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Lesson 13: Writing Division Expressions

Student Outcomes

* Students write numerical expressions in two forms, and , and note the relationship between the two.

Lesson Notes

This is day one of a two-day lesson.

Classwork

**Discussion (8 minutes)**

The discussion will serve as a chance for students to show what they know about division and what division looks like. The discussion should conclude with the overall idea that writing as is a strategic format when working algebraically.

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* How can we write or show divided by ? (You may allow students to explain or even draw examples for class to see).
  + *Answers will vary. Students can draw models, arrays, use the division symbol, and some may even use a fraction.*
* When working with algebraic expressions, are any of these expressions or models more efficient than others?
  + *Writing a fraction to show division is more efficient.*
* Is the same as ?
  + *No, they are not the same. , while*
* How would we show divided by using a fraction?

Example 1 (5 minutes)

Example 1

Write an expression showing without the use of the division symbol.

* Let’s start by looking at a model of .

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* + *We can make a bar diagram.*

What can we determine from the model?

is the same as .

Example 2 (5 minutes)

Example 2

Write an expression showing without the use of the division symbol.

* Here we have a variable being divided by . Let’s start by looking at a model of .
  + *We can make a bar diagram.*

What can we determine from the model?

is the same as .

When we write division expressions using the division symbol, we represent .

How would this look when we write division expressions using a fraction?

Example 3 (8 minutes)

**Example 3**

* 1. Write an expression showing without the use of the division symbol.
* How can we use what we just learned in Examples 1 and 2 to help us with this example?

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* + *The dividend is the numerator, and the divisor is the denominator.*

* 1. Write an expression for divided by the quantity plus.
* How would this look with the division symbol?
* Now, let’s rewrite this using a fraction.

* 1. Write an expression for the quotient of the quantity reduced by and .
* Let’s start again by writing this using a division symbol first.
* Next, we will rewrite it using the fraction bar.

Exercises (10 minutes)

Have students use a white board or small board to practice the following questions.

Exercises

Write each expression two ways: using the division symbol and as a fraction.

* 1. divided by .

and

* 1. divided by .

***and***

* 1. divided by .

***and***

* 1. The quotient of and .

and

* 1. Seven divided by the quantity plus .

and

* 1. divided by the quantity minus .

and

* 1. The sum of the quantity and divided by .

and

* 1. The quotient of the quantity minus and .

and

Closing (4 minutes)

* Explain to your neighbor how you would rewrite any division problem using a fraction.
  + *The dividend would become the numerator, and the divisor would become the denominator.*

Exit Ticket (5 minutes)

Name Date

Lesson 13: Writing Division Expressions

Exit Ticket

Rewrite the expressions using the division symbol and as a fraction.

1. The quotient of and .
2. Five divided by the sum of and .
3. The quotient of decreased by and .

Exit Ticket Sample Solutions

Rewrite the expressions using the division symbol and as a fraction.

1. The quotient of and .

and

1. Five divided by the sum of and .

and

1. **The quotient of the quantity decreased by and .**

***and***

Problem Set Sample Solutions

1. Rewrite the expressions using the division symbol and as a fraction.
   1. Three divided by .

and

* 1. The quotient of and .

and

* 1. divided by the sum of and .

and

* 1. The quantity minus divided by .

and

1. Draw a model to show that is the same as .