November 24, 2014 Period 5 Lesson 5.1

Learning Objective: Students will be able to express the relationship between two quantities.

Warm Up

Find the value of each expression in lowest terms.

1. $13 \div \left(\frac{13}{10} \div \frac{6}{5}\right)$

2. $\frac{2}{3} \div \left(\frac{8}{7} \div \frac{13}{7}\right)$

4. $\frac{19}{5} \div 2 \div \frac{2}{7}$

5. $\frac{17}{4} \div \left(\frac{2}{5} \div 2\right)$

7. $\frac{7}{3} \div \left(\frac{9}{2} \div \frac{2}{3}\right)$

8. $\frac{6}{7} \div \left(\frac{4}{7} \div 1\right)$

November 24, 2014 Period 5 Lesson 5.1

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Warm Up Answers

Find the value of each expression in lowest terms.

1. $13 \div \left(\frac{13}{10} \div \frac{6}{5}\right)$
$= 12$

2. $\frac{2}{3} \div \left(\frac{8}{7} \div \frac{13}{7}\right)$
$= \frac{13}{12} = 1\frac{1}{12}$

4. $\frac{19}{5} \div 2 \div \frac{2}{7}$
$= \frac{133}{20} = 6\frac{13}{20}$

5. $\frac{17}{4} \div \left(\frac{2}{5} \div 2\right)$
$= \frac{85}{4} = 21\frac{1}{4}$

7. $\frac{7}{3} \div \left(\frac{9}{2} \div \frac{2}{3}\right)$
$= \frac{28}{81}$

8. $\frac{6}{7} \div \left(\frac{4}{7} \div 1\right)$
$= \frac{3}{2} = 1\frac{1}{2}$

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Lesson 5.1

November 24, 2014

Essential Question:

How can you represent a relationship between two quantities?

Lesson 5.1

November 24, 2014

Lesson Objective:

Students will be able to:

express the relationship between two quantities.

Self-Evaluation Scale

Score	Description
4	I can teach other students how to express the relationship between two quantities.
3	I can express the relationship between two quantities.
2	I recognize, but still need help to express the relationship between two quantities.
1	I do not know how to express the relationship between two quantities.

November 24, 2014 Period 5 Lesson 5.1

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There are 5 graphing calculators to 7 protractors.

There are 7 protractors to 5 graphing calculators.

There are 4 compasses to 7 protractors.

There are 5 graphing calculators to 4 compasses.

There are 7 protractors to 16 total objects.

The number of graphing calculators is $\frac{5}{16}$ of the total number of objects.

November 24, 2014 Period 5 Lesson 5.1

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Work with a partner. You mix different amounts of paint to create new colors. Write a statement that describes the relationship between the amounts of paint shown in each diagram.

a. Blue 

Green 

There are 4 parts blue for every 3 parts green.

b. Orange 

Yellow 

There are 2 parts or. for every 3 parts yellow

c. Red 

Blue 

d. White 

Purple 

November 24, 2014 Period 5 Lesson 5.1

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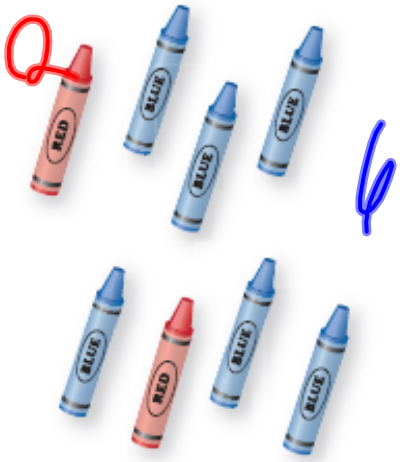
Key Idea

Ratio

Words A **ratio** is a comparison of two quantities. Ratios can be part-to-part, part-to-whole, or whole-to-part comparisons.

Examples
2 red crayons *to* 6 blue crayons
1 red crayon *for every* 3 blue crayons
3 blue crayons *per* 1 red crayon
3 blue crayons *for each* red crayon
3 blue crayons *out of every* 4 crayons
2 red crayons *out of* 8 crayons



Algebra The ratio of a to b can be written as $a : b$.

November 24, 2014 Period 5 Lesson 5.1

$a : b$

a to b

$\frac{a}{b}$

November 24, 2014 Period 5 Lesson 5.1

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1 Writing Ratios

You have the coins shown.

a. Write the ratio of pennies to quarters.

6 pennies → 6 to 7 ← 7 quarters

So, the ratio of pennies to quarters is 6 to 7, or 6 : 7.

b. Write the ratio of quarters to dimes.

