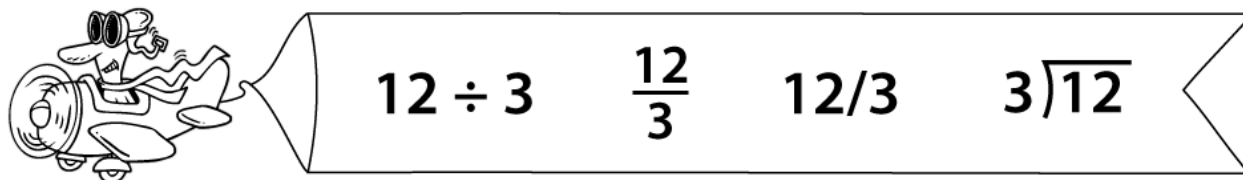


Lesson 3: Division Review (3 Days)

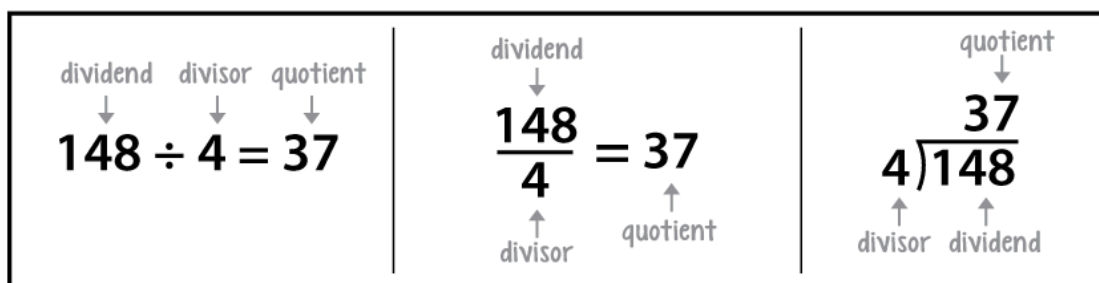
☐ Getting Started

Now that you've practiced multiplying whole and decimal numbers, you're ready to review division as well. You probably remember that division is the opposite of multiplication. For example, $3 \times 2 = 6$, and $6 \div 2 = 3$. Division can be represented in several ways:



Each of these can be read as *twelve divided by three*.

In a division problem, the number that is being divided is called the *dividend* and the number that does the dividing is called the *divisor*. The answer is called the *quotient*.



Just as with the other operations, there is an algorithm for dividing whole numbers that can also be used for dividing decimal numbers with just an extra step or two added.

Stuff You Need

- 3-hole drilled card stock (kit)
- colored pencils
- construction paper (kit)
- glue or glue stick
- Interactive Notebook
- marker
- scissors

Ideas to Think About

- How is division like repeated subtraction?
- How can using divisibility rules be used when dividing larger dividends?
- What are some ways to interpret remainders in division problems?
- In what ways might a remainder affect the answer to a word problem?

Things to Know

- Division is the opposite of multiplication. For example, $3 \times 2 = 6$, and $6 \div 2 = 3$.
- Division is repeated subtraction. In other words, $8 \div 4$ means $8 - 4 = 4 - 4 = 0$. Four can be subtracted from eight two times.
- In a division problem, the number being divided is called the dividend and the number that does the dividing is called the divisor. In the problem $6 \div 2 = 3$, the number 6 is the dividend that is being divided by the divisor, which is 2. The answer to a division problem is called the quotient.
- If one number is divisible by another, it means that the quotient has no remainders. For example, 10 is divisible by 5 but not by 3.
- Remainders in division word problems can be interpreted in different ways. The remainder may need to be included, discarded, or used to round an answer up by 1. Using decimals and zeros can allow division to continue so that no remainder is needed.

Activities

☐ Activity 1: Rules of Divisibility

You know that multiplication can be described as "repeated addition" because it can be thought of as a shortcut for adding a number to itself a bunch of times. For example, 4 times 7 is the same as 4 added 7 times: $4 \times 7 = 4 + 4 + 4 + 4 + 4 + 4 + 4 = 28$.

In the same way, division can be thought of as "repeated subtraction." Let's say you want to evenly divide 18 pieces of candy into groups of three. How many groups of 3 would you get? The problem is written as 18 divided by 3, and one way you could find the answer is to start counting out groups of 3 candies until there is no more candy.

$$18 \div 3 =$$

(count the groups of 3)



6 groups of 3

Because there are six groups of three in eighteen, $18 \div 3 = 6$.

This is a perfectly reasonable and effective way to do division, but it does have one drawback: it takes a long time. This would be especially true for a more complex

problem such as $741 \div 3$. But fear not! The algorithm for division can be used to accurately and quickly find the quotient for longer problems.

