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 combined as long as both have the same variable factor; this is called **combining like terms**.

- With alg**ebra, inverse operations** can be used to solve equations. Inverse operations undo ar[illegible]btraction and vic[illegible]peration of divisi[illegible]

How to u[illegible]

- An example of an **algebraic expression** is 3x + 5. Here the x represents a number that is to be multiplied by three. If x = 2, then the expression equals 3 · 2 + 5 = 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 → 5 · 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 · d)*** *→ 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.

  So, 1.99 + .50 · 3 = 1.99 + 1.50 = 3.49 or $3.49.

- If an expression or equation has more than one variable term, the terms n…able factor.

  Exa…

- To solv…able must be isolated first and then the variable can be solved.

  Example: Solve for x:

  x + 17 = 27
  - 17 -17
  x = 10

  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 ÷ 6

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

   o Six times a number minus two

   o A number plus seven

3. Transla n terms of d, days

   Sharon) for every day afte

4. **Combine** like terms:

   7x - 4 x

   11x + 14y - 5x + 2y

   6x - 64 – 3x

5. Solve by using inverse operations:

   x + 14 = 67 5x = 45 x/2 = 42