frac{5}{4}$
3. Using a Word $\rightarrow (5 \text{ to } 4)$

REMEMBER!! \rightarrow The _____ in which you write the ratio is _____ to the meaning!

Example:



There are 6 stars to 4 circles

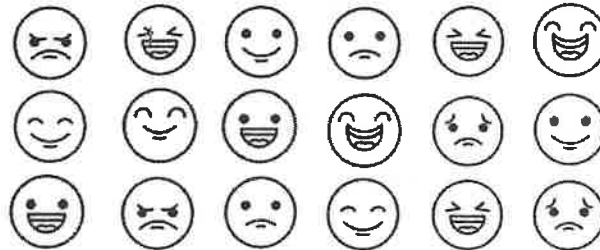
- 1.
2. -
- 3.

Simplifying!

This is the _____ for fractions! We just need to find a _____ number!

$$\frac{6}{4} \div \text{---} = \text{---}$$

Practice!



| | Colon | Fraction | Word |
|------------------------|-------|----------|------|
| Smiling to Not Smiling | | | |
| Angry to Happy | | | |
| Teeth to No Teeth | | | |

Word Problems!

In homework help room, there were 14 eighth graders, 12 seventh graders, and 8 sixth graders.

1. What is the ratio of the number of eighth graders to total number of students?
2. What is the ratio of the number of sixth graders to the number of seventh graders?

Name: _____

Score: _____

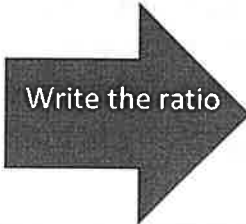
Period: _____

Writing Ratios

Example:

The garden has 17 tulips, 12 Daffodils, and 18 roses.

- A) Roses to Tulips
- B) Daffodils to Tulips
- C) Tulips to Roses
- D) Daffodils to Flowers

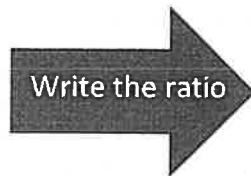


- 18 to 17
- 12 to 17
- 17 to 18
- 12 to 47

Directions: Use the following information to write a ratio.

1. The class has 14 boys, 12 girls, and 1 teacher.

- A) Boys to Girls
- B) Teacher to Girls
- C) Girls to Boys
- D) Teacher to Students



_____ to _____
 _____ to _____
 _____ to _____
 _____ to _____

2. The recipe has 10 tomatoes, 6 cucumbers, and 3 peppers.

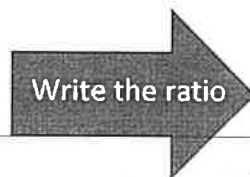
- A) Tomatoes to Peppers
- B) Cucumbers to Tomatoes
- C) Peppers to Cucumbers
- D) Tomatoes to Vegetables



_____ to _____
 _____ to _____
 _____ to _____
 _____ to _____

3. The school has 550 students, 30 teachers, and 10 administrators.

- A) Students to Teachers
- B) Teachers to Administrators
- C) Administrators to Students
- D) Administrators to Teachers



_____ to _____
 _____ to _____
 _____ to _____
 _____ to _____

Ticket Booth

Alignments to Content Standards: 6.RP.A.2 & 6.RP.A.3.a

You are going to an arcade at the mall with your friends. The arcade posts the following sign at the counter:

| |
|--|
| <p>Ticket Prices</p> <p>1 Ticket for \$0.50</p> <p>12 Tickets for \$5.00</p> <p>25 Tickets for \$10.00</p> <p>50 Tickets for \$25.00</p> <p>120 Tickets for \$50.00</p> <p>HAVE FUN!</p> |
|--|

1. If we needed to buy 100 tickets. What combination of tickets would result in the cheapest price?
-
2. Which amount of tickets offers the best deal? Explain.

Tape Diagrams

Name: _____

Date: _____

Daily Target: I can use tape diagrams to model ratios.

Tape Diagram

A _____ uses rectangles to model the _____ quantities of a ratio. Also called a _____ strip, strip diagram, length model, and bar _____.

In a delivery truck, the ratio of apples to oranges is 5:3. The total number of apples and oranges is 120. How many apples and oranges were on the truck?

$$120 \div (5 + 3) = 15$$



There are _____ apples and _____ oranges on the truck.

Practice!

1. A store has 888 sodas, both diet and regular. The ratio of diet sodas to regular sodas was 8:4. How many diet sodas were there?



2. In August, Emily's Clothing Store sold 460 shirts with the ratio of short sleeve to long sleeve being 3:7. How many short sleeve shirts were sold?



