

# Divide by 1-Digit Numbers

## ✓ Show What You Know

### ▶ Inverse Operations Complete the related division equations.

1.  $12 \times 4 = 48$

$\underline{\quad} \div 4 = \underline{\quad}$

$\underline{\quad} \div 12 = \underline{\quad}$

2.  $19 \times 7 = 133$

$\underline{\quad} \div 7 = \underline{\quad}$

$\underline{\quad} \div 19 = \underline{\quad}$

### ▶ Products Find the product.

3. 
$$\begin{array}{r} 16 \\ \times 6 \\ \hline \end{array}$$

 $\underline{\quad}$ 

4. 
$$\begin{array}{r} 52 \\ \times 7 \\ \hline \end{array}$$

 $\underline{\quad}$ 

### ▶ Divide Using Place Value Find the quotient.

5.  $36 \div 6 = \underline{\quad}$

6.  $24 \div 3 = \underline{\quad}$

7.  $49 \div 7 = \underline{\quad}$

8.  $81 \div 9 = \underline{\quad}$

MATH in the



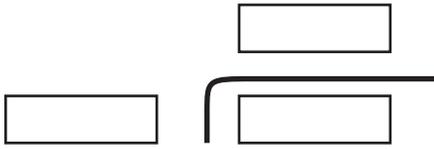
Each digit in the division example has been replaced with the same letter throughout. The digits used were 1, 2, 3, 4, 5, 7, and 9. Find which number each letter represents. Clue: U is 5.

$$\begin{array}{r} \text{S U r E} \\ \text{U} \overline{) \text{C A N}} \\ \underline{- \text{C U}} \\ \text{I N} \\ \underline{- \text{I U}} \\ \text{E} \end{array}$$



## ► Visualize It

Sort the words into the related division diagrams.



$$\square \div \square = \square$$

### Connect to Vocabulary

#### Review Words

divide  
dividend  
division  
divisor  
quotient

#### Preview Words

partial quotient

## ► Understand Vocabulary

Write the word that answers the riddle.

I am the method of dividing in which multiples of the divisor are subtracted from the dividend and then the quotients are added together.

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Name \_\_\_\_\_

# Divide Using Repeated Subtraction

**I Can** use repeated subtraction to find quotients.

## Florida's B.E.S.T.

- Number Sense & Operations 4.NSO.2.4, 4.NSO.2.5
- Algebraic Reasoning 4.AR.1.1, 4.AR.1.2
- Mathematical Thinking & Reasoning MTR.2.1, MTR.4.1, MTR.5.1, MTR.7.1

## Investigate

**Materials** ■ counters ■ grid paper

Tariq is building a backyard pizza oven with an arch opening. He has 72 bricks. He will place 6 bricks at a time as he builds the oven. If he arranges the bricks in piles of 6, how many piles will he have?

You can use repeated subtraction to divide  $72 \div 6$ .

**A.** Begin with 72 counters. Subtract 6 counters.

How many are left? \_\_\_\_\_

**B.** Record the subtraction on grid paper as shown. Record the number of counters left and the number of times you subtracted.

		7	2	
		—	6	

1 time

\_\_\_\_\_ times

\_\_\_\_\_ times



**C.** Can you reach zero evenly? Explain.

\_\_\_\_\_

\_\_\_\_\_

**D.** Count the number of times you subtracted 6 counters. \_\_\_\_\_

So, there are \_\_\_\_\_ piles of 6 bricks.

## Draw Conclusions

1. Explain the relationship between the divisor, the dividend, the quotient, and the number of times you subtracted the divisor from the dividend.

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2. What happens if you subtract multiples of 6? Complete the example at the right.

- What multiples of 6 did you use? How did you use them?

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- What numbers did you add? Why?

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- How did using multiples of the divisor help you?

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3. Why should you subtract  $10 \times 6$  and not  $9 \times 6$  or  $20 \times 6$ ?