Before reviewing how to solve division problems, it's helpful to know some facts about divisibility. What does it mean for a number to be divisible by another number? If one number is divisible by another, it means that the quotient has no remainder. For example, 10 is divisible by 5 ($10 \div 5 = 2$), but is not divisible by 3 ($10 \div 3 = 3 \text{ R } 1$). So how do you know if a number is divisible without actually dividing? You learn the rules of divisibility.

Complete the "Rules of Divisibility" page to learn more about these helpful rules. Then, store this page in your Interactive Notebook for future reference.

☐ Activity 2: Long Division

The rules of divisibility will prove useful to you as you practice the algorithm for long division. You've learned this algorithm before, so let's review the steps using the following website.



Long Division

www.beyondthepage.com/link/10061/

Long division can seem long, but you might notice that it's really a set of steps that is repeated until the final answer is found. Let's see how this works with a word problem.

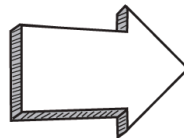


Jeremy has 162 plastic dinosaurs in his collection. If he divides them evenly among three shelves, how many plastic dinosaurs will be on each shelf?

In a division problem, the dividend is the number amount that is being divided. In this case, the number of dinosaurs (162) is the dividend. The divisor is the number doing the dividing. It can represent either the number of groups or the number of items to be put into groups. In this problem, Jeremy is placing dinosaurs on three shelves, so the divisor (3) represents the number of groups, meaning the three shelves. You can use the divisibility rules to find that 162 is divisible by 3, so there will not be a remainder in this problem.

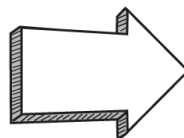
Steps for Division

Step 1: Write the problem in long division form.



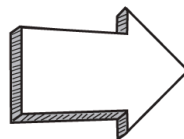
$$3 \overline{)162}$$

Step 2: Divide the starting digit(s) of the dividend by the divisor. Write the whole number answer in the quotient.



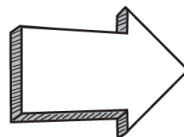
$$\begin{array}{r} 5 \\ 3 \overline{)162} \end{array}$$

Step 3: Multiply the answer by the divisor and subtract it from the the dividend. Make sure the difference is less than the divisor.



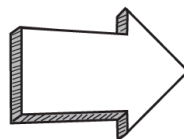
$$\begin{array}{r} 5 \\ 3 \overline{)162} \\ -15 \\ \hline 1 \end{array}$$

Step 4: Bring down the next digit in the dividend and write it next to the difference.



$$\begin{array}{r} 5 \\ 3 \overline{)162} \\ -15 \\ \hline 12 \end{array}$$

Step 5: Repeat steps 2 - 4 until there are no numbers left in the dividend to use.



$$\begin{array}{r} 54 \\ 3 \overline{)162} \\ -15 \\ \hline 12 \\ -12 \\ \hline 0 \end{array}$$

The division algorithm allowed you to figure out that Jeromy can place 54 plastic dinosaurs on each of his three shelves.

Let's try another one.



Wendy has 630 buttons and wants to place them in storage cups with 45 buttons in each cup. How many cups will Wendy need for storing all her buttons?

In this problem, 630 buttons will be divided, so 630 is the dividend. The divisor is 45, and it represents the number of items (buttons) in each group. The problem asks you to find the number of groups needed. You can see that this divisor has two digits. No matter how many digits are in the divisor, you follow the same algorithm steps.

$$\begin{array}{r} 14 \\ 45 \overline{)630} \\ \underline{-45} \\ 180 \\ \underline{-180} \\ 0 \end{array}$$

Wendy needs 14 storage cups to hold all her buttons. As you can see, long division helps you find how many items go into a set number of groups or how many groups of items you have in all.

Now use the standard algorithm to practice solving division problems on the "Long Division" activity sheets.

Day 2

Activity 3: Long Division with Decimal Numbers

In the last activity, all the problems involved whole numbers, but what if you need to divide numbers that have decimals? You can probably guess that the standard algorithm for dividing whole numbers works just as well for decimal numbers, with a few extra steps. Watch the following video to see how to divide with decimal numbers.



Decimal Division

www.beyondthepage.com/link/10494/

In the video, you learned that before you can use the division algorithm, a decimal in the divisor needs to be moved to make a whole number. While it is possible to

divide with a decimal divisor, it's pretty tricky, so a better option is to create an equivalent problem in which the divisor is a whole number.

