Bright Horizons Academy

Grade 6: Mathematics

Ratios and Unit Rates (Understanding and Using)

Objective:

Students will learn to *express* relationships between two quantities using ratios and calculate unit rates to easily compare values and solve problems.

Core Content:

A **ratio** compares two quantities. For example, if there are 2 apples and 3 oranges, the ratio of apples to oranges can be written as 2:3 or 2/3.

A **unit rate** is a ratio where one quantity is compared to one unit of another. To find the unit rate, divide the first quantity by the second.

> Example: If 10 pencils cost $5, divide $5 by 10 to get the unit rate of $0.50 per pencil.

Why It Matters: Ratios and unit rates help you compare quantities, make decisions, and solve real-world problems.

Examples:

- Example 1:
  - Problem: If 6 granola bars cost $3, what is the unit rate?
    - Step 1: Write the ratio: 6 bars to $3

- Step 2: Find the unit rate: $3 ÷ 6 = $0.50 per bar

- Example 2:
  - Problem: A car travels 150 miles in 3 hours.
    - Step 1: Write the ratio: 150 miles to 3 hours.

    - Step 2: Find the unit rate: 150 ÷ 3 = 50 miles per hour.

- Example 3:
  - Problem: If you read 40 pages in 2 days, what is the unit rate?
    - Step 1: Write the ratio: 40 pages to 2 days.

    - Step 2: Find the unit rate: 40 ÷ 2 = 20 pages per day.

Practice Questions:

Try these problems to practice calculating unit rates and understanding ratios:

1. If 8 bananas cost $4, what is the unit price per banana?

2. If you run 12 laps in 3 minutes, how many laps per minute is that?

3. A package of 6 notebooks costs $6, what is the unit rate per notebook?

4. If you travel 120 miles in 2 hours, what is your speed in miles per hour?

5. If 4 cupcakes cost $2, what is the cost of 1 cupcake?

Answers to Practice Questions:

1. Problem: 8 bananas cost $4
   - Step 1: Write the ratio: 8 bananas to $4

- Step 2: Find the unit rate: $4 ÷ 8 = $0.50 per banana

2. Problem: 12 laps in 3 minutes
   - Step 1: Write the ratio: 12 laps to 3 minutes
   - Step 2: Find the unit rate: 12 ÷ 3 = 4 laps per minute

3. Problem: 6 notebooks cost $6
   - Step 1: Write the ratio: 6 notebooks to $6
   - Step 2: Find the unit rate: $6 ÷ 6 = $1 per notebook

4. Problem: 120 miles in 2 hours
   - Step 1: Write the ratio: 120 miles to 2 hours
   - Step 2: Find the unit rate: 120 ÷ 2 = 60 miles per hour

5. Problem: 4 cupcakes cost $2
   - Step 1: Write the ratio: 4 cupcakes to $2
   - Step 2: Find the unit rate: $2 ÷ 4 = $0.50 per cupcake