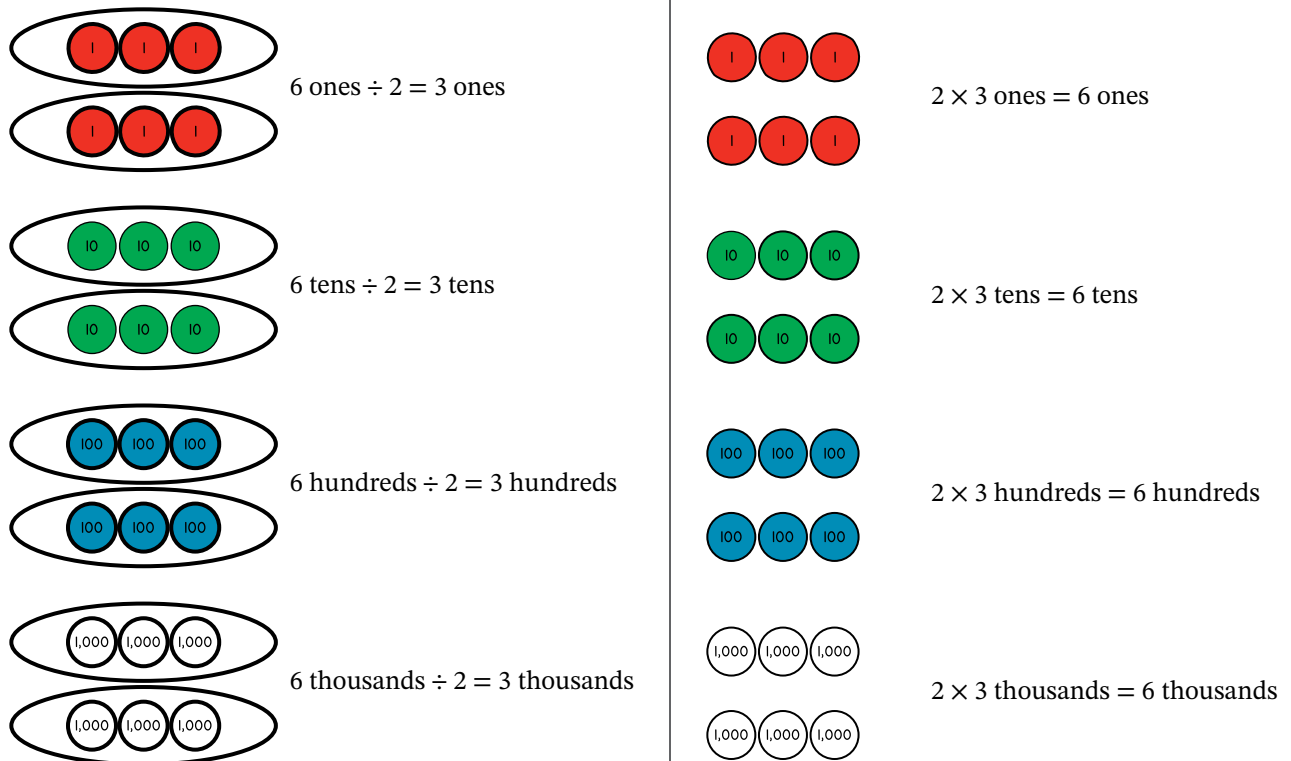


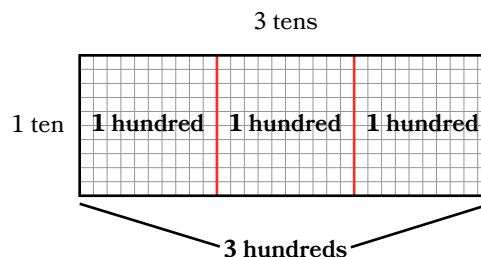
Multiplication and Division of Multiples of Tens, Hundreds, and Thousands

Dear Family,

Earlier this year your student learned to multiply and divide multiples of 10 by one-digit numbers. Now your student is multiplying and dividing multiples of 10, 100, and 1000 by one-digit numbers. Students use place value disks and unit form to connect familiar multiplication and division facts to new problems. They use familiar area models to understand that multiplying 2 multiples of 10 produces a number that is a multiple of 100.