Remember that in math, equivalent means equal, and problems are equivalent if the same changes are applied to every part of the problem. Let's see how this works with the following example:

What is 1.75 divided by 0.25?

The dividend is 1.75 and the divisor is 0.25. To make 0.25 a whole number, you move the decimal two places, and when you move a decimal point, you are really multiplying by a power of ten. Moving the decimal two times to make 0.25 a whole number represents multiplying by two powers of ten, (10×10), or 100. To keep the problem equivalent, you must multiply the dividend by this same powers of ten factor. When 1.75 is multiplied by 100, the result is 175, which is the same as moving the decimal two times to the right.

$$\begin{array}{r} \text{0.25} \overline{)1.75} = \text{25} \overline{)175} \\ \times 10 \times 10 \quad \times 10 \times 10 \end{array}$$

By keeping the new problem equivalent to the original problem, you ensure that the final quotient will be correct.

Next you'll create a foldable to help you remember the division algorithm. You may refer to the illustrations in Lesson 1 if you need a reminder about how to set up the construction paper. Follow these steps:

1. Cut out the boxes from the "Steps for Division Algorithm" sheet.
2. Put the steps in the correct order, and match the correct example problem image with each one.
3. Once you've put the steps and matching examples in order, show them to a parent, and explain each step in your own words.
4. Shade each step and its corresponding example in the same color, using a different colored pencil for each step.
5. Cut about 2 inches off of the long end of a piece of construction paper so the page is about 9" $\times$ 10".
6. Fold the sheet of construction paper in half longways. (Refer to the image guide in Lesson 1 as needed.)
7. Cut the top half into 4 equal sections to create the flaps.
8. Use a marker to write "Step 1", "Step 2", "Step 3", and "Step 4" onto the front of the flaps.

9. Lift the flaps and glue the steps and the examples in the correct order. The step should go on the back of the flap and the example should go below the step.

When you are finished, glue the back of the foldable to a piece of card stock paper, and store it in your Interactive Notebook for future reference.

☐ Activity 4: Practicing Decimal Division

The algorithm for long division works for decimal numbers quite well, doesn't it? You just have to take care to make sure you are placing decimal points correctly as you work. There are many examples of real-world problems that require this type of math. Consider this problem:

Ian purchased a crate of watermelons. The crate of watermelons weighed 54 pounds in all, and each watermelon weighed 4.5 pounds. How many watermelons came in the crate?

To solve, use the steps for long division.

$$4.5 \overline{)54} \Rightarrow 4.5 \overline{)54.0} \Rightarrow \begin{array}{r} 12 \text{ watermelons} \\ 45 \overline{)540} \\ \underline{-45} \\ 90 \\ \underline{-90} \\ 0 \end{array}$$

Did you notice that you had to add a zero to the dividend when you moved the decimal? Any time moving a decimal creates an "empty" spot, be sure to place a zero as a place value holder. Then solve as normal.

Complete the "Long Division with Decimals" activity pages. You can refer to your foldable as you work to ensure you are following the correct steps to solve each problem.

Day 3

☐ Activity 5: Interpreting Remainders

So far, all the problems you've done in this lesson have had dividends that are fully divisible by the divisor, meaning that there is nothing left over after all the division is finished. You know from previous math levels that this isn't always the case. Often in division, you end up with a number amount left over, even after you've divided all the digits in the dividend. This number amount is called a remainder.

While it may be acceptable in some problems to simply write the remainder after the quotient, it is often better in word problems to interpret the remainder to find the answer. To interpret the remainder means to figure out what needs to be done with the leftover number amount to best solve the problem.

There are four main ways to interpret a division remainder:

- include the remainder,
- discard the remainder amount,
- increase the quotient by 1 to include the remainder amount, or
- use a decimal point and zeros in the dividend to prevent a remainder.

Let's work through some examples to demonstrate each of these methods.



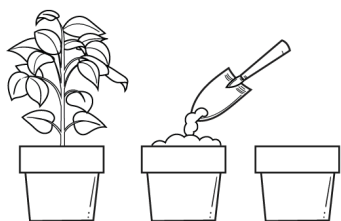
Alan has 46 cookies. He wants to arrange an equal number of cookies on 4 plates to share with his neighbors. If any cookies are left over, Alan will eat them. How many cookies will each neighbor get, and how many will Alan have to eat?

First, solve the problem using long division. Since 46 is not divisible by 4, you know this problem will have a remainder. Remember that you write a remainder after the whole number in the quotient.

$$\begin{array}{r} 11 \text{ R}2 \\ 4 \overline{)46} \\ \underline{-4} \\ 06 \\ \underline{-4} \\ 2 \end{array}$$

In the quotient, the number 11 shows the number of cookies that Alan will put on each plate for his neighbors. The remainder (2) shows the number of cookies he has left over. Both of these numbers are needed to answer the word problem questions. Each neighbor will receive 11 cookies, and Alan will have 2 left over for himself. The remainder is needed in the answer.

