

# Homework

## Unit 3 · Lesson 2: Unit Rates

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** I will create ratios to determine a unit rate.

### Vocabulary

**Ratio:** a comparison of any two quantities



The ratio of circles to stars is  $\frac{2}{5}$  or 2:5 or 2 to 5.

This is a part-to-part ratio.

**Rate:** a special ratio that compares two quantities that have different units of measure

Example:

Miguel types 160 words in 4 minutes.

$\frac{W}{T}$  words : time words to time

$$\frac{160}{40} = 40 \text{ words per minute.}$$

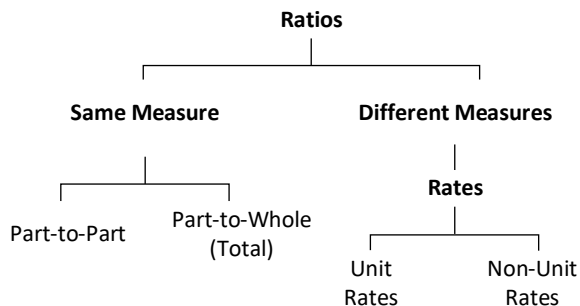
**Unit:** expresses how an amount is measured

dollars per pound, miles per gallon

**Unit Rate:** a ratio showing a comparison to one; a rate with a denominator of 1

$$70 \text{ miles per hour} = \frac{70}{1}$$

### Ratio Review:



### Steps:

#### Unit Rates:

1. Identify and write the rate in words.
2. Express the units/quantity as a ratio (fraction form).
3. Divide the numerator by the denominator to find a denominator of 1.

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### Example # 1

**Directions:** Identify the unit rate and state how you know your solution is reasonable.

Steve can paint one third of a house in half an hour.

**Solution:**

- Determine the units being used:  
The given units are house and hour.
- Create a ratio in the form of a fraction.

$$\bullet \frac{\frac{1}{3} \text{ house}}{\frac{1}{2} \text{ hr}} = \frac{1}{3} \div \frac{1}{2} = \frac{1}{3} \times \frac{2}{1} = \frac{2}{3} = \frac{2}{3} \frac{\text{house}}{1}$$

Unit rate:  $\frac{2}{3}$  of a house/ 1 hour

- Possible justification: 1 hour is more than  $\frac{1}{2}$  an hour, so the work done should be more than  $\frac{1}{3}$ .
- Push for proportional reasoning: There are two half-hours in one hour, so the amount of work should be doubled or multiplied by 2 as well.

### Example # 2

Dan can make 400 sandwiches in  $2\frac{1}{2}$  hours.

**Solution:**

- Identify the units being used:  
The given units are sandwiches and hours.
- Create a ratio in the form of a fraction.

$$\bullet \frac{400 \text{ sandwiches}}{2\frac{1}{2} \text{ hrs}} = \frac{400}{1} \div \frac{5}{2} = \frac{400}{1} \times \frac{2}{5} = \frac{800}{5} = \frac{160}{1}$$

Unit rate: 160 sandwiches/ 1 hour

Possible justification:  $160 + 160 + 80 = 400$  sandwiches and  $1\text{hr} + 1\text{hr} + \frac{1}{2} \text{ hour} = 2\frac{1}{2}$  hours.

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## Unit 3 · Lesson 2: Unit Rates

Name: \_\_\_\_\_

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**Directions:** Find the unit rate.

1. Raul can read 12 pages in half an hour.

2. Jax can wrap 27 presents in an hour and a half.

3. Millie can rake 14 bags of leaves in an hour and 45 minutes. (Use  $\frac{3}{4}$  hour for time.)

4. Lillie can pack 12 boxes of pasta in an hour and a half.

5. Ted can sew  $\frac{1}{2}$  of a pair of pants in 15 minutes.  
(Use  $\frac{1}{4}$  hour for time.)

6. Donald can read  $\frac{3}{4}$  of a book in  $1\frac{1}{2}$  hours.

Explain the steps you used to solve problem number \_\_\_\_\_.

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# Notes

A large, empty rounded rectangular box with a light blue border, intended for students to take notes during the lesson.