Dimensions Math
Grade 3 Letter Home #5

Chapter 5 Multiplication

Dimensions Math
Letters Home

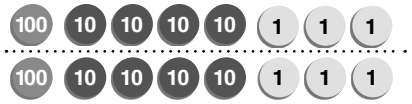
Home Connection

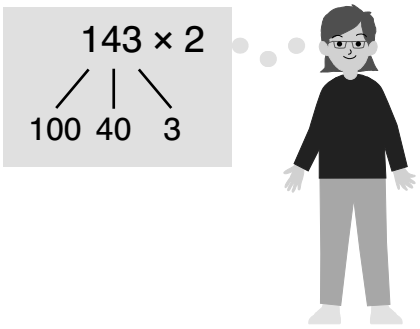
In Chapter 5, your child will learn the standard algorithm for multiplication, in which the numbers are written in a vertical format with the digits aligned. Students will use place-value discs in class to develop a conceptual understanding of the steps in the algorithm before they work with just the process and numbers.

Multiplication with Partial Products

Students begin by multiplying the value of each digit and then adding the products:

Multiply 143 by 2.





Students first record this showing partial products:

$$\begin{array}{r} 143 \\ \times \quad 2 \\ \hline 6 \quad \longleftarrow \text{ 3 ones} \times 2 \\ 80 \quad \longleftarrow \text{ 4 tens} \times 2 \\ 200 \quad \longleftarrow \text{ 1 hundred} \times 2 \\ \hline 286 \end{array}$$

Then, since there is no regrouping, they learn to write each digit in the appropriate place.

$$\begin{array}{r} 143 \\ \times \quad 2 \\ \hline 286 \end{array}$$

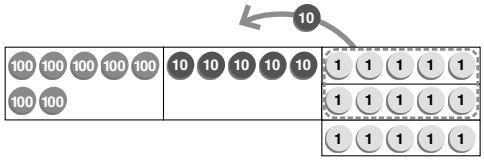
Multiplication with Regrouping

As a child yourself, you may have been taught to "carry" numbers.
Students will think of that process as regrouping ten discs in each place.

755 × 3 = ?

$$\begin{array}{r} 7\,5\,5 \\ \times \quad 3 \\ \hline \end{array}$$

First, multiply the ones: 5 ones × 3 = 15 ones

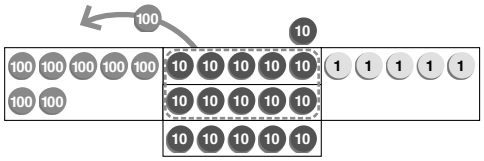


Regroup 15 ones as 1 ten and 5 ones.

We record that regrouped 1 ten in the tens column and the 5 ones in the ones column in the product:

$$\begin{array}{r} 1 \\ 7\,5\,5 \\ \times \quad 3 \\ \hline \quad\;\; 5 \end{array}$$

Next, multiply the tens: 5 tens × 3 = 15 tens
15 tens + 1 regrouped ten = 16 tens

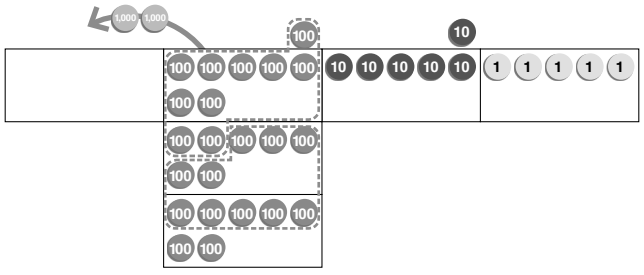


Regroup 16 tens as 1 hundred and 6 tens.

We record that regrouped 1 hundred in the hundreds column and the 6 tens in the tens column in the product:

$$\begin{array}{r} 1\,1 \\ 7\,5\,5 \\ \times \quad 3 \\ \hline \quad 6\,5 \end{array}$$

Finally, multiply the hundreds: 7 hundreds × 3 = 21 hundreds
21 hundreds + 1 regrouped hundred = 22 hundreds



Regroup 22 hundreds as 2 thousands and 2 hundreds.

$$\begin{array}{r} 1\,1 \\ 7\,5\,5 \\ \times \quad 3 \\ \hline 2{,}2\,6\,5 \end{array}$$

Since there are no more digits to multiply, record both the 2 thousands and 2 hundreds in the product.

The advantage of this algorithm is that the process repeats regardless of the number of places. Later in Dimensions Math 3B, your child will revisit and further practice this multiplication algorithm as they learn the facts for 6 through 9.

What can we do at home?

Encourage your child to practice multiplying two-digit numbers using the place-value language. You might find working these problems with your child develops your own number sense!

42 × 3 =?
4 tens × 3 = 12 tens, or 120
2 ones × 3 = 6 ones, or 6
So, 42 × 3 = 120 + 6.

Play Games

- Can you use the digits 1 through 9 once in each box to make true multiplication equations? What if it was a three-digit number × a one-digit number and the product is 3-digits? What if the product is four digits?