

Unit Rates

Procedural Lesson

Grade 7 • Unit 3 • Lesson 2

MC: 7.RP.1▲

MPs

✓ Applied MP
* Embedded MP

1	2	3	4	5	6	7	8
*		✓*	*		✓*		*

Problem of the Day

Objective: _____

Vocabulary

Ratio: a comparison of two quantities



The ratio of circles to stars is 2 to 5. (Part-to-Part)

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

Example:

Miguel types 160 words in 4 minutes.

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

$$\frac{160}{4} = 40 \text{ words per minute.}$$

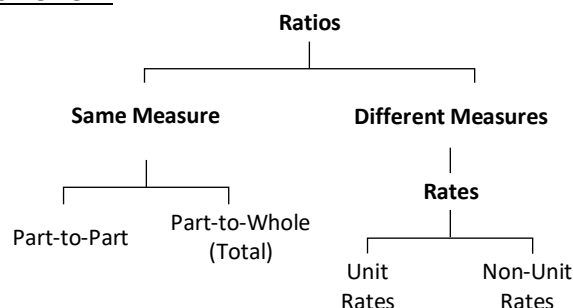
Unit: expresses how an amount is measured

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:



Notes

Unit Rates:

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

Structured Guided Practice

(A/B Partners Practice)

Directions: Find the unit rate.

1. Jane can read $\frac{1}{8}$ of a book in a quarter of an hour.

2. Stan can make 280 cookies in $3\frac{1}{2}$ hours.

Final Check for Understanding

(Teacher Checks Work)

Directions: Find the unit rate.

1. Adam can run 15 miles in $2\frac{1}{2}$ hours.

2. Max can pack $\frac{3}{4}$ of a room for moving in 15 minutes. (Use $\frac{1}{4}$ hour to represent 15 minutes.)

Student Practice

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Name: _____

Date: _____

Directions: Find the unit rates. State how the solution is reasonable.

1. Hal can bike 50 miles in four hours.

2. Sam can bike $\frac{1}{2}$ mile in $\frac{1}{4}$ of an hour.

3. George can paint one-fourth of a house in 1 hour and a half.

4. Elaine can pack 75 books in an hour and a half.

5. Dan can type 7,800 words in two and half hours.

6. Stan can cut 7 lawns in $3\frac{1}{2}$ hours.

Challenge Problems

Directions: Read and solve. State how the solution is reasonable.

1. Duke can swim 10 laps in five minutes. What is his unit rate (where time is in hours)?

2. Explain which movie theater is giving a better deal. Identify the unit rate for each offer.

Theater A \$126 for 7 tickets

Theater B \$57 for 3 tickets

Extension Activity

- * **MP1:** Make sense of the problem and persevere in solving it.
- * **MP4:** Apply mathematics in everyday life.

Which of the following would have a unit rate of $5/1$?

- \$320 for 64 hours of work
- 15 dogs live in 5 houses
- 40 cups for 8 tablespoons
- 140 miles in 28 hours

Closure

Reaching Consensus

**MP3: Do you agree or disagree with your classmate? Why or why not?*

Student Presentations

**MP1: What steps in the process are you most confident about?*

**MP6: Explain how you might show that your solution answers the problem.*

Closure

Recap today's lesson with one or more of the following questions:

✓MP3: What were you considering when identifying the units?

✓MP6: What are the key points in this lesson?