

Unit Rate

Lesson Overview

In this lesson, students will use their pulse to explore proportional reasoning and unit rates. Connections will also be made to grocery store unit rates and other rates such as speed limit.

Standards Addressed

7.RP.1 Compute unit rates with associated ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.

Disciplinary Literacy Best Practices

Graphic Organizer
Bounce Cards
Making Thinking Visible
Two-Minute Paper

Lesson Plan

Time Required – Two 60-minute Class Period

Disciplinary Vocabulary : unit rate

Materials Needed:

- Stop Watches

Assessment: Making Thinking Visible, Two-Minute Paper

Engage

- Students will view a short video clip on finding pulse.

Explore

- With a partner, students will take each other's pulse for two minutes each.
- Students will use the data gathered for two minutes to determine the pulse rate for one minute. Students will use Bounce Cards as they work to practice academic conversation.
- Key Questions:
 - How can you show that two objects are proportional?
 - The unit rate is the rate for one minute. What is the unit rate for your pulse?
 - How might a bar diagram help you determine the unit rate? What other ways might you use to determine the unit rate for your pulse?

Explain

- Students complete a graphic organizer to summarize their understanding about rate, and unit rate. The graphic organizer will provide space to record terms, description of each, example of each, and common uses.
- Teacher will model an example problem for speed using the following guiding questions: Why might you need to know how to calculate the number of miles per hour? What is the numerator of the fraction? What is the denominator of the fraction? To simplify the unit rate, what should you do?
- Teacher will model a problem about unit price of items at the grocery store.
 - Key Questions:
 - How have you seen this used by someone in your family?
 - Why do you think they did this?
- Students will practice problems involving rate and unit rate.

Extend

- Students will be provided grocery store advertisements and collect data from at least two different grocery stores on prices of items. They should select an item that comes in multiple sizes, such as cereal or detergent. Students will record the size of the product and total cost, then calculate the unit price of the item to determine which store has a better price.
- Sample Data Table:

Store	Size of product	Total cost (\$)	Unit price (\$)

- Students will be provided a budget for snacks for an upcoming field trip. They must make sure they have a snack and drink for every student in the 7th grade class. Students will research prices at various stores to determine the best price for their snack proposal. Pairs of students will Make Thinking Visible (MTV) to explain their solution using chart paper and markers. Charts should display the items they recommend for purchase, as well as any calculations and total cost.

Lesson Assessment: Students will reflect on their learning in a two-minute paper. Questions: How might rate and unit rate be useful to us as consumers? How did the Bounce Card strategy help you and your partner work more effectively? What can you do better next time to make the process go more smoothly? What can your partner do better next time to make the process go more smoothly?

Teacher Reflections and Biographical Information

This lesson is designed for a lower level class. Due to skill gaps, heterogeneous pairing is used to help move the lesson along. Some students are given copies of notes to be used as guided notes. Also, students have been previously taught how to solve for unit rates using bar models. Encouraging struggling learners to use these in their calculations ensures success. Lesson

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