Size of Divisor and Size of Quotient

Lesson # 1

Let’s explore quotients of different sizes.

Today's Goals

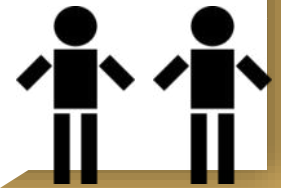
- ❑ When dividing, I know how the size of a divisor affects the quotient.

Students, write your response!

Number Talk: Size of Dividend & Divisor

Warm Up 1.1

- Number Talk
- MLR8: Discussion Supports



Find the value of each expression mentally.

$$5{,}000 \div 5$$

Students, write your response!

Find the value of each expression mentally.

$5{,}000 \div 5$

$5{,}000 \div 2{,}500$

Students, write your response!

Find the value of each expression mentally.

$5{,}000 \div 5$

$5{,}000 \div 2{,}500$

$5{,}000 \div 10{,}000$

Students, write your response!

Find the value of each expression mentally.

$5{,}000 \div 5$

$5{,}000 \div 2{,}500$

$5{,}000 \div 10{,}000$

$5{,}000 \div 500{,}000$

Students, write your response!

All Stacked Up

Activity 1.2

- Poll the Class
- MLR8: Discussion Supports

1. Here are several types of objects. For each type of object, estimate how many are in a stack that is 5 feet high. Be prepared to explain your reasoning.

a. Cardboard boxes

c. Notebooks

b. Bricks

d. Coins

2. A stack of books is 72 inches tall. Each book is 2 inches thick. Which expression tells us how many books are in the stack? Be prepared to explain your reasoning.

a. $72 \cdot 2$ b. $72 - 2$ c. $2 \div 72$ d. $72 \div 2$

3. Another stack of books is 43 inches tall. Each book is $\frac{1}{2}$-inch thick. Write an expression that represents the number of books in the stack.

Let’s Talk About It

- How did your estimates for the number of objects change as the object got thinner?
- Why might that be?
- https://ggbm.at/RJQyS6av

All In Order

Activity 1.3

- MLR2: Collect & Display

1. Your teacher will give your group two sets of division expressions. Without computing, estimate their values and arrange each set of expressions in order, from largest to smallest. Be prepared to explain your reasoning. When finished, pause for a class discussion.

2. Record the expressions in each set in order from largest to smallest.

   Set 1

   Set 2

3. Without computing, estimate each quotient and arrange them in three groups: close to 0, close to 1, and much larger than 1. Be prepared to explain your reasoning.

$30 \div \frac{1}{2}$	$9 \div 10$	$18 \div 19$	$15{,}000 \div 1{,}500{,}000$
$30 \div 0.45$	$9 \div 10{,}000$	$18 \div 0.18$	$15{,}000 \div 14{,}500$
close to 0		close to 1	much larger than 1

Let’s Talk About It

- How did you sort the two sets of equations?
- Which expressions were hard to place?
- How did you decide that a quotient is close to 0?
- How did you decide that a quotient is close to 1?
- Is there a way to tell if a quotient is less than 1 or more than 1?
- Suppose a divisor is less than the dividend. How can we tell if the quotient is just a little larger than 1 or much larger than 1?

Students, draw anywhere on this slide!

Are you ready for more?

Write 10 expressions of the form $12 \div ?$ in a list ordered from least to greatest. Can you list expressions that have value near 1 without equaling 1? How close can you get to the value 1?

Lesson Synthesis

The size of the dividend and the size of the divisor both affect the quotient.

- What happens to the quotient when we divide by smaller and smaller numbers?
- Which would result in a smaller quotient: dividing a number by 0.5 or dividing it by 5? Why?

Lesson Synthesis

The size of the dividend and the size of the divisor both affect the quotient.

- What can we say about the quotient when the divisor is much smaller than the dividend?
- What about when we divide a number by another number that is much larger?
- What can we say about the quotient when the divisor and the dividend are about the same size?

Students, write your response!

Today's Goals

- ❑ When dividing, I know how the size of a divisor affects the quotient.

Result of Division

Cool Down 1.4

Cool Down

Without computing, decide whether the value of each expression is much smaller than 1, close to 1, or much larger than 1.

1. $1{,}000{,}001 \div 99$
2. $3.7 \div 4.2$
3. $1 \div 835$
4. $100 \div \frac{1}{100}$
5. $0.006 \div 6{,}000$
6. $50 \div 50\frac{1}{4}$

Students, draw anywhere on this slide!