

A basic addition fact is defined as the sum of two one-digit addends

$3 + 4 = 7$  is a basic addition fact

$12 + 3 = 15$  is not a basic addition fact because 12 is not a one-digit number

**Definition in your own words**

**Facts/Characteristics**

**Examples**

**Non-examples**

**Basic Addition Fact**

## **What is automaticity?**

Automaticity is the ability to do things without occupying the mind with the low level details that are required; this is usually the result of learning, repetition, and practice. For instance, an experienced cyclist does not have to concentrate on turning the pedals, balancing, and holding on to the handlebars. Instead, those processes are automatic and the cyclist can concentrate on watching the road, the traffic, and other surroundings. Some other examples of automaticity are:

- Driving a car
- Speaking
- Walking/running

Until students have developed sufficient sensory-cognitive tools supporting access to symbolic memory, they will not be able to image, store or retrieve all of the basic facts with automaticity. Therefore, math educators and their students need a comprehensive, developmental, and multisensory structured system for developing automaticity with the facts.

## **Physical and mental activity together**

The ability to do a physical and mental activity at the same time is a skill we use throughout our life and our learning. For example, we think while writing or typing, we can walk and think about our day, we see a barrier in the road ahead and think about how to swerve around it. Each of these things involves both a mental process and an action which leads to the development of automaticity.

## **First things first...**

Mastering the basic facts is not the first thing that students should do. Students first need to understand the meaning of the particular arithmetic operation (e.g., addition). They need to do simple problem solving involving that operation, and use methods such as counting to obtain answers. Only then are students ready to begin to master the basic facts for that arithmetic operation. A nice feature of this sequencing is that some facts will already be in place as a result of students' past experiences with doing arithmetic by counting (for example).

# Prerequisite Skills for Learning Addition

**Premise 1:** Ability to count backwards as well as forward while performing another physical task (*counting backwards from 20 with eyes closed while pretending to tie a shoe*).

**Premise 2:** Ability to give one-more or one-less for any whole number (*teacher calls out a number and holds one finger up or down, students give the new number*).

**Premise 3:** Ability to give two-more or two-less for any whole number (*teacher calls out a number and holds two fingers up or down, students give new number*).

**Premise 4:** Ability to double any whole number up to 10