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$$\begin{array}{r}
 6 \overline{)72} \\
 \underline{-60} \\
 \phantom{0}12 \\
 \underline{-12} \\
 \phantom{00}0
 \end{array}$$

$\leftarrow \square \times 6 \quad 10$   
 $\leftarrow \square \times 6 \quad + \square$

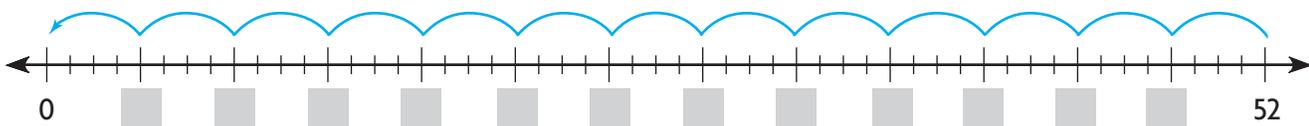
**Math Talk**

**MTR 4.1** Engage in discussions on mathematical thinking.

How does subtracting counters and counting back on a number line help you divide?

## Make Conclusions

Another way to divide by repeated subtraction is to use a number line. Count back by 4s from 52 to find  $52 \div 4$ .



How many equal groups of 4 did you subtract? \_\_\_\_\_

So,  $52 \div 4 =$  \_\_\_\_\_.

**Share and Show**

Use repeated subtraction to divide.

✓ 1.  $84 \div 7$  \_\_\_\_\_

✓ 2.  $60 \div 4$  \_\_\_\_\_

3.  $91 \div 8$  \_\_\_\_\_

Draw a number line to divide.

4.  $65 \div 5 =$  \_\_\_\_\_

**On Your Own**

5. **MTR** Can you divide 32 by 3 evenly?  
Use the number line to explain your answer.




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6. Maik has \$40 to spend at the yard sale. He buys 6 books for \$2 each. He would like to spend the rest of his money on model cars for his collection. If the cars cost \$7 each, how many can he buy? Explain.

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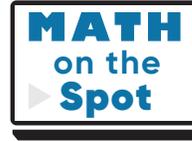
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# UNLOCK the Problem Real World



7. A new playground will be 108 feet long. Builders need to allow 9 feet of space for each piece of climbing equipment. They want to put as many climbers along the length of the playground as possible. How many climbers can they place?

a. What are you asked to find?

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b. How can you use repeated subtraction to solve the problem?

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c. Tell why you might use multiples of the divisor to solve the problem.

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d. Show steps to solve the problem.

e. Complete the sentences.

There are \_\_\_\_\_ equal parts of the playground, each \_\_\_\_\_ feet long.

So, \_\_\_\_\_ climbers can fit along the length of the playground.

8. For numbers 8a–8c, choose True or False for each equation.

8a.  $45 \div 9 = 45 - 9 - 9 - 9 - 9 - 9$        True       False

8b.  $15 \div 5 = 15 - 5 - 5 - 5 - 5 - 5$        True       False

8c.  $24 \div 6 = 2 \times 2$        True       False

Name \_\_\_\_\_

# Divide Using Repeated Subtraction

Go Online

Interactive Examples

Use repeated subtraction to divide.

1.  $42 \div 3 = \underline{\quad 14 \quad}$

2.  $72 \div 4 = \underline{\hspace{2cm}}$

3.  $93 \div 3 = \underline{\hspace{2cm}}$

$$\begin{array}{r} 3 \overline{)42} \\ -30 \\ \hline 12 \\ -12 \\ \hline 0 \end{array} \quad \begin{array}{l} \leftarrow 10 \times 3 \quad | \quad 10 \\ \leftarrow 4 \times 3 \quad | \quad +4 \\ \hline 14 \end{array}$$

4.  $35 \div 4 = \underline{\hspace{2cm}}$

5.  $93 \div 10 = \underline{\hspace{2cm}}$

6.  $86 \div 9 = \underline{\hspace{2cm}}$

Draw a number line to divide.

7.  $70 \div 5 = \underline{\hspace{2cm}}$

## Problem Solving

8. Georgina has 48 small shells. She uses 2 shells to make one pair of earrings. How many pairs of earrings can she make?

9.  *Math* Show how you can use repeated subtraction to find  $84 \div 6$ .