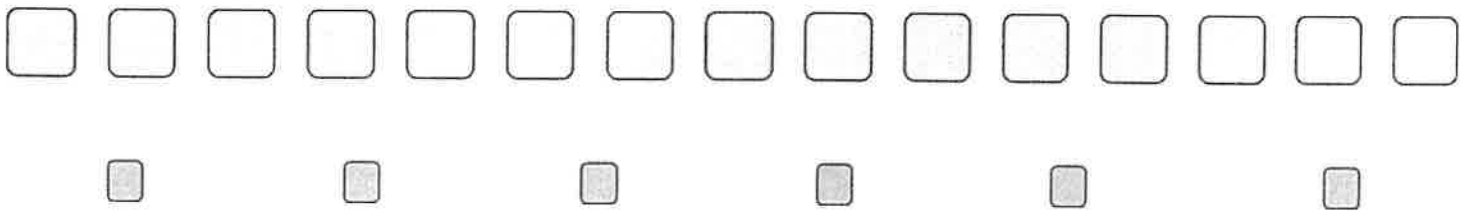
Baking Bread

Alignments to Content Standards: [5.RP.A](#)

A bread recipe calls for 5 cups of flour and 2 teaspoons of yeast.

1. How much flour and how much yeast do you need for two batches of bread? Draw a picture that shows the batches as well as the total amount of flour and total amount of yeast needed.

2. How many batches can you make with 15 cups of flour and 6 teaspoons of yeast? Indicate the batches in the picture.



3. We say that the ratios 5:2, 10:4, and 15:6 are *equivalent*. In this case, even though the amounts of each ingredient are not the same, they would make the same kind of bread. Find another ratio equivalent to these (and that would correspond to the same kind of bread) and draw a picture to represent it.

Ratio Tables

Name: _____

Date: _____

Daily Target: I can use ratio tables to convert between units of measurement.

Ratio Table

A _____ is a table of _____ ratios. The equivalent ratios can be made by _____ or dividing.

A ratio _____ is a way to compare _____.

Todd earns \$3 for every 5 chores he completes on his chore chart. Find equivalent ratios using the ratio table below.

| Chores | Total \$ | | Ratio |
|--------|----------|---|-------|
| | | → | |
| | | → | |
| | | → | |
| | | → | |
| | | → | |

1. How are the number of chores and the amount of money earned related?
2. How are the values in the chores column related?
3. How are the values in the money column related?

4. What do you notice about the ratio column?

Ratio Tables Practice!

Name: _____

Date: _____

Daily Target: I can use ratio tables to convert between units of measurement.

Example:

Use a table to find ratios equivalent to 3 to 2.

| | | | | |
|-----------------|-----------------------|------------------|------------------|------------------|
| | Original Ratio | $3 \cdot 2$ ↓ | $3 \cdot 3$ ↓ | $3 \cdot 4$ ↓ |
| Pints of yellow | 3 | 6 | 9 | 12 |
| Pints of blue | 2 | 4 | 6 | 8 |
| | | ↑ $2 \cdot 2$ | ↑ $2 \cdot 3$ | ↑ $2 \cdot 4$ |

Multiply the numerator and the denominator by 2, 3, and 4.

Multiply by 2

$$\frac{3}{2} \cdot \frac{2}{2} = \frac{6}{4}$$

Multiply by 3

$$\frac{3}{2} \cdot \frac{3}{3} = \frac{9}{6}$$

Multiply by 4

$$\frac{3}{2} \cdot \frac{4}{4} = \frac{12}{8}$$

$\frac{6}{4}$, $\frac{9}{6}$, and $\frac{12}{8}$ are equivalent.

Practice! Use a table to find three equivalent ratios.

1) 4 to 7

| | | | |
|---|----|----|----|
| 4 | 16 | | 44 |
| 7 | | 63 | |

2) $\frac{10}{3}$

| | | | |
|----|----|----|----|
| 10 | | 60 | |
| 3 | 24 | | 30 |

3) 2:5

| | | | |
|---|----|----|---|
| 2 | 10 | | 6 |
| 5 | | 35 | |

4) 8 to 9

| | | | |
|---|----|----|----|
| 8 | 16 | 32 | 40 |
| 9 | | | |

5) Britney does sit-ups every day. The table shows how long it takes her to do different number of sit-ups.

| | | | | | |
|--------------------------|----|----|----|-----|-----|
| Number of Sit-Ups | 10 | 30 | 50 | 200 | 220 |
| Time (min) | 2 | 6 | 10 | 40 | 44 |

How long do you predict it will take Britney to do 120 sit-ups?

Proportional Reasoning

Name: _____

Date: _____

Daily Target: I can use proportions and cross-multiplication to solve ratios.

_____ ratios can be found using _____ reasoning and cross-_____.

Proportional Reasoning

Step One:

Find the _____ that allows one value in the _____ ratio to be converted to the known value in the _____ ratio

Step Two:

_____ it by the other value in the _____ ratio.

$$4 : 5 = n : 20$$

Practice!

1. $1 : 6 = n : 18$

4. $\frac{2}{3} = \frac{n}{24}$

2. $3 : n = 6 : 8$

5. $\frac{5}{15} = \frac{12}{n}$

3. $5 : 9 = n : 45$

6. $\frac{16}{n} = \frac{36}{9}$

Cross-Multiplication

Name: _____

Date: _____

Daily Target: I can use proportions and cross-multiplication to solve ratios.

