

6.4 (B)

Apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates

INTERVENE

<1 min

Fluency Practice

Solve

- $234 \div 9 =$
- $(91 - 43) \div 2 =$
- $3 \times 6.5 =$

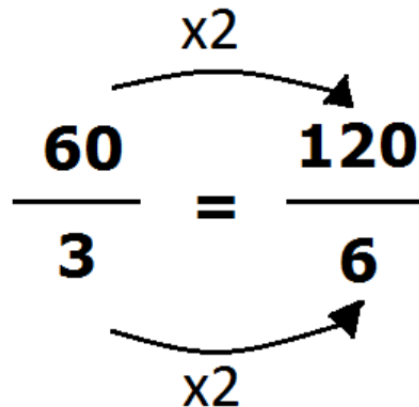
5 min

Problem Solving Strategies

- **1. Understand the Problem**
 - Read the problem carefully (at least 2 to 3 times)
 - Highlight important information (what do I know)
 - Identify Math Clue words (words that tell you what math operations you need to use)
 - Underline what you need to find
 - **2. Plan of Action (how you will solve this problem in steps)**
 - First I will
 - Then I will
 - Next I will
 - Finally, I will
 - **3. Show your work in steps (solve using your steps)**
 - **4. Check your answer (does my answer make sense? why)**
- <3 min

Lesson

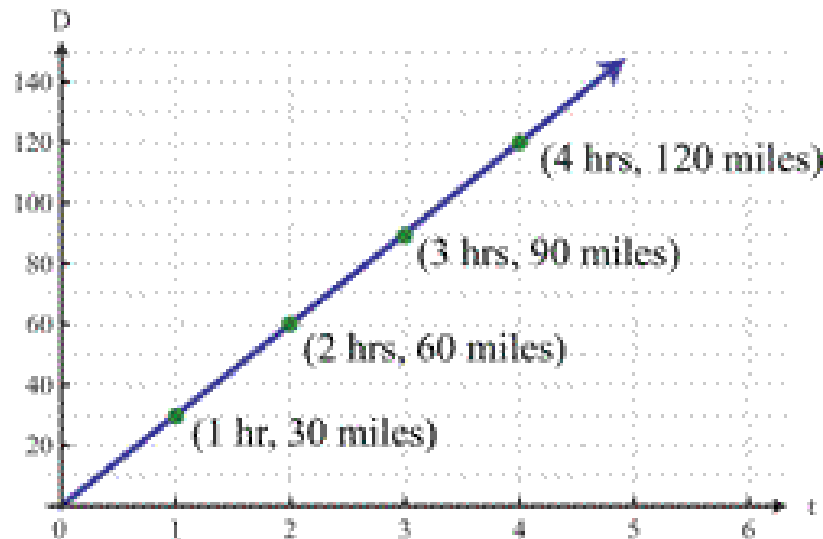
- Ratio - compares values. A ratio says how much of one thing there is compared to another thing
- A **proportion** says that two ratios (or fractions) are equal.

$$\frac{60}{3} = \frac{120}{6}$$


1 min

Proportional Relationships

- A **proportional relationship** between two variables is just a **relationship** where the ratio between the two variables is always going to be the same thing.
- Ex:

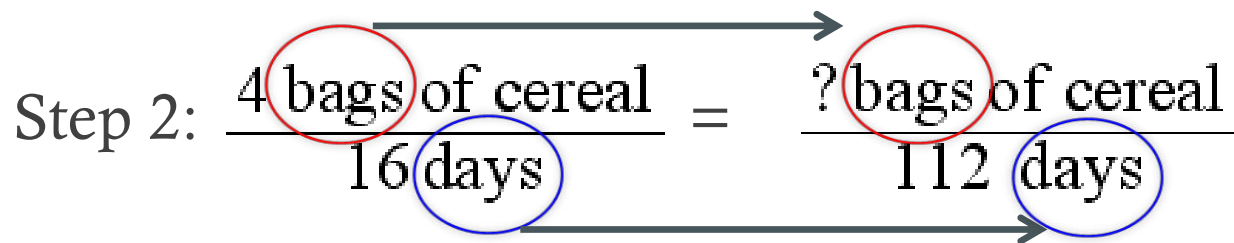


Example

- Robert bought 4 **bags** of cereal every 16 **days**. At this rate, how many **bags** of cereal would he buy in 112 **days**?

Step 1: Robert bought $\frac{4 \text{ bags of cereal}}{16 \text{ days}}$

Step 2: $\frac{4 \text{ bags of cereal}}{16 \text{ days}} = \frac{? \text{ bags of cereal}}{112 \text{ days}}$



Make sure your units match on top and bottom!

