**1.7 – Reading and Writing Equations**

When we write one quantity equal to another quantity, we have an ***equation***. Each quantity may be an algebraic expression or a number. Each side of the equation has the **same** value!

**For example:**

3x + 2 is an algebraic expression

11 is a number

When we make the algebraic expression *equal to* the number, we have the equation: 3x + 2 = 11

We already know that a **variable** represents an unknown number. When we find the exact value of the variable, we ***solve*** the equation. We’ll get to this part in a little bit, but just for fun:

3x + 2 = 11

3x + 2 - 2 = 11 - 2 subtract 2 from each side to isolate (get it on a side by itself) “x”

3x = 9

$\frac{3x}{3} = \frac{9}{3}$ divide each side by 3 to find out the value of one “x”

x = 3

**Example 1: Write an equation for each sentence.**

a) Four added to five times a number is twenty-three. b) A number subtracted from six is two.

**Answers:**

a) Let “***n***” represent the number. b) Let “***n***” represent the number.

 Five times the number is: ***5n*** ***n*** subtracted from 6 is: ***6 – n***

 Four added to ***5n*** is: ***5n + 4***

 Equation: ***5n + 4 = 23***  Equation: ***6 – n = 2***

**Example 2: Write a sentence to match each equation.**

a) $\frac{n}{2} + 3 = 8$ b) *n – 7 = 3*

**Answers:**

a) Start with a number, “***n***”: ***n*** b) Start with a number, “***n***”: ***n***

 Divide by 2: $\frac{n}{2}$ Subtract by 7: ***n – 7***

 Add 3: $\frac{n}{2} + 3$

Sentence: Sentence:

A number divided by 2, then add three is 8. A number subtracted by 7 is 3.