The units change, but the familiar fact remains the same.



$$\begin{aligned}
 10 \times 10 &= 100 \\
 1 \text{ ten} \times 1 \text{ ten} &= 1 \text{ hundred} \\
 1 \text{ ten} \times 2 \text{ tens} &= 2 \text{ hundreds} \\
 1 \text{ ten} \times 3 \text{ tens} &= 3 \text{ hundreds}
 \end{aligned}$$

$$\text{multiple of } 10 \times \text{multiple of } 10 = \text{multiple of } 100$$

At-Home Activities

How Much Time Do You Spend...?

Help your student use multiplication to figure out how long they spend doing an activity over a period of time. Think of an activity that has a length of time that can be written as a multiple of 10 (20 minutes, 30 minutes, 40 minutes, etc.). Ask your student to multiply to figure out how long they spend doing the activity each week or month. For example, talk about the following situations.

- “Every night you read for 20 minutes. How many minutes do you spend reading each week?”
- “Every week you have soccer practice for 40 minutes. How many minutes do you spend at practice after 6 weeks?”

Thinking in Hundreds and Thousands

Look for opportunities around your home or during daily activities to help your student practice multiplying and dividing multiples of 100 or 1000 by a single-digit number. Consider using the following examples.

- “Our car has about 15,000 miles on it. We’ve had the car for about 5 years. If we drive the car about the same distance each year, about how many miles did we drive each year?”
- “This food has 300 calories per serving. There are 8 servings in the whole container. How many calories are in the whole container?”
- “There are about 2000 steps in a mile. About how many steps will I take if I walk 4 miles?”

FAMILY MATH

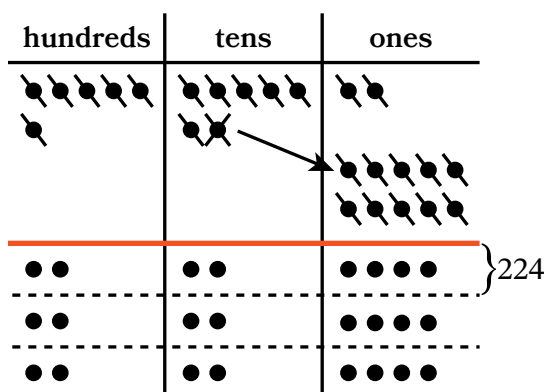
Division of Thousands, Hundreds, Tens, and Ones

Dear Family,

Your student is learning to divide three- and four-digit numbers by one-digit numbers. They begin by using place value charts and area models. They record their work from the place value chart as long division in vertical form and eventually use long division without the help of a place value chart. Ultimately, your student is encouraged to choose the division method that is most efficient for them based on the numbers they are dividing.

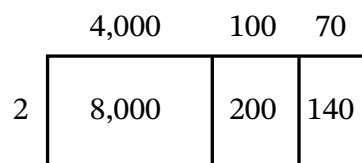
Key Term

long division



$$\begin{aligned} 672 \div 3 &= 2 \text{ hundreds} + 2 \text{ tens} + 4 \text{ ones} \\ &= 200 + 20 + 4 \\ &= 224 \end{aligned}$$

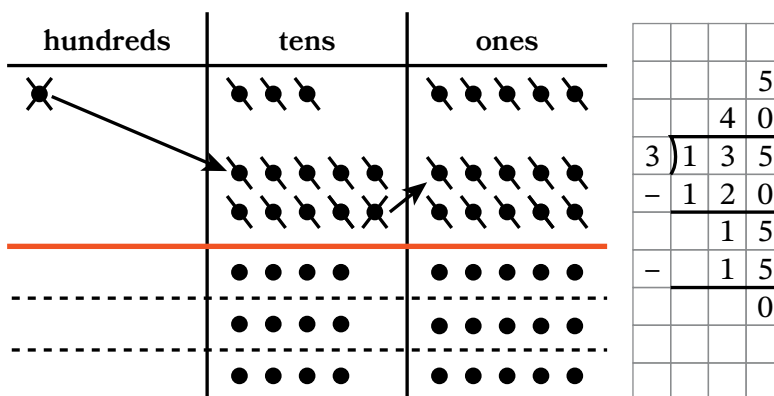
Students represent the total on a place value chart. Then, thinking about the divisor as the number of groups, they equally divide the amount in each place value. The number in each group is the quotient.



$$\begin{aligned} 8,340 \div 2 &= 4,000 + 100 + 70 \\ &= 4,170 \end{aligned}$$

Students draw area models to divide. They use the multiplication and division facts they know to break apart the total into parts that they can more easily divide.

$$135 \div 3 = \underline{\hspace{2cm}}$$



Students use place value charts to help them make sense of long division.

