

Multiplication of Two-Digit Numbers by Two-Digit Numbers

Dear Family,

Your student is learning to multiply two-digit numbers by two-digit numbers. Their previous work with multiplication was limited to multiplying a multi-digit number by a single-digit number. They draw area models and use place value understanding to break apart each factor. Students begin by breaking apart both factors into tens and ones before multiplying. They multiply each part to find partial products, record the 4 partial products in vertical form, and find the sum of the partial products. Recording the vertical form next to the area model helps students see that each part of one factor is multiplied by each part of the other factor. Students transition to breaking apart only one factor, resulting in 2 partial products. The order in which the partial products are recorded in vertical form prepares your student for using the multiplication standard algorithm in grade 5.

	30	2
6	$6 \times 30 = 180$	$6 \times 2 = 12$
10	$10 \times 30 = 300$	$10 \times 2 = 20$

$$\begin{array}{r}
 32 \\
 \times 16 \\
 \hline
 12 \\
 180 \\
 20 \\
 + 300 \\
 \hline
 512
 \end{array}$$

$$\begin{array}{r}
 74 \\
 \times 41 \\
 \hline
 74 \\
 + 2960 \\
 \hline
 3,034
 \end{array}$$

$$\begin{array}{r}
 74 \\
 \times 1 \\
 \hline
 74
 \end{array}$$

$$\begin{array}{r}
 74 \\
 \times 40 \\
 \hline
 2860 \\
 + 2960 \\
 \hline
 5,820
 \end{array}$$

Using the area model, both factors, 32 and 16, are broken into tens and ones before multiplying. The four partial products are recorded in vertical form and added to find the total.

Using vertical form, only one factor, 41, is broken into tens and ones before multiplying. Two partial products are added to find the total.

At-Home Activity

What's Your Number?

Ask your student to write down the year they were born and break the year into two numbers. Use the first two digits of the year to make one number and the last two digits to make another number. Write the two numbers as a multiplication problem. For example, if your student was born in 2011, they would write 20×11 . Ask your student to use a strategy from class to help them multiply the numbers together to find the product. Repeat the process with the birth years of other family members and consider asking the following questions.

- “Who had the largest product? Why?”
- “Who had the smallest product? Why?”
- “Will an older person always have the largest product? Why?”