In other problems, the remainder is not directly a part of the answer, so you have to figure out exactly what to do with a left over amount. The following problem provides an example of this.



Imagine that you have 136 liters of potting soil and want to use it to fill as many 3-liter pots as possible. How many pots can you fill with the potting soil?

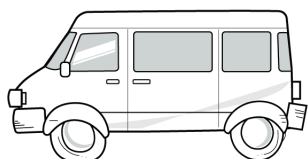
Using the divisibility rules, you can see that 136 is not divisible by 3, so again, you can expect a remainder.

$$\begin{array}{r} 45 \text{ R}1 \\ 3 \overline{)136} \\ \underline{-12} \\ 16 \\ \underline{-15} \\ 1 \end{array}$$

The number 45 in the quotient shows the number of pots that you can completely fill with potting soil. The remainder (1) shows that after filling those pots, there is still one liter of soil left over.

What should you do with this soil? Ask yourself: Do I have to use all of the potting soil? The answer is no. You cannot completely fill another pot with the remaining soil, so in a problem such as this, you discard the remainder and show the answer as "45 pots."

This won't always be the case. There are other types of problems in which it doesn't work to discard the remainder. For example:



Mr. Thompson is taking a group of students on a field trip to the planetarium. He is using vans to carry the students. If each van can hold 15 students, how many vans will be needed to carry 85 students on the field trip?

$$\begin{array}{r} 5 \text{ R}10 \\ 15 \overline{)85} \\ \underline{-75} \\ 10 \end{array}$$

The quotient shows that after completely filling 5 vans, there are still 10 students remaining. Can Mr. Thompson discard those students? Not unless he wants some very unhappy students! In this case, the remainder requires us to add one more to the quotient's main number so that the remainder is included in the answer. Mr. Thompson will need 6 vans for the field trip.

So far you've explored problems that require the remainder to be used, the remainder to be discarded, or the remainder to be rounded. Some problems, however, do not solve correctly if a remainder exists. These problems call for a special technique that involves decimals. Consider the following problem.



Iggy and Brianna earned \$127 washing cars one weekend. They want to divide the earnings evenly. How much money will each girl receive?

$$\begin{array}{r} \$63 \text{ R}1 \\ 2 \overline{)\$127} \\ \underline{-12} \\ 07 \\ \underline{-6} \\ 1 \end{array}$$

Each girl gets \$63, but what about that remaining \$1? Should they discard that extra money? No way! Can they increase their earned money by \$1? Again, the answer is no. They could simply say they have \$1 left, but that doesn't really help anything either. If only there was a way to evenly divide that one dollar. Guess what? There is a way, and it involves decimals.

Remember that every whole number has a decimal after the ones place and every decimal has place values to the right of it. Those place values can be written with zeros without changing the actual value of the number. That means that 6.0 and 6.00 have the exact same value as 6. You can use this fact to extend any dividend so that the steps of long division continue to happen until there is no more remainder. Study the following image to see how this works for the previous example:

$$\begin{array}{r} \$63.5 \\ 2 \overline{) \$127.0} \\ \underline{-12} \\ 07 \\ \underline{-6} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

By adding a decimal and a zero in the tenths place, the division problem could be solved without having a remainder. Iggy and Brianna each earned \$63.50. (Even though the last zero wasn't shown in the division problem, you know to include it for answers involving money.)

Practice the skills you've learned by completing the "Interpreting Remainders in Division" activity sheets. Be sure to carefully read any word problems to decide how best to interpret a remainder.

☐ Activity 6: Basic Skills Review

You will complete the "Basic Skills Review #1" sheet. This review practices skills that you've previously learned. In your answers, be sure to simplify fractions if needed and include unit labels. For example, if a problem is about perimeter, your answer should include a unit of length such as "inches" or "centimeters." Use scratch paper if more room is needed to solve a problem.

Wrapping Up

You have now reviewed and practiced the algorithms for adding, subtracting, multiplying, and dividing whole numbers and decimal numbers. These basic operations form the foundation for much of the math we do. You will continue to use these skills as you work through the rest of the units in this level. Keep your Interactive Notebook handy for reference if you need review of the algorithm steps.

Learning Gates

Take the [Learning Gates quiz](#) for this lesson.

RULES of DIVISIBILITY

Instructions: Study the divisibility rule for each whole number listed in the table. Use the rule to identify the numbers in the Try It! column that are divisible by the whole number. If a number is divisible, circle it.

