**6.1 – Solving Equations**

**Reminder:** Equations have an equal sign (=) while algebraic expressions do not!

**Systematic Trial** – choosing a value for the variable, then checking by substituting. Using this answer and logical reasoning, you can choose the next value to check.

**Inspection** – finding the value for the variable by using common operations such as addition, subtraction, multiplication, and division.

**Example 1:** Mr. Shumsky works part-time as a server. He makes $14 per hour plus $36 per day as guaranteed tips. How many hours would Mr. Shumsky have to work to make $260 in one day?

Let “h” be the number of hours Mr. Shumsky would have to work.

We would then have the equation: *14h + 36 = 260*

**Method 1: Systematic Trial**

*Try:* *h = 10*

*14 x 10 + 36*

*= 140 + 36*

*= 176*

*Try: h = 20*

*14 x 20 + 36*

*= 280 + 36*

*= 316*

*\*\** Notice that 176 is much too small and that 316 is much too high. We can take the average of these two values to try and get us closer!

Total Earnings: 176 + 316 = 492 ÷ 2 = 246

Hours: 10 + 20 = 30 ÷ 2 = 15

246 is still less than 260, so we know that the number of hours is a little bit more than the average of the two values we have tried so far. So, let’s try 16:

*Try: h = 16*

*14 x 16 + 36*

*= 224 + 36*

*= 260*

**Method 2: Inspection**

Our equation is: *14h + 36 = 260*

We first find a number which, when added to 36, gives 260.

We know that: *224 + 36 = 260*

So, that means: *14h = 224*

Then we find a number which, when multiplied by 14, has product 224.

We know that 14 x 16 = 224; so *h = 16*

**Example 2:** Debra has a collection of 50 CD’s. She gives 22 of them to her little sister and then divides the rest evenly between each of her four best friends. How many CD’s will she give to each friend? Solve using systematic trial and inspection.