**1.8 – Solving Equations Using Algebra Tiles**

We can use algebra tiles to help visualize and solve algebraic expressions and equations.

**Remember:**

1 yellow unit tile represents +1

1 red unit tile represents -1

1 yellow variable tile represents “x”

1 red variable tiles represents “-x”

We follow a series of simple steps when solving equations:

1. ***Define the variable*** – let “x” represent …
2. ***Translate the word problem*** into an equation – practice makes perfect
3. ***Isolate the variable*** – get “x” on one side, everything else on the other by doing inverse operations (+/-, x/÷)
4. ***Solve for one “x”***
5. ***Substitute your answer into the original equation*** to make sure you are correct
6. ***Write a sentence*** to state your answer if it is a word problem

When we use algebra tiles to help us solve equations, we draw a vertical line down the center of our page to represent the equals sign in the equation. Then, we just follow the steps above and voila, we have found the unknown value!

**Example 1:** Jane is trying to collect teddy bears. Her best friend gives her 4 teddy bears. She then has 13 teddy bears. How many teddy bears did Jane have at the start?

**Example 2:** Sophie had $13. She bought 5 gift bags for her friends. Each bag costs the same amount. She then had $3 left. How much was each gift bag?

**Example 3:** Eric has a collection of paintings. He sells 4 paintings to a French collector. He then has 9 paintings left. How many paintings did Eric have before he made the sale?