

# Multiply Multi-Digit Numbers



Dear Family,

This week your child is learning to multiply multi-digit numbers.

One way to find  $124 \times 25$  is to set up the problem vertically to find partial products that can be added to find the total product.

First, multiply each digit in 124 by the 5 ones in 25.

$$\begin{array}{r} 124 \\ \times 5 \\ \hline 20 \\ 100 \\ + 500 \\ \hline 620 \end{array}$$

Then multiply each digit in 124 by the 2 tens in 25.

$$\begin{array}{r} 124 \\ \times 20 \\ \hline 80 \\ 400 \\ + 2,000 \\ \hline 2,480 \end{array}$$

partial product

Lastly, add the partial products to find the product:  $124 \times 25 = 620 + 2,480 = 3,100$ .

Partial products are the basis of the standard algorithm for multiplying multi-digit numbers. An algorithm is a set of routine steps used to solve problems.

Your child is learning how to record the steps of the standard algorithm in a condensed format, with regrouping shown above the problem.

$$\begin{array}{r} 124 \\ \times 25 \\ \hline 20 \\ 100 \\ 500 \\ 80 \\ 400 \\ + 2,000 \\ \hline 3,100 \end{array}$$

Notice how the partial products appear as steps in the standard algorithm.

Another way your child is learning to multiply is with an area model, which gives a visual representation of the multiplication.

Invite your child to share what he or she knows about multiplying multi-digit numbers by doing the following activity together.

## ACTIVITY MULTIPLY MULTI-DIGIT NUMBERS

Do this activity with your child to multiply multi-digit numbers.

**Materials** magazine or newspaper

Work with your child to find a real-life example of using multiplication that involves the number of words in a magazine or newspaper article.

Sometimes a reporter has to write a story with a certain number of words, for example, 500 words. Multiplication is a good way to find the number of words in a story.

- Have your child choose an article from a magazine or newspaper.
- Ask your child to count the number of words in one paragraph and record the number on a sheet of paper.
- Then count the number of paragraphs in the article.
- Ask your child the following questions.
  1. Suppose each paragraph has the same number of words. How could you find how many words are in the article? How many words are in the article?
  2. If each paragraph has a different number of words, is the answer to the previous question an exact answer or an estimate for the total number of words in the article?

### Answers:

1. Multiply the number of words in a paragraph by the number of paragraphs.
2. It is an estimate because the number of words in each paragraph varies.