Divisible by	Rule	Example	Try It!
2	If a number ends in an even digit (0, 2, 4, 6, or 8), then the number is divisible by 2.	$24 \div 2 = 12$ 24 ends in 4, so it is divisible by 2.	658, 330, 227, 902, 555, 1,096
3	If the sum of the digits in a number is divisible by 3, then the number is divisible by 3.	$432 \div 3 = 144$ $432 : 4 + 3 + 2 = 9$, 9 can be divided by 3, so 432 is divisible by 3	871, 603, 321, 450, 335, 2,515
4	If the last two digits of a number are divisible by 4, then the whole number is divisible by 4.	$324 \div 4 = 81$ $324 : 24$ is a multiple of 4 (6×4), so 324 is divisible by 4	448, 690, 316, 740, 254, 3,912
5	If the last digit of a number is 0 or 5, then the number is divisible by 5.	$645 \div 5 = 129$ 645 ends in 5, so it is divisible by 5	859, 180, 365, 557, 230, 8,995
6	If a number is divisible by both 2 and 3, then it is divisible by 6.	$312 \div 6 = 52$ 312 is even, so it is divisible by 2; $3 + 1 + 2 = 6$, so it is divisible by 3	921, 306, 234, 913, 520, 5,214
9	If the sum of the digits in a number is divisible by 9, then the number is divisible by 9.	$8,019 \div 9 = 891$ $8,019 : 8 + 0 + 1 + 9 = 18$, 18 can be divided by 9, so 8,019 is divisible by 9	887, 659, 702, 117, 590, 2,466
10	If the last digit is a 0, the number is divisible by 10.	$6,840 \div 10 = 684$ 6,840 ends in 0, so it is divisible by 10	560, 900, 502, 710, 888, 6,405
12	If a number is divisible by both 3 and 4, then it is divisible by 12.	$360 \div 12 = 30$ 360: $3 + 6 + 0 = 9$, which is divisible by 3; the last two digits (60) are divisible by 4, so 360 is divisible by 12	612, 444, 875, 940, 324, 9,180

Long Division

1.

$828 \div 6 =$

2.

$8 \overline{)9608}$

3.

$5,453 \div 7 =$

4.

A cash prize of \$7,638 is to be divided equally among three winners. How much will each winner receive?



5.

$$21 \overline{)8505}$$

6.

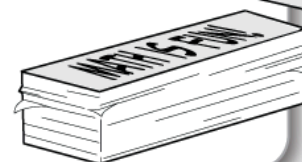
$$6,664 \div 56 =$$

7.

$$44 \overline{)6468}$$

8.

A batch of 3,750 bumper stickers must be packed into shipping boxes with 25 bumper stickers in each box. How many shipping boxes will be needed to pack all the bumper stickers?

MATH IS FUN!

Steps for Division Algorithm

Move the decimal point straight up from the dividend to the quotient.			
Move the decimal in the divisor to make it a whole number (if necessary). Move the decimal in the dividend the same number of places.	Move the decimal in the divisor to make it a whole number (if necessary). Move the decimal in the dividend the same number of places.		
Draw the long division symbol. Put the dividend under the symbol, and put the divisor outside the symbol.	Draw the long division symbol. Put the dividend under the symbol, and put the divisor outside the symbol.		
Perform the long division as usual.			

$73.32 \div 5.2$

$5.2 \overline{)73.32}$

14.1

$52 \overline{)733.2}$

$\begin{array}{r} -52 \\ \hline 213 \\ -208 \\ \hline 52 \\ -52 \\ \hline 0 \end{array}$

14.1

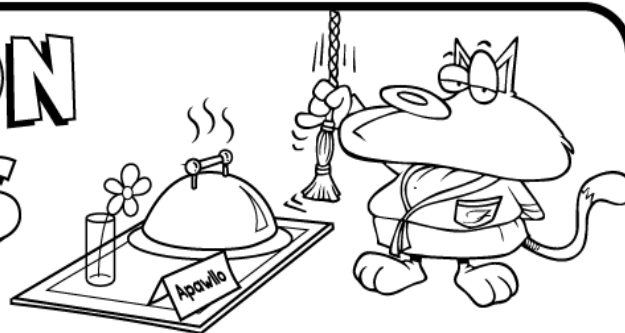
$52 \overline{)733.2}$

$\begin{array}{r} -52 \\ \hline 213 \\ -208 \\ \hline 52 \\ -52 \\ \hline 0 \end{array}$

$5.2 \overline{)73.32}$

LONG DIVISION with DECIMALS

Instructions: Solve each problem using the steps for long division with decimals.