Step 3: $\frac{4 \text{ bags of cereal}}{16 \text{ days}} = \frac{? \text{ bags of cereal}}{112 \text{ days}}$

Which way to solve makes the most sense to **you**?
Use either one

Step 3: $\frac{4 \text{ bags of cereal}}{16 \text{ days}} = \frac{? \text{ bags of cereal}}{112 \text{ days}}$

Method 1

$$\frac{4 \text{ bags of cereal}}{16 \text{ days}} = \frac{? \text{ bags of cereal}}{112 \text{ days}}$$

$$4 \times 7 = 28$$

$$\frac{4 \text{ bags of cereal}}{16 \text{ days}} = \frac{? \text{ bags of cereal}}{112 \text{ days}}$$

$$16 \times 7 = 112$$

ANSWER = 28 bags of cereal

Method 2

$$\frac{4 \text{ bags of cereal}}{16 \text{ days}} = \frac{? \text{ bags of cereal}}{112 \text{ days}}$$

Step 1: multiply 4 x 112 diagonally

$$\frac{4 \text{ bags of cereal}}{16 \text{ days}} \times \frac{? \text{ bags of cereal}}{112 \text{ days}}$$

Step 2: divide your answer by 16

$$4 \times 112 = 448 \quad 448 \div 16 = 28$$

ANSWER = 28 bags of cereal

Example

- Jason played for 19 minutes every 3 games. Sam played 24 minutes every 4 games. Who played more minutes per game?

Step 1: **Jason** played $\frac{19 \text{ minutes}}{3 \text{ games}} = \mathbf{6.33 \text{ minutes per game}}$

Step 2: **Sam** played $\frac{24 \text{ minutes}}{4 \text{ games}} = \mathbf{6 \text{ minutes per game}}$

$6.33 > 6.00$ so Jason played more minutes per game

A barrel contained 60 gallons of water. Water leaked out of the barrel at a rate of 5 gallons every 3 days.

I Do



At this rate, how many days did it take for all 60 gallons of water to leak out of the barrel?

- F** 20 days
- G** 12 days
- H** 100 days
- J** 36 days

<5 min

We do - Question 1

In Austin, Texas, 8 bats ate 40 grams of insects in one night. At this rate, how many grams of insects could 64 bats eat in one night?

<5 min

We Do – Question 2

Megan and Desmond each added the same amount of water to their aquariums. Megan mixed 5 mL of a chemical solution with every gallon of water for her aquarium. Desmond mixed 8 mL of the chemical solution with every 2 gallons of water for his aquarium.

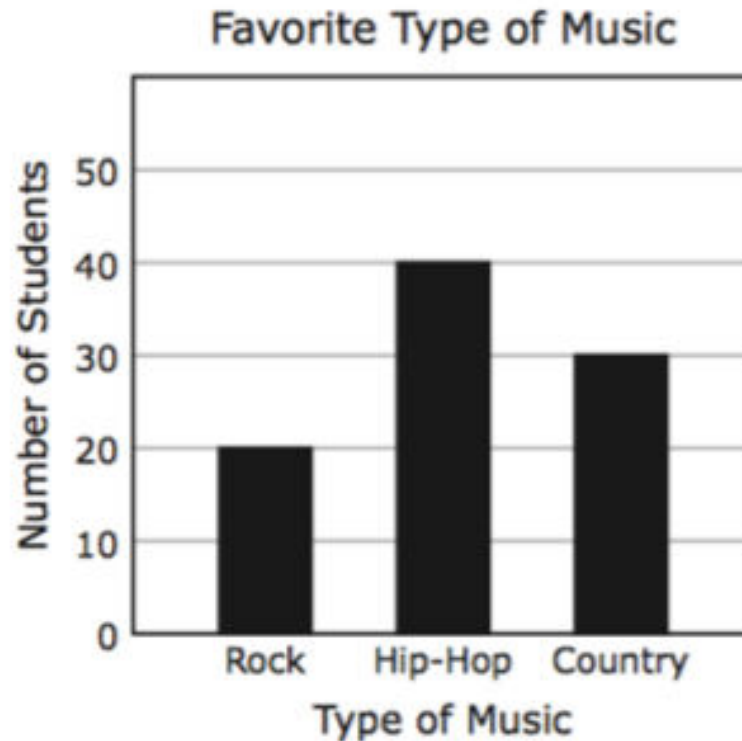
Which of these statements is true?

- A Megan used more solution per gallon of water than Desmond, because $5 : 1$ is greater than $8 : 2$.
- B Megan used more solution per gallon of water than Desmond, because 5 mL is greater than 2 mL.
- C Desmond used more solution per gallon of water than Megan, because 8 mL is greater than 5 mL.
- D Desmond used more solution per gallon of water than Megan, because $8 : 2$ is greater than $5 : 1$.

<5 min

We do - Question 3

Aiden asked a group of students to choose their favorite type of music from the choices of rock, hip-hop, and country. The results of the survey are shown in the graph.



F 240

G 80

H 60

J 180

Based on the graph, how many students in a class of 360 students would be expected to choose hip-hop or rock as their favorite type of music?

~J mmm

We do - Question 4

A window washer cleaned 38 windows in 2 hours. At this rate, how many windows did he clean in 7 hours?

<5 min

Debrief

- Ratio - compares values. A ratio says how much of one thing there is compared to another thing
- A **proportion** says that two ratios (or fractions) are equal.

$$\frac{60}{3} = \frac{120}{6}$$

The diagram illustrates the relationship between the two fractions in the proportion. An arrow points from 60 to 120 with "x2" above it, and another arrow points from 3 to 6 with "x2" below it.

1 min

You Do

- Go back to Intervene to take your quiz!

Answer Key

- I Do- J
- We Do 1 - 320
- We Do 2- A
- We Do 3 – F
- We Do 4- 133