

1.3

Write Expressions

Goal • Translate verbal phrases into expressions.

Your Notes

VOCABULARY

Verbal model An expression that describes a problem using words as labels and using math symbols to relate the words

Rate A fraction that compares two quantities measured in different units

Unit rate A rate per one given unit

TRANSLATING VERBAL PHRASES

Operation	Verbal Phrase	Expression
Addition	The <u>sum</u> of 3 and a number n	$3 + n$
	A number x <u>plus</u> 10	$x + 10$
Subtraction	The <u>difference</u> of 7 and a number a	$7 - a$
	Twelve <u>less</u> than a number x	$x - 12$
Multiplication	Five <u>times</u> a number y	$5y$
	The <u>product</u> of 2 and a number n	$2n$
Division	The <u>quotient</u> of a number a and 6	$\frac{a}{6}$
	Eight <u>divided</u> into a number y	$\frac{y}{8}$

Order is important when writing subtraction and division expressions.

Your Notes

The words “the quantity” tell you what to group when translating verbal phrases.

Example 1 *Translate verbal phrases into expressions*

Translate the verbal phrase into an expression.

Verbal Phrase	Expression
a. 6 less than the quantity 8 times a number x	$8x - 6$
b. 2 times the sum of 5 and a number a	$2(5 + a)$
c. The difference of 17 and the cube of a number n	$17 - n^3$

Checkpoint Translate the verbal phrase into an expression.

1. The product of 5 and the quantity 12 plus a number n

$$5(12 + n)$$

2. The quotient of 10 and the quantity a number x minus 3

$$\frac{10}{x - 3}$$

Example 2 *Use a verbal model to write an expression*

Food Drive You and three friends are collecting canned food for a food drive. You each collect the same number of cans. Write an expression for the total number of cans collected.

Solution

Step 1 Write a verbal model. Amount of cans \times Number of people

Step 2 Translate the verbal model into an algebraic expression. c \times 4

An expression that represents the total number of cans is $c \times 4$.

Your Notes

✓ **Checkpoint** Complete the following exercise.

3. In Example 2, suppose that the total number of cans collected are distributed equally to 2 food banks. Write an expression that represents the number of cans each food bank receives.

$$\frac{c \times 4}{2}$$

Example 3 Find a unit rate

Three gallons of milk cost \$9.15. Find the unit rate.

Solution

$$\begin{aligned} \frac{\$9.15}{3 \text{ gallons}} &= \frac{\$9.15}{3 \text{ gallons}} \div 3 \\ &= \frac{\$3.05}{1 \text{ gallon}} \end{aligned}$$

The unit rate is \$3.05 per gallon, or \$3.05/gal.

✓ **Checkpoint** Find the unit rate.

4. $\frac{420 \text{ miles}}{3 \text{ hours}}$
140 mi/h

5. $\frac{\$12}{3 \text{ ft}^2}$
\$4/ft²

6. $\frac{20 \text{ cups}}{8 \text{ people}}$
2.5 c/person

Homework