1. $81.27 \div 9 =$

2. $6288.8 \div 2.8 =$

3. $842.1 \div 2.1 =$

4. $59.94 \div 0.74 =$

5.

$$256 \div 0.8 =$$

6.

$$42.8 \div 0.04 =$$

7.

Kelli bought 12 bags of cat food for \$77.40. How much did each bag cost?

8.

A box of screws weighs 55.5 ounces. If each screw weighs 0.3 ounces, how many screws are in the box?

INTERPRETING REMAINDERS in DIVISION

Instructions: Solve each problem using division. Interpret any remainders to accurately answer the given question.

1. Hendrick needs to read a 895 page book. If he reads 35 pages a day, how many days will it take Hendrick to finish the book?



2. Violet earned \$82 last week as a babysitter. If she worked 8 hours, how much did she get paid each hour that she babysat?



3. Joey bought a large bag of jellybeans and wants to divide the candy into smaller bags with 24 jellybeans in each. If the large bag has 980 jellybeans, how many small bags can Joey fill?



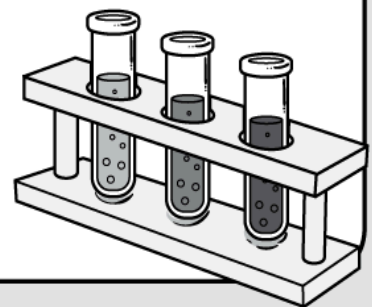
4. Mary Elizabeth divided a game's cards evenly among 4 players and then created a bonus pile with the extra cards. If there were 71 game cards, how many cards were in the bonus pile?

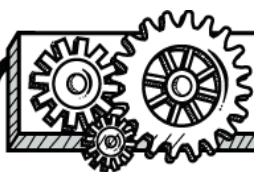


5. Joachim has a rope that is 645.4 inches long. He wants to cut the rope into 7 equal-sized pieces. How long will each piece of rope be?



6. A scientist has 79.2 grams of a chemical and needs to put 2.2 grams of the chemical into different test tubes. How many test tubes can she fill?





BASIC SKILLS REVIEW #1

1. Candidate A won 87,356 votes in the election and Candidate B won 145,302 votes. How many votes were cast altogether?

2.

$$5.982 + 96.3 = \underline{\hspace{2cm}}$$

3.

$$\begin{array}{r} 452,006 \\ - 372,899 \\ \hline \end{array}$$

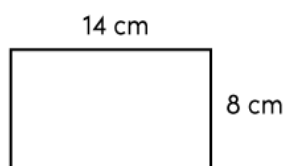
4. What property of multiplication is shown?

$$15 \times 73 = 73 \times 15$$

5. Mortie jogs 8 miles every day. How many miles has he jogged in the past 365 days?

6. Pie in the Sky Bakery has $\frac{3}{8}$ of a coconut pie, $\frac{5}{8}$ of a cherry pie, and $\frac{1}{8}$ of an apple pie. How much total pie does the bakery have?

7. What is the perimeter of the rectangle?



8. Write using digits. Nine million, three hundred fifteen thousand, four hundred eighty-six.

9. If there are 96 crackers in a package and a serving size is 16 crackers, how many servings are in the package?

10. Samantha bought 3 yards of yarn. How many feet of yarn does she have?

Lesson 3: Division Review (3 Days)

Getting Started

✿ Ideas to Think About

- How is division like repeated subtraction?
- How can using divisibility rules be used when dividing larger dividends?
- What are some ways to interpret remainders in division problems?
- In what ways might a remainder affect the answer to a word problem?



Things to Know

- Division is the opposite of multiplication. For example, $3 \times 2 = 6$, and $6 \div 2 = 3$.
- Division is repeated subtraction. In other words, $8 \div 4$ means $8 - 4 = 4 - 4 = 0$. Four can be subtracted from eight two times.
- In a division problem, the number being divided is called the dividend and the number that does the dividing is called the divisor. In the problem $6 \div 2 = 3$, the number 6 is the dividend that is being divided by the divisor, which is 2. The answer to a division problem is called the quotient.
- If one number is divisible by another, it means that the quotient has no remainders. For example, 10 is divisible by 5 but not by 3.
- Remainders in division word problems can be interpreted in different ways. The remainder may need to be included, discarded, or used to round an answer up by 1. Using decimals and zeros can allow division to continue so that no remainder is needed.

