

# Unit 3: Expressions

I can write algebraic expressions from word problems.

## Variable:

A letter that stands for a number

## Algebraic Expression:

Uses numbers, variable, and operational symbols but no equal sign

## Key Words for Operational Symbols:

Each  $\times$  More  $+$  Less  $-$  Share Equally  $\div$

## Simple Expressions:

- 1) The product of a number and 6  $6n$
- 2) Six increased by a number  $6+n$
- 3) The quotient of a number and 2  $n/2$
- 4) 3 more than twice a number  $2n+3$
- 5) 5 less than the product of two different numbers  $xy-5$

## Translating Word Problems (1 step):

1) At a ballpark, team hats are sold for \$15 each. Let  $h$  = the number of hats. Write an algebraic expression for the cost of  $h$  hats.

$$15h$$

2) Jake has four more books than Sarah. Let  $b$  = the number of books Sarah has. Write an algebraic expression for the number of books Jake has.

$$b+4$$

3) Mr. Cantu withdraws \$160 each week to pay the babysitter. Let  $w$  = the number of weeks. Write an algebraic expression for the change in his bank account after  $w$  weeks.

$$-160w$$

4) Lena is exactly 3 years older than her brother, Peter. If  $p$  represents Peter's age, write an algebraic expression to represent Lena's age.

$$p+3$$

5) Elaina and her friends went out to dinner and decided to split the bill evenly. The cost for dinner was \$56.75. If there were  $n$  number of people out to dinner, how much did each person pay?

$$56.75/n$$

Jen is paddling a canoe from one side of a lake to the other. She is paddling at a rate of 35 yards per minute.

Write an expression to find the total number of yards she paddles in  $m$  minutes.

$$35m$$

## Key Words/Phrases

Addition	Subtraction
<p>more than increase by greater than total plus                  sum</p>	<p>decreased by difference between take away less                  less than subtract              subtract from</p>
Multiplication	Division
<p>Product                  Triple Times Multiply of Twice/double</p>	<p>Shared Each receive Quotient Separate Half, Third, etc.</p>

### Two-Step Algebraic Expressions

#### Together

1) To get into the county fair, Patricia must pay a \$5 entrance fee and \$2 per ride. Write an expression to represent the total Patricia spends at the fair.

$$2r + 5$$

3) Julie has \$300. She wants to spend her money on ice skating lessons. Her lessons will cost \$56 per week. Write an expression For the amount she has after w weeks.

$$300 - 56w$$

5) The length of a rectangle is 13.5 cm. Write an expression to represent the perimeter of the rectangle, using w to represent the width.

$$2w + 27$$

7.) A group of 5 people at a restaurant decide to split their bill evenly. If b represents the bill and each person says they will throw in \$2 for a tip, write an expression to represents the amount each person spends.

$$\frac{b}{5} + 2$$

#### You Try

2) Jasmine wants to rent a bike while she is on vacation. The rental fee is \$8.00 plus an additional \$2.50 for every hour the bike is rented. If h represents the number of hours the bike is rented, write an expression to represent the total amount spent.

$$8 + 2.5h$$

4) At the beginning of the day, the owner of a restaurant opens a new case of take-out boxes. One case holds 500 take-out boxes. He uses an average of 35 take-out boxes each day. Based on his average usage, write an expression to represent the number of take-out boxes that remain d days after the new case of boxes is opened.

$$500 - 35d$$

6) The length of a rectangle is 6 cm. Write an expression to represent the perimeter of the rectangle, using w to represent the width.

$$2w + 12$$