

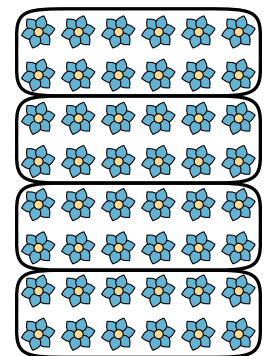
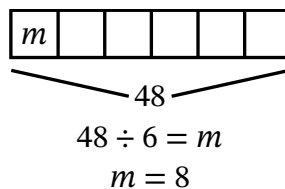
Multiplication and Division Concepts with an Emphasis on Units of 6 and 8

Dear Family,

Your student is continuing to practice multiplication and division. They use their knowledge of multiplication and division with units of 3 and 4 to help them solve problems with units of 6 and 8. Familiar strategies, such as the break apart and distribute strategy, and familiar representations, such as arrays, equal groups, and tape diagrams, support your student as they multiply with larger factors. Your student is beginning to use a letter to represent an unknown value in models and equations.

		6	$2 \times 3 = 1 \times 6$
		12	$4 \times 3 = 2 \times 6$
		18	$6 \times 3 = 3 \times 6$

Thinking about threes can help when multiplying and dividing with sixes because 6 is 2 groups of 3.



$$\begin{array}{r} \underline{8} \text{ groups of } (\underline{2} \times \underline{3}) \\ \underline{8} \times (\underline{2} \times \underline{3}) \\ \underline{8} \times \underline{6} \end{array}$$

$$\begin{array}{r} \underline{4} \text{ groups of } (\underline{2} \times \underline{6}) \\ \underline{4} \times (\underline{2} \times \underline{6}) \\ \underline{4} \times \underline{12} \end{array}$$

Letters can represent unknown values. It is useful to choose a letter related to the problem. For example, m could represent money.

Arrays can be broken into equal groups in different ways when they are being used to solve more challenging problems.

At-Home Activities

How Much and How Many with 6 and 8

With your student, look for opportunities to solve real-world multiplication and division problems with units of 6 and 8. For example, if a box of granola bars holds 6 bars, ask your student how many bars are in 5 boxes. If it costs \$8 for a movie ticket, ask your student how many tickets you can buy with \$24. Encourage them to use strategies such as skip-counting, drawing an array, and breaking apart the problem into more familiar factors.

Multiplication to Keep Fit

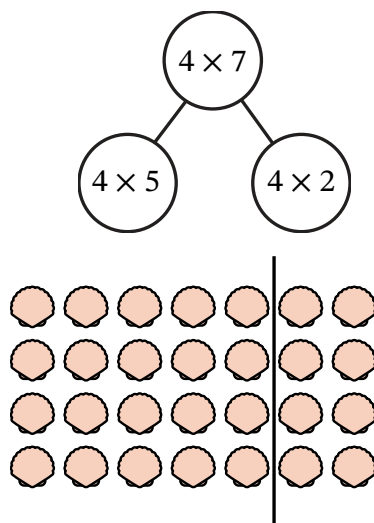
Do a fun workout with your student. Choose a few exercises, such as jumping jacks, sit-ups, push-ups, or lunges, that you can do together. Do each exercise 6 or 8 times to complete 1 set. Do 2 to 5 sets of the exercises with your student, keeping track of how many you complete. During your cooldown, ask your student questions about the number of exercises. Encourage them to use multiplication and division to determine the answers.

- “How many total sit-ups did we do? What can we multiply to help us figure it out?”
- “How many sit-ups and jumping jacks did we do? Tell me what equations help you find the total.”
- “We did 48 lunges, and there were 8 in each set. How many sets of lunges did we do?”

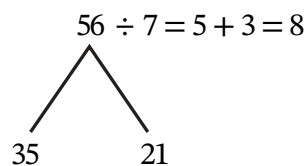
Multiplication and Division Concepts with an Emphasis on the Unit of 7

Dear Family,

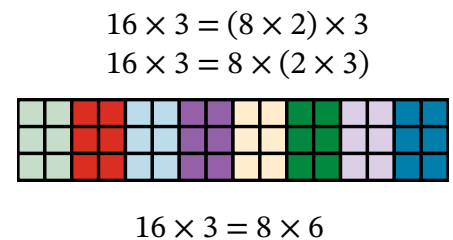
Your student is applying strategies for multiplying and dividing introduced earlier in the year, now with an emphasis on the unit 7. As your student learns their multiplication facts for 7, they use the break apart and distribute strategy to break the unit of 7 into more familiar parts. Your student also explores another strategy that is helpful when one factor is large. They write a multiplication expression with 2 factors as a multiplication expression with 3 factors. Then they use parentheses to group the 3 factors in different ways, and they learn that the order of multiplying the factors doesn't change the total.



The factors in a multiplication problem can be broken into smaller parts. Because $7 = 5 + 2$, fives and twos facts are helpful when multiplying by 7.



The total in a division problem can be broken into smaller parts. To divide by 7, students choose parts that can be divided by 7 with known facts.



The array shows 16×3 . It also shows 8 groups of 3×2 . Students can break apart arrays into smaller problems and use parentheses to group factors.

