Intro to Algebra

What do you know?

What do we call the answer to an addition problem?   Sum

What do we call the answer to a subtraction problem?   Difference

What do we call the answer to a multiplication problem?   Product

What do we call the answer to a division problem?   Quotient

How did you do?

What's a variable?

In Algebra, mathematicians use letters to take the place of different quantities. The same letter can represent different values in different situations.

For example, we could use the letter p to represent the number of pennies in a bank.

But for the next problem, the letter p might represent the number of pizzas you need for a party.

Verbal Phrases to Algebraic Expressions

Now it's time to be a translator! You get to translate words to expressions.

Four times a number minus 2.

We don't know what "number" they want us to use—so we use a variable! Let's use "n" for "number"

We can write this in algebraic form: 4•n – 2

Your turn to translate

The difference of 5 and a number.

Remember which operation uses "difference"   subtraction!

The algebraic expression is: 5 – n

Take 2

The sum of three times a number and 2.

Remember which operation uses "sum"   addition!

This expression has two parts: we have a sum, but we also have "times".

You should have written: 3n + 2 (3n stands for three times a number)

Algebraic Expressions to Verbal Phrases

Can you translate an algebraic expression back into words?

$$\frac{5x}{10}$$

This expression also has two parts! We need to multiply the 5 and the x, then divide by 10.

We would write: *The quotient of five times a number and ten.*

Coefficients

Another key component of algebra is understanding coefficients. A coefficient is the number that comes before a variable. Essentially, it's a numbers we are multiplying to the variable.

What's the coefficient of *6x*?   6

What's the coefficient of *101y*?   101

What's the coefficient of *-5xy*?   -5

What's the coefficient of *x*?   1

Any time you see a variable alone, it is understood that the coefficient of the variable is 1.

Polynomials

Coefficients and their variables join together by addition or subtraction to form polynomials.

$$6x \qquad 5x+y \qquad -10abc \qquad -3xy+2ab-4cd$$

These are all polynomials, but they can have specific names based on their number of terms.

mono: one   bi: two   tri: three

6x   *5x+y*   *-10abc*   *-3xy+2ab-4cd*

6x is a **mono**mial because it only has one term.

5x+y is a **bi**nomial because it has two terms: 5x and y

-10abc is a **mono**mial. Even thought there are three variables, they are no plus signs or minus signs to separate terms.

-3xy+2ab-4cd is a **tri**nomial. There are three terms: -3xy, 2ab and -4cd.

Check for Understanding...

Write an algebraic expression for this phrase:

The sum of three times a number and 5.

3n + 5

What is the coefficient?

3

What kind of polynomial is it?

binomial

Did you get it?

Now you're ready for an activity!