At-Home Activity

Divide an Even Number

Encourage your student to look for a three- or four-digit number that is even. Following are a few examples to help guide their thinking.

- Your student's favorite basketball team scored 114 points in their last game.
- Your house or building number is 1106.
- Your student scored 5,294 points in their online game.

Ask your student to divide the number they have chosen by 2 by using the three different methods they have been learning. Have them check their answers by making sure all three quotients are the same. Discuss which method seemed the most efficient to them and why.

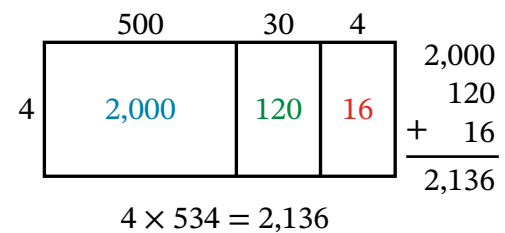
Multiplication of up to Four-Digit Numbers by One-Digit Numbers

Dear Family,

Earlier this year, your student learned to multiply two-digit numbers by one-digit numbers. Now, your student is building on that learning by multiplying three- and four-digit numbers by one-digit numbers. They use place value charts and area models to multiply by 1 place value at a time. They learn that the product of each smaller multiplication problem is called a partial product. To find the final product, they add all the partial products. Your student practices multiplying on a place value chart and by drawing an area model to prepare them for multiplying with vertical form. They see that the final product is the same no matter which method they use to multiply.

thousands	hundreds	tens	ones
	••••• ••••• ••••• •••••	••• ••• ••• •••	••••• ••••• ••••• •••••
	2,000	120	16

$$\begin{aligned}
 4 \times 534 &= 4 \times (5 \text{ hundreds} + 3 \text{ tens} + 4 \text{ ones}) \\
 &= 4 \times (500 + 30 + 4) \\
 &= (4 \times 500) + (4 \times 30) + (4 \times 4) \\
 &= 2,000 + 120 + 16 \\
 &= 2,136
 \end{aligned}$$



Students use place value charts to help them multiply and write equations to describe their work.

Students draw area models to help them multiply. The side lengths are the factors being multiplied and the areas are the partial products.

			5	3	4
	×				4
				1	6
			1	2	0
	+	2	0	0	0
		2,	1	3	6

→ 4 × 4 ones

→ 4 × 3 tens

→ 4 × 5 hundreds

			5	3	4
	×				4
		2	0	2	6
		2,	1	3	6

When first multiplying with vertical form, students record each partial product on a separate line. They transition to recording all of the partial products on one line.

At-Home Activity

Time to Multiply!

Have your student look at a clock and write the time as a three- or four-digit number. For example, if the time is 5:28, then write the number as 528. If the time is 10:13, then write the number as 1,013. Once your student has found their number, ask them to multiply it by another number based on the time of day. If the time is a.m., have them multiply by either 2, 3, 4, or 5. If the time is p.m., have them multiply by either 6, 7, 8, or 9. Your student can repeat this activity at different times of the day for extra practice. Encourage them to use a different method each time to multiply.

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	$10 \times 30 = 300$	$10 \times 2 = 20$

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

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

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

$$\begin{array}{r} 74 \\ \times 40 \\ \hline 2860 \\ + 2960 \\ \hline 5820 \end{array}$$

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?”

FAMILY MATH

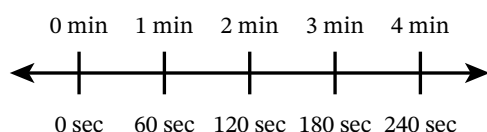
Problem Solving with Measurement

Dear Family,

Your student is learning to solve problems with units of time, weight, and liquid volume by converting from larger units to smaller units. They convert hours to minutes, minutes to seconds, and pounds to ounces by using multiplication. Students explore the relationships among liquid volume measurements. They continue to practice renaming larger units as smaller units as they solve addition and subtraction problems.