## Lesson Check

10. Abner collects postcards that his friends send him when they travel. He can put 6 cards on one scrapbook page. How many pages does Abner need to fit 42 postcards?
- 
11. Ari stocks shelves at a grocery store. He puts 35 cans of juice in each display case. The case has 4 shelves with an equal number of cans, and one shelf with only 3 cans. How many cans are on each of the equal shelves?
- 

## Spiral Review

12. Joelle sorted her books into separate piles. She placed 4 books in each pile. If she has 160 books, how many piles did she make?
- 
13. Eamon is arranging 39 books on 3 shelves. If he puts the same number of books on each shelf, how many books will there be on each shelf?
- 
14. A newborn boa constrictor measures 18 inches long. An adult boa constrictor measures 9 times the length of the newborn plus 2 inches. How long is the adult?
- 
15. Miguela has 6 rolls of coins. Each roll has 20 coins. How many coins does Miguela have?
-

Name \_\_\_\_\_

# Divide Using Partial Quotients

**I Can** use partial quotients to divide by 1-digit divisors.

Florida's B.E.S.T.

- Number Sense & Operations 4.NSO.2.4, 4.NSO.2.5
- Algebraic Reasoning 4.AR.1.1
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1



## UNLOCK the Problem Real World

At camp, there are 5 players on each lacrosse team. If there are 125 people on lacrosse teams, how many teams are there?

**One Way** Use partial quotients.

In the **partial quotient** method of dividing, multiples of the divisor are subtracted from the dividend and then the partial quotients are added together.

**Divide.**  $125 \div 5$      **Write.**  $5 \overline{)125}$

### STEP 1

Start by subtracting a greater multiple, such as 10 times the divisor. For example, you know that you can make at least 10 teams of 5 players.

Continue subtracting until the remaining number is less than the multiple, 50.

### STEP 2

Subtract smaller multiples, such as 5, 2, or 1 times the divisor until the remaining number is less than the divisor. In other words, keep subtracting multiples until you no longer have enough players to make a team.

Then add the partial quotients to find the quotient.

So, there are \_\_\_\_\_ lacrosse teams.



Partial Quotients

$$\begin{array}{r}
 5 \overline{)125} \\
 \underline{-100} \phantom{0} \\
 25 \phantom{0} \\
 \underline{-20} \phantom{0} \\
 5 \phantom{0} \\
 \underline{-5} \\
 0
 \end{array}$$

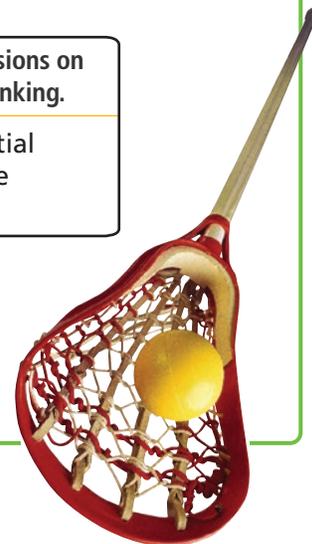
↓

$10 \times$	$\underline{\hspace{2cm}}$	10
$10 \times$	$\underline{\hspace{2cm}}$	10
$5 \times$	$\underline{\hspace{2cm}}$	$+ 5$

**Math Talk**

**MTR 4.1** Engage in discussions on mathematical thinking.

How did you use partial quotients to solve the problem?



**Another Way** Use rectangular models to record the partial quotients.



Jarod and Ana also found the number of teams using partial quotients. They recorded the partial quotients using rectangular models. They each still had 25 as the quotient.