⦿ Skills

- Fluently divide multi-digit numbers using the standard algorithm
- Fluently divide multi-digit decimals using the standard algorithm
- Solve real-world and mathematical problems involving the four operations with rational numbers

Introducing the Lesson

In this lesson, your child will review and practice skills for long division involving whole and decimal numbers. He will learn rules for divisibility that will help him more quickly and efficiently divide numbers, and he will develop strategies for interpreting how to deal with remainders in division problems.

Activities

Activity 1: Rules of Divisibility

Your child will learn some rules of divisibility to help him quickly identify if a number is evenly divisible by a factor.

- The numbers that are divisible by 2 are 658, 330, 902, and 1,096.
- The numbers that are divisible by 3 are 603, 321, and 450.
- The numbers that are divisible by 4 are 448, 316, 740, and 3,912.
- The numbers that are divisible by 5 are 180, 365, 230, and 8,995.
- The numbers that are divisible by 6 are 306, 234, and 5,214.
- The numbers that are divisible by 9 are 702, 117, and 2,466.

- The numbers that are divisible by 10 are 560, 900, and 710.
- The numbers that are divisible by 12 are 612, 444, 324, and 9,180.

Activity 2: Long Division

Your child will review and practice the standard algorithm for long division with both one and two digit divisors. In the examples and practice problems given, you or your child may notice that none of them involve *remainders*. While dealing with remainders in long division is an important skill, the primary focus of this activity is ensuring that the student can fluently use the steps in long division. How to understand and solve problems involving remainders will be taught later in this lesson.

If your child needs more review of the steps in long division, have him watch the video at the following web link.



Math Antics: Long Division

www.beyondthepage.com/link/10062/

Answer Key:

1. $828 \div 6 = 138$
2. $9,608 \div 8 = 1,201$
3. $5,453 \div 7 = 779$
4. A cash prize of \$7,638 is to be divided equally among three winners. How much will each winner receive? (\$2,546) $\$7,638 \div 3 = \$2,546$
5. $8,505 \div 21 = 405$
6. $6,664 \div 56 = 119$
7. $6,468 \div 44 = 147$
8. A batch of 3,750 bumper stickers must be packed into shipping boxes with 25 bumper stickers in each box. How many shipping boxes will be needed to pack all the bumper stickers? (150 boxes)
 $3,750 \div 25 = 150$

Day 2

Your child will learn how the standard algorithm can be applied to decimal division with a few extra steps added. After watching a learning video, he will create a decimal division foldable for his Interactive Notebook that is similar to the foldables made for the other operations. The steps and matching images should be in the following order:

1. Draw the long division symbol. Put the dividend under the symbol, and put the divisor outside the symbol. (Pairs with the image of the division sentence being converted into long-division format.)
2. Move the decimal in the divisor to make it a whole number (if necessary). Move the decimal in the dividend the same number of places. (Pairs with the image of the arrows showing the movement of the two decimal points.)
3. Perform the long division as usual. (Pairs with the image showing the long division problem being solved.)

4. Move the decimal point straight up from the dividend to the quotient. (Pairs with the image of the upward arrow.)

If your child gets confused about why it's okay to move a decimal in the divisor as long as he also moves the decimal in the dividend, you can prove to him that it works using a calculator. Enter the original division problem (such as $16.8 \div 1.2$) and write down the answer shown on the calculator. Then ask your child to move the decimal points in the original problem to create an equivalent problem. Enter this new problem into the calculator (such as $168 \div 12$). Show that the answer to the equivalent problem is the same as the answer to the original problem.

Activity 4: Practicing Decimal Division

Your child will practice the steps of long division for decimal problems. Encourage him to use the foldable he created as a reminder of the correct steps to use for the division algorithm.

Answer Key:

1. $81.27 \div 9 = 9.03$
2. $6288.8 \div 2.8 = 2,246$
3. $842.1 \div 2.1 = 401$
4. $59.94 \div 0.74 = 81$
5. $256 \div 0.8 = 320$
6. $42.8 \div 0.04 = 1,070$
7. Kelli bought 12 bags of cat food for \$77.40. How much did each bag cost? (\$6.45) $\$77.40 \div 12 = \$6.45$
8. A box of screws weighs 55.5 ounces. If each screw weighs 0.3 ounces, how many screws are in the box? (185 screws) $55.5 \div 0.3 = 555 \div 3 = 185$

Day 3

Activity 5: Interpreting Remainders

Your child will learn how to interpret remainders in division problems in terms of how they affect the answer that needs to be given. In some problems, having a remainder is not the best solution, so the concept of using a decimal point and zeros is taught, allowing the student to continue using long division until there is no more remainder. If your child would benefit from extra review of the division algorithm, including how it works with decimals, have him watch the video at the following web link.