_____ ratios can be found using _____ reasoning and cross-_____.

Cross-Multiplication

Step One:

Set up as a cross-_____ problem.

$$\frac{4}{5} = \frac{n}{20}$$

Step Two:

_____ each set of values.

Step Three:

Use division to _____ the unknown value.

Step Four:

Solve the _____

Practice!

1. $\frac{2}{3} = \frac{n}{24}$

4. $\frac{4}{8} = \frac{n}{10}$

2. $\frac{5}{15} = \frac{12}{n}$

5. $\frac{12}{30} = \frac{30}{n}$

3. $\frac{16}{n} = \frac{36}{9}$

6. $\frac{3}{5} = \frac{18}{n}$

Conversion

Name: _____

Date: _____

Daily Target: I can use proportions and cross-multiplication to convert between different numbers.

If 3 inches on a map represents 50 miles, how much does 4.5 inches represents on the same map?

Step One:

Write the _____ of the given numbers in a _____.

Step Two:

Write the numbers in the _____ order as your _____ ratio.

Step Three:

Write the _____ that includes your _____ variable.

Step Four:

Solve using _____-multiplication or _____ reasoning.

Practice!

1. Convert 84 ounces to pounds. There are 16 ounces in 1 pound.

$$\frac{oz}{p} = \frac{16}{1} = \text{---}$$

2. There are 12 gallons of milk in the fridge. There are 8 pints in each gallon, how many pints of milk are there?

$$\frac{p}{g} = \text{---} = \text{---}$$

3. Sara pours 6 gallons of water into her aquarium. If there are four quarts in each gallon, how many quarts of water does Sara pour into the aquarium?

$$\frac{q}{g} = \text{---} = \text{---}$$

4. Sasha used 235 milliliters of water in his volcano experiment. Each liter of water is equal to 1,000 milliliters of water. How many liters of solution did Sasha use?

$$\text{---} = \text{---} = \text{---}$$

Name _____

Date _____

| | |
|--|---|
| <p>Sara is 1.5 meters tall. If there are 0.3 meters in one foot, how tall is she in feet?</p> <p>(Hint: What is your original ratio?)</p> $\frac{m}{ft} = \frac{m}{ft}$ | <p>Tiana owns a table that is 32 inches wide. There are 2.54 centimeters in an inch. How wide is the desk in centimeters?</p> <p>(Hint: What is your original ratio?)</p> $\frac{cm}{in} = \frac{cm}{in}$ |
| <p>Jordan used 452 milliliters of solution in his science lab. Each liter of solution is equal to 1,000 milliliters of solution. How many liters of solution did Jordan use?</p> <p>(Hint: What is your original ratio?)</p> $\frac{L}{mL} = \frac{L}{mL}$ | <p>If 3 inches on a map represents 120 miles, how much does 4.5 inches represents on the same map?</p> <p>(Hint: What is your original ratio?)</p> $\frac{in}{mi} = \frac{in}{mi}$ |
| <p>Lana pours 7 gallons of water into her fish tank. If there are four quarts in each gallon, how many quarts of water does Lana pour into the aquarium?</p> <p>_____ = _____</p> | <p>If 4 inches on a map represents 105 miles, how much does 6.5 inches represents on the same map?</p> <p>_____ = _____</p> |
| <p>Caleb is 2.1 meters tall. If there is 0.3 meters in one foot, how tall is he in feet?</p> | <p>Logan owns a chair that is 22 inches wide. There are 2.54 centimeters in an inch. How wide is the chair in centimeters?</p> |
| <p>Dearion pour 12 gallons of water into his aquarium. If there are four quarts in each gallon, how many quarts of water does Dearion pour into the aquarium?</p> | <p>Kylie is building a birdhouse. She purchased three 12-foot-long boards. Kylie must cut pieces for the rood that are 20 inches long. What is the greatest number of 20-inch pieces she can cut from each board?</p> |

Hunger Games versus Divergent

Alignments to Content Standards: 6.RP.A

6.RP.A.3

Task

The 150 6th grade students at NPMS were asked if they prefer seeing the movie *Hunger Games* or *Divergent*. The data showed that 100 preferred *Hunger Games* and 50 preferred *Divergent*.

1. Look at the following statements and decide if each accurately reports the results of the survey and explain *how you know*.

- a. Students prefer *Hunger Games* to *Divergent* in a ratio of 1 to 3.
- b. Students prefer *Hunger Games* to *Divergent* in a ratio of 2 to 1.
- c. The ratio of students who prefer *Divergent* to students who prefer *Hunger Games* is 1 to 2.
- d. The number of students who prefer *Hunger Games* is 50 more than the number of students who prefer *Divergent*.
- e. The number of students who prefer *Hunger Games* is two times the number of students who prefer *Divergent*.

2. There are a total of 750 students in the school,

- a. How many prefer *Hunger Games*?
- b. How many prefer *Divergent*?