At-Home Activity

The Sevens Have It

Play a game with your student to help them practice multiplying by 7. Write the numbers 2–10 on small pieces of paper or index cards. Make one set for your student and one for yourself. Shuffle the numbers in each set. Place your student's numbers in a pile facedown in front of them and yours in a pile facedown in front of you. Ask your student to take the top paper from their pile and multiply the number by 7. Then you take the top paper from your pile and multiply the number by 7. Whoever has the larger product takes both numbers and puts them facedown at the bottom of their pile. For example,

- Your student picks a 5 from their pile. They say, " $7 \times 5 = 35$."
- You pick a 4 from your pile. You say " $7 \times 4 = 28$."
- Your student takes the papers with 5 and 4 and puts them facedown at the bottom of their pile because 35 is the larger product.

Repeat the process until one person has all the slips of paper in their pile.

FAMILY MATH

Analysis of Patterns Using Units of 9, 0, and 1

Dear Family,

Your student is exploring patterns when multiplying and dividing with units of 9, 0, and 1. They use the relationship between 9 and 10 to help them skip-count and multiply by 9. They also identify special patterns that help them better remember nines facts. They investigate multiplication and division patterns with 1 and 0 and discover that there are special rules when multiplying and dividing with these units. Using their knowledge of multiplication and division, they analyze patterns in multiplication tables and use patterns to find unknown numbers. They also write their own word problems and solve word problems with two steps.

Key Term
multiple



9 fours = 10 fours – 1 four

$$\begin{aligned} 9 \times 4 &= (10 \times 4) - (1 \times 4) \\ &= 40 - 4 \\ &= 36 \end{aligned}$$

To find 9 units of four, find 10 units of four and then subtract 1 unit of four.

1 nine is 9
2 nines is 18
3 nines is 27
4 nines is 36
5 nines is 45
6 nines is 54
7 nines is 63
8 nines is 72
9 nines is 81
10 nines is 90

The number of tens in a multiple of 9 is 1 less than the number of groups of 9.

$\boxed{7}$ groups of 0 is $\underline{\quad 0 \quad}$.

$\boxed{7} \times \underline{\quad 0 \quad} = \underline{\quad 0 \quad}$

0 groups of $\boxed{7}$ is $\underline{\quad 0 \quad}$.

$\underline{\quad 0 \quad} \times \boxed{7} = \underline{\quad 0 \quad}$

Any number multiplied by 0 is 0. A number cannot be divided by 0, but 0 divided by any other number is 0.

$1 \times 2 = 2$
 $1 \times 3 = 3$
 $1 \times 4 = 4$
 $1 \times 5 = 5$
 $1 \times 6 = 6$
 $1 \times 7 = 7$
 $1 \times 8 = 8$
 $1 \times 9 = 9$

$1 \times 30 = 30$
 $1 \times 500 = 500$

Any number, except 0, multiplied or divided by 1 is itself.

At-Home Activity

One Group Less

Encourage your student to practice multiplying with units of 9 by using the strategy of multiplying by 10 and subtracting 1 group. Look for an object with a set number of features, such as a fork with 4 prongs or a window with 6 panes. Show it to your student and ask them questions to help them find the total number of features for 9 of those objects.

- “If 1 fork has 4 prongs, how many prongs are on 10 forks?” ($10 \times 4 = 40$)
- “If there are 40 prongs on 10 forks, how many prongs are on 9 forks?” ($40 - 4 = 36$)

If possible, place 10 of the object in front of your student and then remove 1 when you ask about 9 objects.

Multiplication with Multiples of 10 and Further Application of Concepts

Dear Family,

Your student is learning how to multiply by multiples of 10 up to 90: 10, 20, 30, 40, 50, 60, 70, 80, and 90. They use what they know about place value and other strategies to break apart a multiple of 10 into two factors. They apply their multiplication skills to solve two-step word problems and to count more complex groups of objects. The strategies your student is learning now will support their understanding of multiplying with larger numbers.

$$4 \times 2 \text{ ones} = 8 \text{ ones}$$

$$4 \times 2 = 8$$

$$4 \times 2 \text{ tens} = 8 \text{ tens}$$

$$4 \times 20 = 80$$

Writing multiples of ten in unit form shows the connection between multiplying by ones and multiplying by tens.

$$4 \times 20 = 4 \times (2 \times 10)$$

$$= (4 \times 2) \times 10$$

$$= 8 \times 10$$

$$= 80$$

Breaking apart a multiple of 10 into a number times 10 allows for multiplying smaller, known facts first.

At-Home Activities

Multiplying by Tens

Look for items that come packaged in multiples of 10. Encourage your student to use the items to practice multiplying by multiples of 10.

- “One package of pencils comes with 40 pencils. How many pencils would be in 7 packages?”
- “There are 8 bags of oranges on that shelf. Each bag holds about 20 oranges. About how many oranges are on the shelf?”
- “This shoe rack holds 30 shoes. How many shoes will 3 shoe racks hold?”

Tens of Cents

Help your student count a collection of coins. Provide an assortment of nickels, dimes, and quarters, or write 5¢, 10¢, and 25¢ on small pieces of paper to represent coins. Have your student put the coins into groups that have the same value. For example, if the value is 30¢, groups could be made from 3 dimes, 6 nickels, or 1 quarter and 1 nickel. Then ask your student to skip-count or multiply to find the total value of all the coins. Their count may sound like, “3 tens, 6 tens, 9 tens, 12 tens” or “30 cents, 60 cents, 90 cents, 120 cents.”

As a challenge, suggest they break the coins into two types of groups, each with a different value. For example, they could organize all the dimes into groups of 20¢ and all the nickels and quarters in groups of 30¢. Then have them find the value of the coins in each type of group and add to find the total value of all the coins.