

## Section 1.1

### Facts

Everyone has to start somewhere, and that start, for you, is right here. When you first started learning math, you probably learned the names for numbers, and then you started to add: 3apples + 7apples equals how many apples? Well 10, of course.

My guess is that you caught on to what you were doing and can now add M&M's, coconuts, gallons of water, money etc. From the beginning I am going to assume you know how to add in your head up to 15+15. If you don't, please make up some flash cards and get those in your brain. It is similar to learning the alphabet before learning to read. We need the addition facts to be available for instant recall.

Soon after addition was learned, I bet someone told you that there was a shortcut when you had to add some numbers over and over. For example:

$$\underbrace{3+3+3+3+3+3+3}_{7} = 21$$

If you notice, there are seven 3's.

3, seven times, turns out to be 21, so we write it as  $7 \times 3 = 21$ .

One of the best coincidences of the world is that 7, three times, is also 21.

$$3 \times 7 = 21$$

Such a switching works for any numbers we pick:

$$4 \times 5 = 20 \text{ and } 5 \times 4 = 20$$

$$3 \times 13 = 39 \text{ and } 13 \times 3 = 39$$

Since we will be using the multiplication facts almost as much as we will be using the addition facts, you need to also memorize the multiplication facts up to 15×15. Learn them well, and you will be able to catch on to everything else quite nicely.