

Unit Rates

CCSS:

6.RP.A.2 “Understand the concepts of a unit rate a/b associated with a ratio $a:b$ where b does not = 0, and use rate language in the context of a ratio relationship.”

Objective: Students will be able to define what rates are and accurately complete problems pertaining to rates.

Setting the Stage:

- Remind the students of the definition of a ratio.
- Show them the toothpaste commercial and ask them to define the ratio that is given.
 - 4 out of 5 dentists
- Ask them to raise their hand if they have ever...
 - seen a speed limit
 - bought fruits and veggies at a store and used a scale to determine its price
 - Checked your pulse
 - These are all examples of rates!
- Read the definition of a rate and have the students write it in their notebooks.
 - Def: a ratio comparing two quantities of different kinds of units.

LESSON DESIGN

Modeling:

- Miles per hour
 - *Miss Larimore travelled 120 miles in two hours. Write this rate the three different ways (120mi : 2hr, 120mi/2hr, picture), then simplify.*
 - Draw a rectangle to represent 120 miles, then segment it in half to represent 2 hours. To find the rate, divide 120 miles by 2 hours = 60 miles / 1 hour or 60 mph.
 - The simplified version is an example of a unit rate.
 - In notebooks: A unit rate has a denominator of 1 unit when it is written as a fraction.
 - We use unit rates most often because they are easier to measure.
 - *Douglas rode 40 miles on his bike, which took him 2 hours. Write this as a unit rate.*
 - First, set up the ratio with 40 miles as the numerator and 2 hours as the denominator.
 - The goal is to make the denominator 1 unit (1 hour), so divide the fraction by $2/2$ to get 20 miles/1 hour.
 - If the problem said he rode 80 miles per 4 hours, divide the fraction by $4/4$.

We do:

- Work with a partner to find the unit rate of 50 feet to 5 seconds.
- Remind them to always write the units for the numerator and the denominator, not just the numbers.

Modeling:

- Unit Price
 - Write definition in notebooks
 - Def: The cost per unit.
 - *Miss Larimore spent \$36 on 4 concert tickets.* Write this in its three forms, then reduce it to simplest form.
 - Simplest form = \$9 per ticket or \$9/1 ticket.
 - This is the unit price.

We Do:

- #1 p.34 44 points in 4 quarters (football)
 - Work with a partner
- Do more problems if you have time and the students need it.
- #7 How are rates and ratios related?
 - Rates are a type of ratio, but they have different units for the numerator and denominator.
- #11 p.36 Answer as a class.

CLOSER

- Review the definitions of rates and unit rates.
 - Ask the class to give you the answers or read the definitions aloud together.