Jarod

5	125				
	10				
5	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; background-color: #cccccc; text-align: center;">50</td> <td style="width: 75%; text-align: center;">75</td> </tr> </table>	50	75	$\begin{array}{r} 125 \\ - \phantom{00} \\ \hline 75 \end{array}$	
50	75				
	10      10				
5	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; background-color: #cccccc; text-align: center;">50</td> <td style="width: 33%; background-color: #cccccc; text-align: center;">50</td> <td style="width: 34%; text-align: center;">25</td> </tr> </table>	50	50	25	$\begin{array}{r} 75 \\ - \phantom{00} \\ \hline 25 \end{array}$
50	50	25			
	10      10      5				
5	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; background-color: #cccccc; text-align: center;">50</td> <td style="width: 33%; background-color: #cccccc; text-align: center;">50</td> <td style="width: 34%; text-align: center;">25</td> </tr> </table>	50	50	25	$\begin{array}{r} 25 \\ - \phantom{00} \\ \hline 0 \end{array}$
50	50	25			

10 + 10 + 5 = \_\_\_\_\_

Ana

5	125			
	20			
5	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; background-color: #cccccc; text-align: center;">100</td> <td style="width: 20%; text-align: center;">25</td> </tr> </table>	100	25	$\begin{array}{r} 125 \\ - \phantom{00} \\ \hline 25 \end{array}$
100	25			
	20      5			
5	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%; background-color: #cccccc; text-align: center;">100</td> <td style="width: 20%; text-align: center;">25</td> </tr> </table>	100	25	$\begin{array}{r} 25 \\ - \phantom{00} \\ \hline 0 \end{array}$
100	25			

20 + 5 = \_\_\_\_\_

**Math Talk**

**MTR 4.1** Engage in discussions on mathematical thinking.

Why might you prefer to use one method rather than the other?

**Share and Show**



- Lacrosse is played on a field 330 ft long. How many yards long is a lacrosse field? (3 feet = 1 yard)

Divide. Use partial quotients.

$3 \overline{)330}$	
- <span style="background-color: #cccccc; display: inline-block; width: 20px; height: 15px;"></span>	$100 \times \span style="background-color: #cccccc; display: inline-block; width: 15px; height: 15px;"> = 100$
- <span style="background-color: #cccccc; display: inline-block; width: 20px; height: 15px;"></span>	
- <span style="background-color: #cccccc; display: inline-block; width: 20px; height: 15px;"></span>	$10 \times \span style="background-color: #cccccc; display: inline-block; width: 15px; height: 15px;"> = 10$
- <span style="background-color: #cccccc; display: inline-block; width: 20px; height: 15px;"></span>	

So, the lacrosse field is \_\_\_\_\_ yards long.

Divide. Use partial quotients.

✓ 2.  $3 \overline{)225}$

Divide. Use rectangular models to record the partial quotients.

✓ 3.  $428 \div 4 = \underline{\hspace{2cm}}$

## On Your Own

Divide. Use partial quotients.

4.  $7 \overline{)224}$

5.  $7 \overline{)259}$

6.  $8 \overline{)864}$

7.  $6 \overline{)738}$

Divide. Use rectangular models to record the partial quotients.

8.  $328 \div 2 = \underline{\hspace{2cm}}$

9.  $475 \div 5 = \underline{\hspace{2cm}}$

10.  $219 \div 3 = \underline{\hspace{2cm}}$

11.  $488 \div 4 = \underline{\hspace{2cm}}$



**MTR**  
**4.1** Engage in discussions on mathematical thinking.

How could you solve Problems 2 and 3 a different way?

12. **MTR** What is the least number you can divide by 5 to get a three-digit quotient? Explain how you found your answer.

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# Problem Solving · Applications

Use the table for 13–15.

13. Rob wants to put 8 baseball cards on each page in an album. How many pages will he fill?

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14. Rob filled 5 plastic boxes with hockey cards. There were the same number of cards in each box. How many cards did he put in each box? How many cards were left over?

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15. Rob filled 3 fewer plastic boxes with football cards than basketball cards. He filled 9 boxes with basketball cards. How many boxes did he fill with football cards? How many football cards were in each box?

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16. Marshall can buy 5 T-shirts for \$60. If each shirt costs the same amount, what is the cost of 4 T-shirts?

