



## Ask Chris

This month Chris Turner answers a question about teaching math.

Chris Turner, our learning difficulties consultant, helps tutors with students struggling to master new skills. Call us if you have a question for Chris.

*I have noticed my student needs some help with his math skills, especially fractions. Do you have any advice for me?* ~ Tutor

### **Use the student assessment to guide your instruction.**

The first thing you need to do is look at your student's math assessment. In order to give us a well-rounded picture of student's literacy strengths and weaknesses, we assess most new students in both reading and math. The assessment will tell you where to start. If your student has not yet been assessed in math, encourage him to make an appointment for a test. It will take about an hour.

### **Understand the distinction between computation and application skills.**

The assessment is divided into two sections: Computation Skills and Application Skills. These two sections of the test correspond to two different kinds of mathematical skills. Computation refers to the ability to solve equations. This part of the test looks at how well students know their number facts and how well they can perform the basic math operations: addition, subtraction, multiplication and division. At higher levels it also looks at geometry and algebraic equations.

The application part of the test is made up of word problems designed to show how well students can apply these mathematic functions to solve a variety of everyday problems. Students can use a calculator on this part of the test.

These two areas involve different parts of the brain. A student might be good at computation, but poor at application and vice versa. Build on your student's strength.

I sometimes think of computation as being like developing a sight word vocabulary- it takes a good memory. Many students have difficulty remembering basic math facts or may use inefficient ways to solve problems.

Application is more like decoding. A student needs to be able to use a variety of strategies to figure out what the problem is and then needs to be able to follow a sequence and retrieve rules to come up with the answer.

In assessing students, we have found that a great many of them need work on understanding fractions, percentages and decimals. This seems to be the area where many of our students "bottomed out" in school. The combination of relatively poor reading skills and relatively poor ability to remember math facts, meant that many students were not able to keep up in school by the time fractions were introduced.

We have a number of excellent text books and we can help you choose the best material for your student. However, even the best material will need to be supplemented by the judicious use of examples and manipulatives.

Use examples to develop understanding

Illustrative examples are a powerful way to develop mathematical insight. Often, however, students have not been exposed to enough different examples to fully understand a concept. Their partial understanding makes it difficult for them to move ahead. For instance, many students fail to understand that a fraction can represent part of a group of objects as well as part of a single object because the only examples they have been shown deal with parts of a single object. Help your student by providing a range of examples to illustrate the full extent of a mathematical concept.

### **Use manipulatives to build skills**

Manipulatives are physical objects that students can handle, for example colored tiles, shapes, wrap-ups, pattern blocks, etc. Using these tangible objects allows students to use visual, auditory and kinesthetic senses as they master skills. Taking a multi-sensory approach can mean the difference between success and failure. You can use manipulatives to introduce concepts, for example, using colored tiles to show how different fractions are equivalent. You can also encourage your student to use self-correcting manipulatives to practice skills. We have a number of manipulatives available for your use in the Resource Room including some great tools for working on fractions.

### **Math workshop**

One of our plans for the coming year is to develop a math workshop to help tutors provide their students with the best possible instruction in math skills. If you have any ideas to help us develop the workshop, or if you are interested in taking such a workshop, give us a call.