CHAPTER 10

Computation

There are fast and easy ways for adding, subtracting, multiplying and dividing larger numbers when we use mental math strategies.

Many adults were taught that the only way to perform operations with greater numbers was to use standard algorithms, a set of procedures for carrying out a computation.

In other countries, however, different algorithms are used.

Your child may be able to come up with his/her own strategy, called a student-generated algorithm, that actually makes it easier for him/her to find the answer.

For example, if your child is trying to solve 499 + 499, rather than writing the numbers vertically and using the carrying method we learned,

$$\begin{array}{r} {\scriptstyle +1\ +1} \\ 499 \\ +499 \\ \hline 998 \end{array}$$

your child might use his/her understanding of numbers and think 500 + 500 = 1000, so the answer is 1000 - 2 = 998. This type of strategy involves thinking about numbers as quantity, for example, 499 is almost 500, rather than just thinking about digits. When students think about quantity, rather than relying on procedures, they are less likely to make errors.

Here is an example for subtraction

$$4001 - 3997$$

It's not easy to solve the traditional way.

But if your child uses counting up, 3997 + 3 = 4000, plus one more = 4001, the answer is 3 + 1 = 4.

These student-generated strategies also work for multiplication and division.

Rather than using the long division algorithm to solve 3248 ÷ 16, your child might think 16 x 100 = 1600, 16 x 200 = 3200, 16 x 3 = 48.

The goal is for your child to develop efficient and accurate strategies for multi-digit computation, and flexibility working with numbers. Based on the numbers in the question, your child will use a different strategy.

Rather than showing your child the procedures you learned in school, ask your child to share his/her strategy and to think about how efficient and easy it is to use and how it connects to traditional strategies. This is a great opportunity for your child to teach you some math.