Long Division With 2 Digit Divisors Song (Decimals & Remainders)

www.beyondthepage.com/link/12948/

Answer Key:

1. Hendrick needs to read a 895 page book. If he reads 35 pages a day, how many days will it take Hendrick to finish the book? (26 days) $895 \div 35 = 25 R 20$; *Hendrick must read the remaining pages, which means he needs to add 1 additional day to his answer.*
2. Violet earned \$82 last week as a babysitter. If she worked 8 hours, how much did she get paid each hour that she babysat? (\$10.25) *Violet wants to be paid an exact amount, so a decimal and zeros must be added to \$82 to avoid a remainder. $\$82.00 \div 8 = \$10.25$*

3. Joey bought a large bag of jellybeans and wants to divide the candy into smaller bags with 24 jellybeans in each. If the large bag has 980 jellybeans, how many small bags can Joey fill? (40 bags) $980 \div 24 = 40 \text{ R } 20$; *the remaining jellybeans cannot fill another bag, so they are discarded from the answer.*
4. Mary Elizabeth divided a game's cards evenly among 4 players and then created a bonus pile with the extra cards. If there were 71 game cards, how many cards were in the bonus pile? (3 cards) $71 \div 4 = 17 \text{ R } 3$; *the remainder is used in a special way, so it is included in the answer.*
5. Joachim has a rope that is 645.4 inches long. He wants to cut the rope into 7 equal-sized pieces. How long will each piece of rope be? (92.2 inches) $645.4 \div 7 = 92.2$ inches; *the problem does not include a remainder.*
6. A scientist has 79.2 grams of a chemical and needs to put 2.2 grams of the chemical into different test tubes. How many test tubes can she fill? (36 test tubes) $79.2 \div 2.2 = 36$; *the problem does not include a remainder.*

Activity 6: Basic Skills Review

Your child will complete a Basic Skills Review. These reviews focus on previously learned skills and encourage knowledge retention and increased mathematical fluency.

Answer Key:

1. Candidate A won 87,356 votes in the election and Candidate B won 145,302 votes. How many votes were cast altogether? (232,658 votes) $145,302 + 87,356 = 232,658$
2. $5.982 + 96.3 = 102.282$
3. $452,006 - 372,899 = 79,107$
4. What property of multiplication is shown? $15 \times 73 = 73 \times 15$ (the commutative property of multiplication)
5. Mortie jogs 8 miles every day. How many miles has he jogged in the past 365 days? (2,920 miles) $365 \times 8 = 2,920$
6. Pie in the Sky Bakery has $\frac{3}{8}$ of a coconut pie, $\frac{5}{8}$ of a cherry pie, and $\frac{1}{8}$ of an apple pie. How much total pie does the bakery have? (1 $\frac{1}{8}$ pies) $\frac{3}{8} + \frac{5}{8} + \frac{1}{8} = \frac{9}{8} = 1 \frac{1}{8}$
7. What is the perimeter of the rectangle? (44 centimeters) $14 + 8 + 14 + 8 = 44$
8. Write using digits. Nine million, three hundred fifteen thousand, four hundred eighty-six (9,315,486)
9. If there are 96 crackers in a package and a serving size is 16 crackers, how many servings are in the package? (6 servings) $96 \div 16 = 6$
10. Samantha bought 3 yards of yarn. How many feet of yarn does she have? (9 feet) $1 \text{ yard} = 3 \text{ feet}, 3 \text{ yards} = 9 \text{ feet}$

Wrapping Up

Questions to Discuss

- The number is 5,610. Decide if the number is divisible by 2, 3, 4, 5, 6, 9, 10, and/or 12. (5,610 is divisible by 2 because it is even, by 3 because the digits add to 12 which is divisible by 3, by 5 because it ends in a 0, by 6 because it is divisible by both 2 and 3, and by 10 because it ends in a 0.)
- In the problem $56.7 \div 0.45$, how many times should the decimal points be moved before using long division? (2 times, the divisor is 0.45 and the decimal should move 2 times to the right to make it 45; the decimal should move two times to the right in the dividend to keep the problem equivalent)

- Heather has 145 books and can fit 10 books in each book basket. How many baskets will she need to hold all the books? Explain how the remainder was interpreted. (15 baskets, $145 \div 10 = 14 \text{ r. } 5$, Heather needs to have all the books in baskets, so the remainder requires another basket for the final answer)

Things to Review

- Review the divisibility rules for 2, 3, 4, 5, 6, 9, 10, and 12
- Review the algorithm for long division of whole numbers
- Review the algorithm for long division of decimal numbers, including the first step (moving the decimals) when a decimal appears in the divisor
- Review the four ways a remainder can be interpreted in a division word problem