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17. Use partial quotients. Fill in the blanks.

$$\begin{array}{r} 5 \overline{)485} \\ - \phantom{00} \\ \hline \phantom{00} \\ - \phantom{00} \\ \hline \phantom{00} \\ - \phantom{00} \\ \hline \phantom{00} \end{array}$$

$$- \phantom{00}$$

$80 \times 5$

$10 \times 5$

$7 \times 5$

$+$

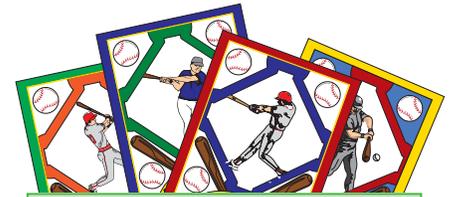
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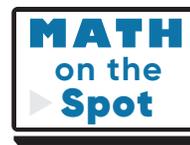
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**Rob's Sports Cards Collection**

Sport	Number of Cards
Baseball	248
Basketball	189
Football	96
Hockey	64



## Show the Math

Demonstrate Your Thinking

# Divide Using Partial Quotients

Go Online

Interactive Examples

Divide. Use partial quotients.

$$\begin{array}{r}
 8 \overline{)184} \\
 \underline{-80} \quad 10 \times 8 \quad 10 \\
 104 \\
 \underline{-80} \quad 10 \times 8 \quad 10 \\
 24 \\
 \underline{-24} \quad 3 \times 8 \quad +3 \\
 0 \qquad \qquad \qquad 23
 \end{array}$$

2.  $6 \overline{)258}$

3.  $5 \overline{)630}$

Divide. Use rectangular models to record the partial quotients.

4.  $246 \div 3 = \underline{\hspace{2cm}}$

5.  $126 \div 2 = \underline{\hspace{2cm}}$

6.  $605 \div 5 = \underline{\hspace{2cm}}$

Divide. Use either way to record the partial quotients.

7.  $492 \div 3 = \underline{\hspace{2cm}}$

8.  $198 \div 9 = \underline{\hspace{2cm}}$

9.  $692 \div 4 = \underline{\hspace{2cm}}$

## Problem Solving

10. Adela took 112 photos on vacation. She wants to put them in a photo album that holds 4 photos on each page. How many pages can she fill?
- \_\_\_\_\_

11.  *Math* Explain how to use partial quotients to divide 235 by 5.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Lesson Check

12. Annaka used partial quotients to divide  $145 \div 5$ . What could be the partial quotients Annaka used?
13. Mai used partial quotients to find the quotient of  $378 \div 3$ . What could be the partial quotients that Mai found?

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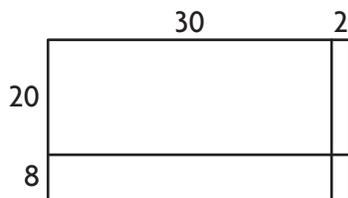
## Spiral Review

14. What are the partial products of  $42 \times 5$ ?
15. Mr. Watson buys 4 gallons of paint that cost \$34 per gallon. How much does Mr. Watson spend on paint?

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16. Use the area model to find the product of  $28 \times 32$ .



17. An adult male lion eats about 108 pounds of meat per week. About how much meat does an adult male lion eat in one day?

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Name \_\_\_\_\_

## Model Division with Regrouping

**I Can** use base-ten blocks and drawings to model division with regrouping.

### Investigate

**Materials** ■ base-ten blocks

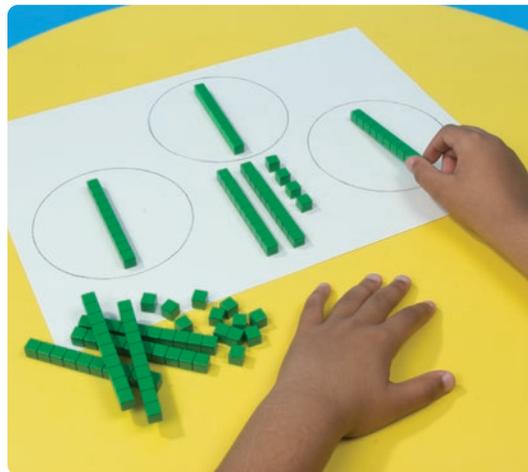
The librarian wants to share 54 books equally among 3 classes. How many books will she give to each class?