7 quarters → 7 to 3 ← 3 dimes

So, the ratio of quarters to dimes is 7 to 3, or 7 : 3

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

3 dimes → 3 to 16 ← 16 coins

So, the ratio of dimes to the total number of coins is 3 to 16, or 3 : 16.

November 24, 2014 Period 5 Lesson 5.1

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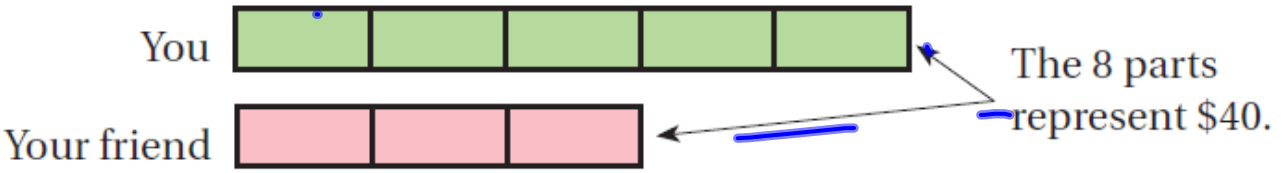
A *tape diagram* is a diagram that looks like a segment of tape. It shows the relationship between two quantities.

2 Using a Tape Diagram

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

To help visualize the problem, express the ratio 5 : 3 using a tape diagram.



Because there are 8 parts, you know that 1 part represents $40 ÷ 8 = $5.

5 parts represent $5 • 5 = $25.

3 parts represent $5 • 3 = $15.

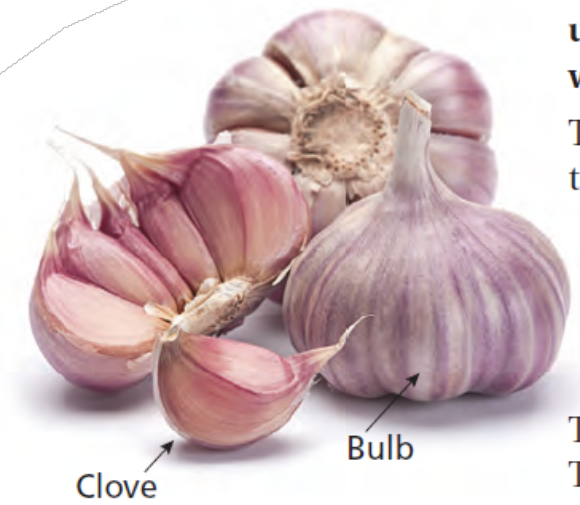
So, your monthly allowance is $25, and your friend's monthly allowance is $15.

November 24, 2014 Period 5 Lesson 5.1

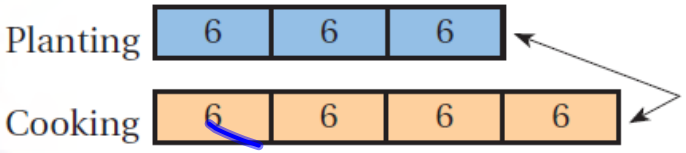
Learning Objective: Students will be able to express the relationship between two quantities.

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?



To help visualize the problem, express the ratio *3 for every 4* using a tape diagram.



The 7 parts represent 42 bulbs, so each part represents $42 \div 7 = 6$ bulbs.

There are $3 \cdot 6 = 18$ bulbs for planting and $4 \cdot 6 = 24$ bulbs for cooking. The group of 18 bulbs has about $18 \cdot 8 = 144$ cloves.

∴ So, you will plant about 144 cloves.

November 24, 2014 Period 5 Lesson 5.1

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Assignment

Complete problems 6, 8, 10, 12, 16, 18, 20, 22, & 24 on pages 194 - 195 in your Big Ideas Text Book.

Assignment Answers

6. 2 to 5, or 2 : 5; For every 2 frogs, there are 5 turtles.

8. 2 to 6, or 2 : 6; For every 2 calculators, there are 6 pencils.

10. 3 to 15, or 3 : 15; 3 out of 15 movies are dramas.

12. 15 to 4, or 15 : 4; Out of 15 movies, 4 are action.

16. 4 h

18. 21 states

20. 8; The ratio of boys to girls is 5 : 7, so each part is $48 \div 12 = 4$. So, there are $5 \cdot 4 = 20$ boys and $7 \cdot 4 = 28$ girls.

22. 67.5 in.; *Sample answer:* Using a tape diagram, 2 parts represents 15 inches, so each part is 7.5 inches. There are 9 total parts, which represents 67.5 inches.

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Lesson 5.1

November 24, 2014

Essential Question:

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November 24, 2014 Period 5 Lesson 5.1

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Homework

In your Big Ideas Record and Practice Journal page 100.