Key Terms

cup	pint
gallon	pound
ounce	quart



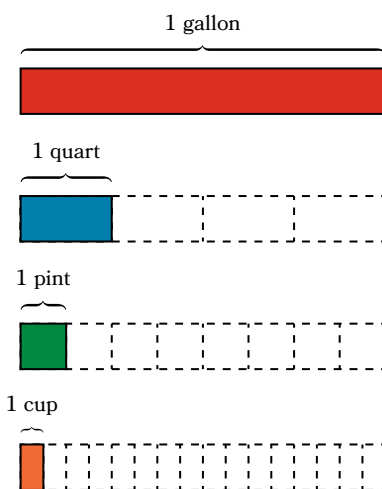
Minutes	Seconds
1	60
5	300
7	420
12	720

Students use number lines and conversion tables to rewrite units.

$$32 \text{ lb } 8 \text{ oz} + 11 \text{ oz} = 531 \text{ oz}$$

$$\begin{array}{r} 32 \\ \times 16 \\ \hline 512 \end{array} \quad \begin{array}{r} 8 \text{ oz} + 11 \text{ oz} = 19 \text{ oz} \\ + 19 \\ \hline 531 \end{array}$$

Students use multiplication to convert larger units to smaller units and then add or subtract.



Students use a tape diagram to see the relationships among the customary measurements of liquid volume including gallons, quarts, pints, and cups.

At-Home Activities

Minutes and Seconds

Help your student practice adding and subtracting units of time. You can use a stopwatch, or the timer on a phone, to help you figure out how long it takes your student to complete two related activities. For example, find the time it takes your student to get dressed. Then find the time it takes your student to eat breakfast. Round both times to the nearest whole second. Then ask your student to tell you either the total amount of time it takes to complete both activities together or how much longer one activity takes than the other.

What If We Pour. . .?

Encourage your student to think about units of liquid volume. Look for containers of liquid that come in gallons, quarts, or pints, such as milk or juice. Ask your student to figure out how many cups were in each container when each container was full and unopened. Then ask questions about the amounts in the containers. Consider using the following questions to guide their thinking.

- “If we pour 3 cups out of this gallon of milk then how many cups will we have left?”
- “If we pour 1 quart of orange juice and then pour 1 pint of cranberry juice into a container, how many cups of orange juice and cranberry juice will we have altogether in the container?”

FAMILY MATH

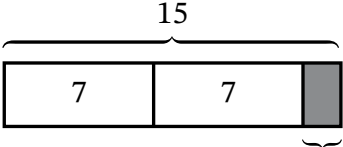
Remainders, Estimating, and Problem Solving

Dear Family,

Your student is learning to divide with numbers that result in a remainder. Up to this point, students have worked with totals that could be divided evenly. Students learn that if the total is not a multiple of the divisor then there is a remainder. They solve division word problems and use estimation to decide whether their answers are reasonable. Students realize that the remainder, the quotient, or both could be used to help them determine the answer based on the word problem.

Key Term
remainder

$15 \div 7$
 $(2 \times 7) + 1$
 Quotient: 2
 Remainder: 1



$15 \div 7$
 Quotient: 2
 Remainder: 1

$15 = (2 \times 7) + 1$

The total is 15. There is a remainder because 15 is not a multiple of the divisor, 7.

$18 \quad 76$
 $g = 94$
 5
 10
 $6 \overline{) 94}$
 $- 60$
 34
 $- 30$
 4

The fewest number of cartons
Miss Wong needs for all the eggs
is 16.

Miss Wong has 18 eggs. She gets 76 more eggs from her chickens. She puts the eggs into cartons. Each carton can hold 6 eggs. What is the fewest number of cartons she needs for all the eggs?

To answer the question both the remainder and the quotient need to be considered. To determine the fewest number needed, 1 must be added to the quotient.

At-Home Activity

Thinking about Remainders

Look for opportunities with your student where you can divide objects among people. Remind your student to ask whether the total is a multiple of the divisor. Consider using the following sample situations.

- “There are 5 of us having lemonade. There are 16 ice cubes in an ice tray. If each of us gets an equal number of ice cubes will any ice cubes be left over? How do you know?”

Ask your student to divide an odd number of crayons between 2 people. Before they divide, ask them whether they think any crayons will be left over. Have them explain their reasoning.