

Home Connection

In third grade students learned how to use the standard algorithm to multiply up to a three-digit number by a one-digit number. In this chapter, students will progress to multiplying four-digit numbers by two-digit numbers.

Mental Math for Multiplication

Students will see multiples of tens, hundreds, and thousands that can easily be solved by thinking of simple two-digit and one-digit computations.

In the problem $4,200 \times 3$, students can begin by thinking of 42×3 . They will multiply by splitting 42 into 40 and 2, multiplying each number by 3, and adding the two products.

$$\begin{array}{c} 42 \times 3 = 120 + 6 \\ \swarrow \quad \searrow \\ 40 \quad 2 \end{array}$$

With their knowledge of place value, they can then find the product of 4,200 and 3. So 42 hundreds $\times 3 = 126$ hundreds.

42 hundreds $\times 3 = 126$ hundreds or 12,600

When multiplying by a multiple of 10 (10, 100, 1,000) we no longer say “add the zero”, but instead “append the zero”. By saying “add a zero” we imply addition, rather than a knowledge of place value.

To solve multiplication problems with numbers near a multiple of 100, students will learn to multiply by the multiple of 100 and subtract the difference.

For example, 299×4 can be thought of as $(300 \times 4) - (1 \times 4) = 1,200 - 4$, or 1,196.

Standard Multiplication Algorithm Using Vertical Placement

To multiply 34 by 12, decompose the 12 into 10 and 2. Then multiply 34×2 to give the first product of 68. Then multiply 34×10 . Because the next step multiplying by a 10, we now need to append a zero (no longer say “put a placeholder”). Then add the two products together to get our final product.

$$\begin{array}{r} 34 \\ \times 12 \\ \hline 68 \quad \leftarrow 34 \times 2 \\ 340 \quad \leftarrow 34 \times 10 \end{array}$$

Using Multiplication in Bar Models

3 A farm sold 3,489 duck eggs. It sold 4 times as many chicken eggs as duck eggs. How many more chicken eggs than duck eggs did it sell?

Duck eggs 3,489

Chicken eggs

1 unit \rightarrow 3,489
3 units \rightarrow ?

$3,489 \times 3 = 10,467$
10,467 more chicken eggs

Students have worked with bar models several times before, but now we are adding in the concept of EQUAL UNITS. Students are asked “How many more chicken eggs than duck eggs did it sell?” To find this, they must recognize that there are 4 TIMES as many chicken eggs as duck eggs (pictured as 4 equal units). They are given the value of 1 unit (3,489). Students must then compare the bar models. There

are 3 additional units in the chicken egg bar model- this represents how many more chicken eggs were sold. To find this value with equal units, if 1 unit equal 3,489, then 3 units equal $3,489 \times 3$. This is just one example of the type of bar model problems students will encounter this chapter.

What can we do at home?

Automatic recall of multiplication facts is critical for multiplying 2, 3, and 4 digit numbers. At this point in fourth grade your child should have mastered all multiplication and division facts up to 12×12 . Continued practice of these multiplication facts at home will greatly benefit your child.

Salute is a fun game for multiplication and division and can be modified to practice facts up to 12×12 . The modifications are listed below.

Salute

Multiplication and Division Fact Practice

Materials: Deck of playing cards with the face cards removed. **(Leave in the Jack to represent 11 and the Queen as 12)**

Directions:

- This game works best with 3 players, but can be played with 2.
- Place the deck of cards in the middle of the three players.
- Player One draws a card and without looking places it on their forehead.
- Player Two draws a card and without looking places it on their forehead. (If playing with only 2 players put this card on the table face up.)
- Player Three silently multiplies the two cards and says the product out loud.
- Then player One and Two try to be the first to determine the card on their forehead.
- After several turns, switch roles so everyone gets a chance to determine the product.

Check out a video for Salute and other activities on our TCA Website.

<https://www.tcatitans.org/Domain/200> They are located in the math resources multiplication and division folder at the bottom of the page.