

RATIOS 5.1

1

ESSENTIAL QUESTION

How can you represent a relationship between two quantities?

2

COMMON CORE STATE STANDARDS

6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

3

We are going to take a survey. How many people in the room:

- | | |
|-----------------------|---------------------|
| 1) Right-Handed | Left-Handed |
| 2) Girl | Boy |
| 3) Brown Eyes | Blue Eyes |
| 4) Have Pets | Don't Have Pets |
| 5) Long-Sleeved Shirt | Short-Sleeved Shirt |
| 6) Shorts | Pants |

4

A **RATIO** is a comparison of two quantities. It says how much of one thing there is compared to another thing.

Ratios can be part-to-part, part-to-whole, or whole-to-part.

5

What is the ratio of **red** crayons to **blue** crayons?

2 to 6 or 2:6

This ratio means that for every two red crayons there are 6 blue crayons.

This is a part-to-part ratio. (compares one part to another part)



6

What is the ratio of **blue** crayons to the **total number of crayons**? 6 to 8 or 6:8

This ratio means that 6 out of 8 crayons are blue.

This is a part-to-whole ratio. (compares one part to entire amount)



7

What is the ratio of the **total number of crayons** to **red** crayons? 8 to 2 or 8:2

This ratio means that out of 8 crayons two are red.

This is a whole-to-part ratio. (compares the entire amount to a part)



8

EXAMPLE 1 Writing Ratios

- a. Write the ratio of pennies to quarters.

6 to 7 or $6:7$

- b. Write the ratio of quarters to dimes.

1 to 3 or $1:3$

- c. Write the ratio of dimes to the total number of coins.

3 to 16 or $3:16$



9

On Your Own

Write the ratio of dimes to pennies.

3 to 6 or

$3:6$



10

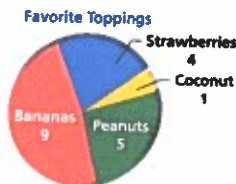
On Your Own

The circle graph shows the favorite ice-cream toppings of several students. Use ratio language to compare the number of students who favor peanuts to the total number of students.

5:19

5 out of

19 students



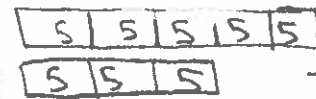
11 favor peanuts

EXAMPLE 2 Using a Tape Diagram

The ratio of your monthly allowance to your friend's monthly allowance is 5 : 3. The monthly allowance total \$40. How much is each allowance?

You

Your friend



To find out how much each part is figure

12 out what $40 \div 8$ is It's \$5.

Your allowance is \$25
and your friend's monthly allowance is \$15.

The 8 parts represent \$40.

EXAMPLE 2 Using a Tape Diagram

The ratio of small dogs to large dogs at a dog show is 4 : 3. There are 56 dogs at the dog show. How many small dogs and large dogs are there?

Small Dogs

8	8	8	8
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Large Dogs

8	8	8
---	---	---

$$56 \div 7 = 8$$

- 13 There were 32 small dogs and 24 large dogs

EXAMPLE 2 Using a Tape Diagram

The ratio of red pens to blue pens is 3 : 5. There are 72 pens total. How many red pens and blue pens are there?

blue pens

9	9	9	9	9
---	---	---	---	---

red pens

9	9	9
---	---	---

$$72 \div 8$$

- 14 There are 45 blue pens and 27 red pens.

EXAMPLE 3 Using a Tape Diagram

You separate 42 bulbs of garlic into two groups: one for planting and one for cooking. You will plant 3 bulbs for every 4 bulbs that you will use for cooking. Each bulb has about 8 cloves. About how many cloves will you plant?



Planting

6	6	6
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cooking

6	6	6	6
---	---	---	---

$$42 \div 7 = 6$$

$$\begin{array}{r} 6 \\ 18 \\ \times 8 \\ \hline 144 \end{array}$$

- 15 To find how many cloves you will plant multiply the number of bulbs you plant (18) by 8.
You will plant 144 cloves