



# Lesson 15: Read Expressions in Which Letters Stand for Numbers

## Student Outcomes

- Students read expressions in which letters stand for numbers. They assign operation terms to operations when reading.
- Students identify parts of an algebraic expression using mathematical terms for all operations.

## Classwork

### Opening Exercise (10 minutes)

**Opening Exercise**

Complete the graphic organizer with mathematical words that indicate each operation. Some words may indicate more than one operation.

<u>ADDITION</u>	<u>SUBTRACTION</u>	<u>MULTIPLICATION</u>	<u>DIVISION</u>	<u>EXPONENTS</u>
SUM	DIFFERENCE	PRODUCT	QUOTIENT	POWER
ADD	SUBTRACT	MULTIPLY	DIVIDE	SQUARED
MORE THAN	FEWER THAN	TIMES	EACH	CUBED
TOTAL	MINUS	EVERY	PER	
ALL TOGETHER	LESS THAN	DOUBLE, TRIPLE	SPLIT	
IN ALL	HOW MANY MORE	OF		
INCREASED BY	LEFT	AS MUCH		
PLUS	DECREASED BY	EACH		

Have different students share the vocabulary words they wrote in each category. If students are missing vocabulary words in their graphic organizers, have them add the new words. At the end of the Opening Exercise, every student should have the same lists of vocabulary words for each operation.

### Example 1 (13 minutes)

Have students write down an expression using words. Encourage students to refer back to the graphic organizer created during the Opening Exercise. After providing students time to write each expression, have different students read each expression out loud. Each student should use different mathematical vocabulary.

**Example 1**

Write an expression using words.

a.  $a - b$

*Possible answers: a minus b; the difference of a and b; a decreased by b; b subtracted from a.*

b.  $xy$

*Possible answers: the product of x and y; x multiplied by y; x times y.*

c.  $4f + p$

*Possible answers: p added to the product of 4 and f; 4 times f plus p; the sum of 4 multiplied by f and p.*

d.  $d - b^3$

*Possible answers: d minus b cubed; the difference of d and the quantity b to the third power.*

e.  $5(u - 10) + h$

*Possible answers: add h to the product of 5 and the difference of u and 10; 5 times the quantity of u minus 10 added to h.*

f.  $\frac{3}{d+f}$

*Possible answers: find the quotient of 3 and the sum of d and f; 3 divided by the quantity d plus f.*

MP.6

- Why is 3 divided by  $d$  plus  $f$  not a correct answer?
  - *Possible answer: 3 divided by  $d$  plus  $f$  would indicate that we divide 3 and  $d$  first and then add  $f$ , but this is not what the expression is showing.*

**Exercises (12 minutes)**

Students work with a partner to complete the following problems.

*Scaffolding:*  
If students are using the vocabulary words well or finish early, ask students to write two different expressions for Exercises 1–4.

**Exercises**

Circle all the vocabulary words that could be used to describe the given expression.

1.  $6h - 10$

ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
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2.  $\frac{5d}{6}$

SUM	DIFFERENCE	PRODUCT	QUOTIENT
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3.  $5(2 + d) - 8$

ADD

SUBTRACT

MULTIPLY

DIVIDE

4.  $abc$

MORE THAN

LESS THAN

TIMES

EACH

Write an expression using vocabulary words to represent each given expression.

5.  $8 - 2g$

*Possible answers: 8 minus the product of 2 and g; 2 times g subtracted from 8; 8 decreased by g doubled.*

6.  $15(a + c)$

*Possible answers: 15 times the quantity of a increased by c; the product of 15 and the sum of a and c; 15 multiplied by the total of a and c.*

7.  $\frac{m+n}{5}$

*Possible answers: the sum of m and n divided by 5; the quotient of the total of m and n, and 5; m plus n split into 5 equal groups.*

8.  $b^3 - 18$

*Possible answers: b cubed minus 18; b to the third power decreased by 18.*

9.  $f - \frac{d}{2}$

*Possible answers: f minus the quotient of d and 2; d split into 2 groups then subtracted from f; d divided by 2 less than f.*

10.  $\frac{u}{x}$

*Possible answers: u divided by x; the quotient of u and x; u divided into x parts.*

**Closing (5 minutes)**

- Peter says the expression  $11 - 3c$  is 3 times  $c$  decreased by 11. Is he correct? Why or why not?
  - *Peter is not correct because the expression he wrote is in the wrong order. If Peter wanted to write a correct expression and use the same vocabulary words, he would have to write 11 decreased by 3 times  $c$ .*

**Exit Ticket (5 minutes)**



Name \_\_\_\_\_

Date \_\_\_\_\_

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### Exit Ticket

1. Write two word expressions for each problem using different math vocabulary for each expression.

a.  $5d - 10$

b.  $\frac{a}{b+2}$

2. List five different math vocabulary words that could be used to describe each given expression.

a.  $3(d - 2) + 10$

b.  $\frac{ab}{c}$

## Exit Ticket Sample Solutions

1. Write two word expressions for each problem, using different math vocabulary for each expression.

a.  $5d - 10$

*Possible answers: The product of 5 and d minus 10. 10 less than 5 times d.*

b.  $\frac{a}{b+2}$

*Possible answers: The quotient of a and the quantity of b plus 2. a divided by the sum of b and 2.*

2. List five different math vocabulary words that could be used to describe each given expression.

a.  $3(d - 2) + 10$

*Possible answers: difference, subtract, product, times, quantity, add, sum.*

b.  $\frac{ab}{c}$

*Possible answers: quotient, divide, split, product, multiply, times, per, each.*

## Problem Set Sample Solutions

1. List five different vocabulary words that could be used to describe each given expression.

a.  $a - d + c$

*Possible answers: sum, add, total, more than, increase, decrease, difference, subtract, less than.*

b.  $20 - 3c$

*Possible answers: difference, subtract, fewer than, triple, times, product.*

c.  $\frac{b}{d+2}$

*Possible answers: quotient, divide, split, per, sum, add, increase, more than.*

2. Write an expression using math vocabulary for each expression below.

a.  $5b - 18$

*Possible answers: The product of 5 and b minus 18. 18 less than 5 times b.*

b.  $\frac{n}{2}$

*Possible answers: The quotient of n and 2. n split into 2 equal groups.*

c.  $a + (d - 6)$

*Possible answers: a plus the quantity d minus 6. a increased by the difference of d and 6.*

d.  $10 + 2b$

*Possible answers: 10 plus twice b. The total of 10 and the product of 2 and b.*