

Finding Unit Rates

The contents of this content module were developed by special educator Bethany Smith, PhD and validated by content expert Drew Polly, PhD at University of North Carolina at Charlotte under a grant from the Department of Education (PR/Award #: H373X100002, Project Officer, Susan.Weigert@Ed.gov). However, the contents do not necessarily represent the policy of the Department of Education and no assumption of endorsement by the Federal government should be made

Ratio versus rate

- Ratio- comparison of two quantities with the same unit of measure
 - If a pack of 90 buttons cost \$3.00, the ratio would be:
- Rate- comparison of two quantities that have **different units**

$$\frac{90}{3}$$

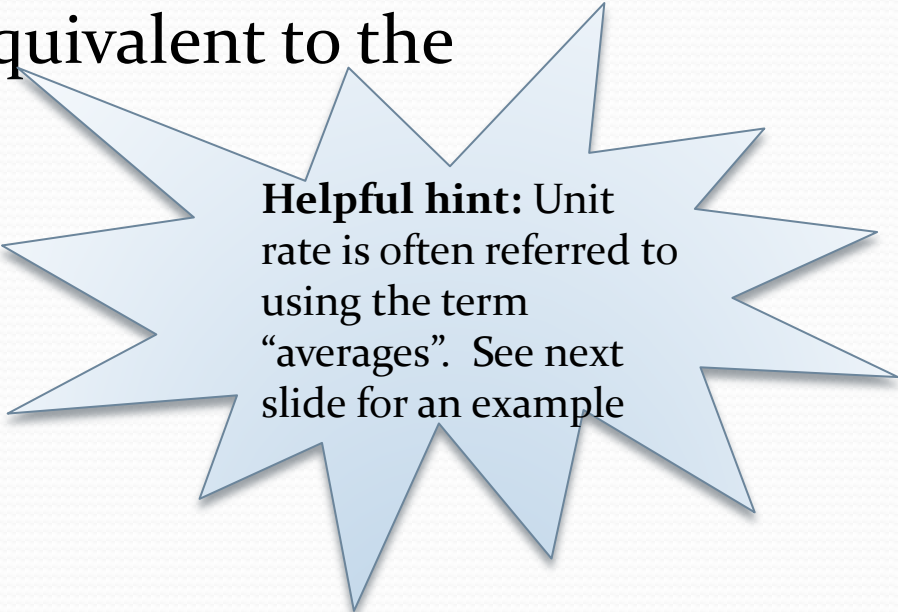
$$\frac{90 \text{ miles}}{3 \text{ hours}}$$

What is unit rate?

- Unit rate- rates where the second quantity (denominator) is 1

- The rate $\frac{90\text{miles}}{3\text{hours}}$ is equivalent to the

unit rate of $\frac{30\text{miles}}{1\text{hour}}$



Helpful hint: Unit rate is often referred to using the term “averages”. See next slide for an example

Finding unit rates: An example

Word Problem: A band is traveling from Charlotte, NC to Atlanta, GA. The bus traveled 260 miles in 5 hours. What was the average speed of the bus?

Step 1: Set up the rate $r = \frac{\text{distance}}{\text{time}}$

Step 2: Add facts from problem $r = \frac{260 \text{ mi}}{5 \text{ h}}$

Step 3: Solve for unit rate $r = 52 \text{ mi/h}$

Ideas for application

- Create word problems within the context of grocery shopping and finding the best price when comparing two items
 - Drew read 6 boxes in 2 weeks. If he keeps the same pace, how many books will he read in 1 week?
 - Today we need to buy soda for a class party. You can buy a three 2 liter of soda for \$4.35 or six 20 ounce bottle for \$1.95. A 2 liter of soda equals 67 ounces Find the unit price for both and compare to find the best price.

Making connections

- Finding unit prices addresses the following 6th and 7th grade Core Content Connectors
 - 6.ME.2a2 Solve one step real world measurement problems involving unit rates with ratios of whole numbers when given the unit rate
 - 6.PRF.1c1 Describe the ratio relationship between two quantities for a given situation
 - 6.PRF.2b4 Determine the unit rate in a variety of contextual situations
 - 6.PRF.2b5 Use ratios and reasoning to solve real-world mathematical problems
 - 7.PRF.1e1 Determine unit rates associated with ratios of lengths, areas, and other quantities measured in like units
 - 7.PRF.1g1 Solve real-world multistep problems using whole numbers