

## INTRODUCTION TO ALGEBRA

- **Algebra** is the practice of using expressions with letters or variables that represent numbers. Words can be changed into a mathematical expression by using the words, plus, exceeds, diminished, less, times, the product, divided, the quotient and many more.
- When given an **algebraic expression**, it can be solved by filling in a number for the variable.
- Word problems can be turned into **variable expressions** by changing the words to mathematical terms.

- If an expression has more than one **variable expression**, it can be



### PREVIEW

How

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- A when the expression equals  $5 \cdot 2 + 3 = 11$ . By filling in 2 for the  $x$ , the expression can be solved.

- Words can be changed into mathematical terms. Look at the following words and translate them into mathematical terms:

**Ex. Five times a number minus three  $\rightarrow 5 \cdot n - 3 = 5n - 3$**

- Each word represents a mathematical term. Once this is done, the expression can either be left this way or solved if given a value for  $n$ .

- Word problems are also changed into **variable expressions** in the same way. Look at this word problem:

Jack rented a movie. The store charged \$1.99 for the first day and \$.50 for each day after that. If Jack had the movie for  $d$  days, what expression could be used to represent the cost of renting a movie in terms of  $d$ ?

*\$1.99 for the first day and \$.50 for each day after that*  
 $(.50 \cdot d) \rightarrow$  the expression is  **$1.99 + .50d$**

This expression can be solved when 3 (or any other number) is substituted for  $d$ , the number of days Jack had the movie.



**PREVIEW**

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$$\begin{array}{r} x + 17 = 27 \\ - 17 \quad -17 \\ \hline x \quad = 10 \end{array}$$

Seventeen is subtracted from both sides to solve for  $x$ . On the left side, the numbers cancel out and on the right side  $27 - 17 = 10$ , the answer.

## Try This!

1. Solve if  $n = 3$ :

$$7 - n$$

$$2n + 8$$

$$4n \div 6$$

2. Translate into an **algebraic expression**:

- o Six times a number minus two



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**PREVIEW**

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$$11x + 14y - 5x + 2y$$

$$6x - 64 - 3x$$

5. Solve by using inverse operations:

$$x + 14 = 67$$

$$5x = 45$$

$$x/2 = 42$$