

**Do Now:** Simplify

1)  $750/1000$

2)  $210/315$

3)  $94/188$

4)  $156/416$

## 6.1 Ratios and Rates

7.RP  
7.EE  
8.EE

- SWBAT find ratios and unit rates.
- SWBAT understand ways of representing numbers; understand the units of measurement.

Calculators: Yes

A **ratio** uses division to compare two quantities.

### Writing Ratios

-You can write a ratio of two quantities, a and b, where  $b \neq 0$ , in three ways:

- a to b
- a : b
- $a/b$

-Each ratio is read "the ratio of a to b"

-A ratio should be written in simplest form

An archer shoots 60 arrows at a target, with 44 arrows hitting the scoring area. *16 missed*

a) Write a ratio of the number of hits to the number of misses.

# of hits to # of misses

$44$  to  $16$   
 $11$  to  $4$       $11:4$       $\frac{11}{4}$

b) Write a ratio of the number of hits to the number of shots.

$\frac{44}{60} = \frac{11}{15}$       $11:15$       $11$  to  $15$

Rachelle tosses a foam ball at her wastebasket. Out of 40 tosses, she hits the basket 22 times.

a) Write a ratio of the number of hits to the number of misses.

$$\begin{array}{l} 22 \text{ to } 18 \\ \frac{11}{9} \end{array}$$

$$\frac{11}{9}$$

$$11:9$$

b) Write a ratio of the number of hits to the number of shots.

$$\begin{array}{l} 22 \text{ to } 40 \\ \frac{11}{20} \end{array}$$

$$\frac{11}{20}$$

$$11:20$$

**Equivalent ratios** are two ratios that have the same value.

Write the equivalent ratio.

$$1. \quad \frac{5 \text{ cm}}{1 \text{ min}} = \frac{? \text{ cm}}{1 \text{ hr}}$$

$$\frac{5 \text{ cm}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{300 \text{ cm}}{1 \text{ hr}}$$

Write the equivalent ratio.

$$2. \quad \frac{5 \text{ m}}{1 \text{ sec}} = \frac{? \text{ m}}{1 \text{ hr}}$$

$$18,000 \text{ m to } 1 \text{ hr}$$

$$\frac{5 \text{ m}}{1 \text{ sec}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{18,000 \text{ m}}{1 \text{ hr}}$$

Write the equivalent ratio.

$$3. \quad \frac{3 \text{ lb}}{\$1} = \frac{? \text{ oz}}{\$1}$$

$$\frac{3 \text{ lb}}{\$1} \cdot \frac{16 \text{ oz}}{1 \text{ lb}} = \frac{48 \text{ oz}}{\$1}$$

The ratio comparing the length of a bird's wings to the average width of the bird's wings is the bird's aspect ratio. Order the birds from greatest to least aspect ratio.

Bird	Wing Length (cm)	Average Wing Width (cm)
White-tailed eagle	209	30
European jay	47	12
Black-headed gull	83	8

**Rate** is a ratio of two quantities measured in different units.

**Unit rate** is a rate that has a denominator of 1 when expressed as a fraction.

Find the unit rate. denominator = 1

$$1. \quad \frac{140 \text{ words} \div 4}{4 \text{ min} \div 4} = \frac{35 \text{ words}}{1 \text{ min}}$$

Find the unit rate. denominator = 1

$$2. \quad \frac{80 \text{ oz}}{2.5 \text{ servings}} = \frac{32 \text{ oz}}{1 \text{ serving}}$$

$$3. \quad \frac{\$320}{4 \text{ people}} = \frac{\$80}{1 \text{ person}} \quad (\$80 \text{ to } 1 \text{ person})$$

$$4. \quad \frac{24 \text{ muffins}}{\$15} = \frac{1.6 \text{ muffins}}{\$1}$$

1.6 muffins to \$1

You host a party for 12 people. The food and drinks for the party cost \$66. What is the cost per person?

Unit rate  $\frac{\$66}{12 \text{ people}} = \frac{\$5.50}{1 \text{ person}}$

A jet flies 540 miles per hour. Write its rate in miles per minute.

An insect crawls 1 foot in 10 seconds. At this rate, how far will it crawl in 5 minutes?

$$\frac{1 \text{ ft}}{10 \cancel{\text{ sec}}} \cdot \frac{60 \cancel{\text{ sec}}}{1 \text{ min}} = \frac{60 \text{ ft}}{10 \text{ min}}$$

$$= \frac{30 \text{ ft}}{5 \text{ min}}$$

### Exit Pass 6.1

One adult chaperone is required to accompany every six students on a museum tour. How would you write this ratio of students to adults? Represent the ratio in three different ways.

"Don't blame the sea if you cannot catch a fish."

Working individually or with a partner, complete the workbook.

**Workbook pg.**



## Reflection of Today's Lesson

### 6.1 Ratios and Rates

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7.EE  
8.EE

- SWBAT find ratios and unit rates.
- SWBAT understand ways of representing numbers; understand the units of measurement.

**Calculators: Yes**

## Homework

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