SOLVING LINEAR EQUATIONS

Linear equations are equations that have two variables.

- When graphed, a linear equation is a straight line. Although the standard equation for a line is y = mx + b, where *m* is the slope and *b* is the y-intercept, linear equations often have both of the variables on the same side of the equal sign.
- Linear equations can be written verbally and translated into algebraic form.
- Linear equations can be **solved** for one variable when the other variable is given.
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- For example, what is 'twice a number is increased by another number is sixty-one' in algebraic form?

Ex. twice a number → 2x
increased by another number → + y
is sixty-one → = 61

The result is 2x + y = 61

Once a linear equation is translated into the algebraic form, it can be **solved** for one of the variables if given the other variable.

- For example, what is y in the equation, 2x + y = 61, when x is 19? To solve, 19 is substituted for x and the equation is solved for y.

Ex. 2(19) + y = 61 → 38 + y = 61 → y = 23

The result is that *x* is 19 and *y* is 23 or (19, 23). In this case, the one variable was given and the equation was solved to find the other variable.

In some cases, an **ordered pair** will be given to see if it is a solution set for an equation.

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1. What is 'four times a number diminished by seven is two times another number' in algebraic form?

2. What is the **value of y** in the linear equation, 5x + 8 = y -2 when x is -3?

3. What is the **value of y** in the linear equation, 3y = -2x - 10 when y is -4?

4. Is the ordered pair, (6, -3), a **solution set** for the linear equation, 1/3x + 2y = 4?

5. Is the ordered pair, (10, -10), a **solution set** for the linear equation, 2x - 40 = 2y?