Dimensions Math
Grade 4 Letter Home #4

Chapter 4 Multiplication

Dimensions Math
Letters Home

Home Connection

In Chapter 4, your child will further their understanding of the standard algorithm for multiplication by estimating, then multiplying, a four-digit number by a one-digit number. They will also learn to multiply by a two-digit number. They begin by learning some mental math strategies.

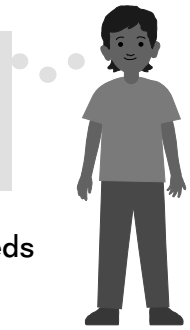
Mental Math for Multiplication

2,300 × 5

Solve the problem for the leading non-zero digits first.

23 × 5 = 100 + 15 = 115

20 3

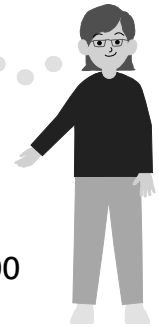


23 hundreds × 5 = 115 hundreds
2,300 × 5 = 11,500

Use partial products

2,300 × 5

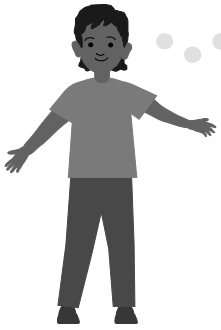
2,000 300



2,000 × 5 = 10,000
300 × 5 = 1,500
10,000 + 1,500 = 11,500

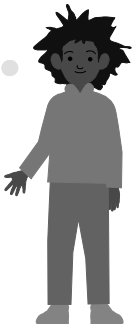
Multiplication Algorithm

Students will use place-value discs in class to develop a conceptual understanding of the steps in the algorithm before they work with just the process and numbers. They will be encouraged to estimate their answer first.



2,415 × 3
↓
2,000 × 3 = 6,000

2,415 × 3
↓
2,500 × 3 = 7,500



While both estimates are reasonable, the second one will be closer to the actual answer. Which method students use generally depends on their proficiency with mental math. Students calculate using the algorithm they learned in Dimensions Math 3:

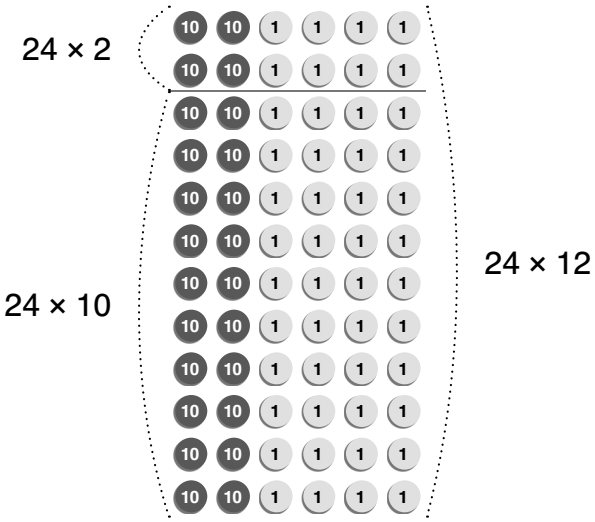
$$\begin{array}{r} {\scriptstyle 1\quad\ 1\quad} \\ 2,415 \\ \times\quad\ 3 \\ \hline \mathbf{7},245 \end{array}$$

The estimate of 7,500 is closer to the actual answer, 7,245.

Your child builds on this understanding of the multiplication algorithm to multiply by a two-digit number. Students will see, but not typically use, place-value discs to understand this initially.

24 × 12

An estimate for 24 × 12 might be 24 × 10 = 240. The answer will be greater than 240.



Multiply 24 by 2.

$$\begin{array}{r} 24 \\ \times\ 12 \\ \hline \mathbf{48} \end{array}$$

Multiply 24 by 10.

$$\begin{array}{r} 24 \\ \times\ 12 \\ \hline 48 \\ \mathbf{240} \\ \hline \end{array}$$

Add the products.

$$\begin{array}{rl} 24 & \\ \times\ 12 & \\ \hline 48 & \longleftarrow 24 \times 2 \\ 240 & \longleftarrow 24 \times 10 \\ \hline \mathbf{288} & \end{array}$$

The estimate of 240 is close to, but less than, the actual answer of 288.
Notice the red "0" in the partial product? Your child should see that when we multiply by a two-digit number, we are multiplying by the digit in the ones place first, and then multiplying by the digit in the tens place.

When we regroup, we can write the digits on top of our calculation.

We can write the regrouped digits on top.

```
  4 4
  6 6
    4 8 9
×     5 7
  ------
    3 4 2 3
+ 2 4 4 5 0
  ------
  2 7,8 7 3
```

What can we do at home?

- Practice, practice, practice multiplication and division math facts. Students who don't know their multiplication facts will struggle with the numerous calculations involved in this multiplication process.
- Using multiplication math vocabulary will be greatly beneficial to your child's success. Examples to use: "multiply" and "product" rather than "times" for multiplication problems.
- Using graph paper or wide-ruled notebook paper turned sideways are great ways to help your child keep numbers lined up properly in columns when calculating their answers.