Lesson 16: Write Expressions in Which Letters Stand for Numbers

Classwork

Opening Exercise

Underline the key words in each statement.

a. The sum of twice b and 5

b. The quotient of c and d

c. a raised to the fifth power and then increased by the product of 5 and c

d. The quantity of a plus b divided by 4

e. 10 less than the product of 15 and c

f. 5 times d and then increased by 8

Mathematical Modeling Exercise 1

Model how to change the expressions given in the Opening Exercise from words to variables and numbers.

a. The sum of twice b and 5

Sum = +

twice = multiply by 2

$2b + 5$

b. The quotient of c and d

Quotient = division

$\frac{c}{d}$

c. a raised to the fifth power and then increased by the product of 5 and c

Power = exponent

increased = add

Product = multiplication

$a^5 + 5c$

d. The quantity of a plus b divided by 4

Quantity = ( )

divided = division

$\frac{a+b}{4}$

e. 10 less than the product of 15 and c

Less than = Subtraction
Product = multiplication

$15c - 10$

f. 5 times d and then increased by 8

times = multiplication
increased = add

$5d + 8$

Mathematical Modeling Exercise 2

Model how to change each real-world scenario to an expression using variables and numbers. Underline the text to show the key words before writing the expression.

Marcus has 4 more dollars than Yaseen. If y is the amount of money Yaseen has, write an expression to show how much money Marcus has.

$y + 4$ or $4 + y$

Mario is missing half of his assignments. If a represents the number of assignments, write an expression to show how many assignments Mario is missing.

$\frac{a}{2}$ or $a \div 2$

Kamilah's weight has tripled since her first birthday. If w represents the amount Kamilah weighed on her first birthday, write an expression to show how much Kamilah weighs now.

$3w$

Nathan brings cupcakes to school and gives them to his five best friends, who share them equally. If c represents the number of cupcakes Nathan brings to school, write an expression to show how many cupcakes each of his friends receive.

$\frac{c}{5}$ or $c \div 5$

Mrs. Marcus combines her atlases and dictionaries and then divides them among 10 different tables. If a represents the number of atlases and d represents the number of dictionaries Mrs. Marcus has, write an expression to show how many books would be on each table.

$\frac{a+d}{10}$ or $(a+d) \div 10$

To improve in basketball, Ivan's coach told him that he needs to take four times as many free throws and four times as many jump shots every day. If f represents the number of free throws and j represents the number of jump shots Ivan shoots daily, write an expression to show how many shots he will need to take in order to improve in basketball.

$4(f+j)$ or $4f + 4j$

Exercises

Mark the text by underlining key words, and then write an expression using variables and/or numbers for each statement.

1. b decreased by c squared

$b - c^2$

2. 24 divided by the product of 2 and a

$\frac{24}{2a}$ or $24 \div (2a)$

3. 150 decreased by the quantity of 6 plus b

$150 - (6 + b)$

4. The sum of twice c and 10

$2c + 10$

5. Marlo had \$35 but then spent $\$m$.

$\$35 - m$

6. Samantha saved her money and was able to quadruple the original amount, m.

$4m$

7. Veronica increased her grade, g, by 4 points and then doubled it.

$2(g + 4)$

8. Adbell had m pieces of candy and ate 5 of them. Then, he split the remaining candy equally among 4 friends.

$\frac{m-5}{4}$ or $(m-5) \div 4$

9. To find out how much paint is needed, Mr. Jones must square the side length, s, of the gate and then subtract 15.

$s^2 - 15$

10. Luis brought x cans of cola to the party, Faith brought d cans of cola, and De'Shawn brought h cans of cola. How many cans of cola did they bring altogether?

$x + d + h$