- Draw 3 circles to represent the classes. Then use base-ten blocks to model 54. Show 54 as 5 tens 4 ones.
- Share the tens equally among the 3 groups.
- If there are any tens left, regroup them as ones. Share the ones equally among the 3 groups.
- There are \_\_\_\_\_ ten(s) and \_\_\_\_\_ one(s) in each group.

So, the librarian will give \_\_\_\_\_ books to each class.

Florida's B.E.S.T.

- Number Sense & Operations 4.NSO.2.4, 4.NSO.2.5
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.6.1



## Draw Conclusions

- Explain why you needed to regroup in Step C.  
 \_\_\_\_\_  
 \_\_\_\_\_
- How you can use base-ten blocks to find the quotient of  $92 \div 4$ ?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# Make Connections

Use the quick picture at the bottom of the page to help you divide.  
Record each step.

Find  $76 \div 3$ .

### STEP 1

Model 76 as 7 tens 6 ones.

Draw three circles to represent equal groups.

$$3 \overline{)76}$$

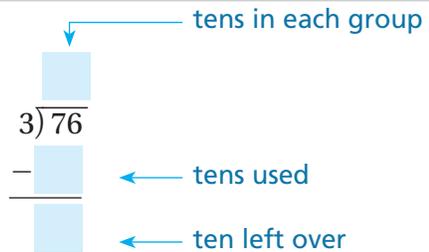
### STEP 2

Share the 7 tens equally among the 3 groups.

Cross out the tens you use.

There are \_\_\_\_\_ tens in each group.

\_\_\_\_\_ tens were used. There is \_\_\_\_\_ ten left over.



### STEP 3

One ten cannot be shared among 3 groups without regrouping.

Regroup 1 ten by drawing 10 ones.

There are now \_\_\_\_\_ ones to share.



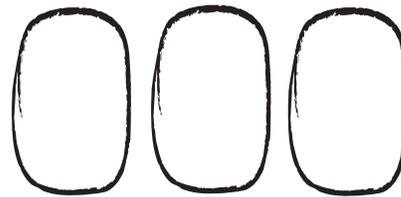
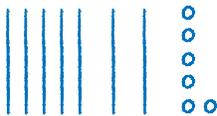
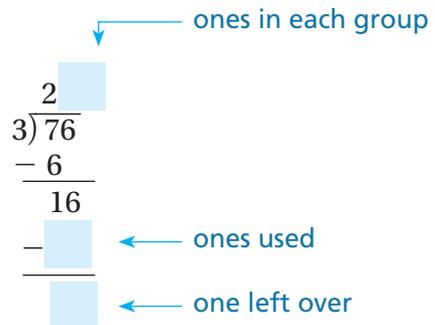
### STEP 4

Share the ones equally among the 3 groups.

Cross out the ones you use.

There are \_\_\_\_\_ ones in each group.

\_\_\_\_\_ ones were used. There is \_\_\_\_\_ one left over.



There are 3 groups of \_\_\_\_\_ and \_\_\_\_\_ left over.

So, for  $76 \div 3$ , the quotient is \_\_\_\_\_ and the remainder is \_\_\_\_\_.

This can be written as \_\_\_\_\_.



**MTR 4.1** Engage in discussions on mathematical thinking.

Why do you share tens equally among groups before sharing ones?

# Share and Show



**Divide. Use base-ten blocks.**

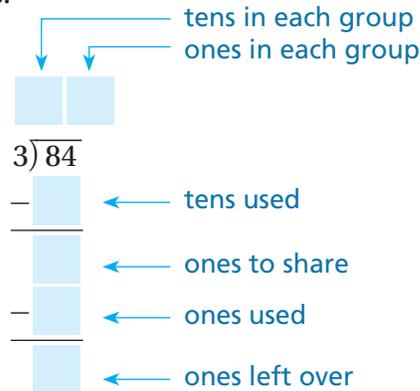
1.  $48 \div 3$  \_\_\_\_\_

2.  $84 \div 4$  \_\_\_\_\_

3.  $72 \div 5$  \_\_\_\_\_

4. Divide. Draw a quick picture. Record the steps.

$84 \div 3$  \_\_\_\_\_



## On Your Own

5. **WRITE** *Math* Explain why you did not need to regroup in Problem 2.

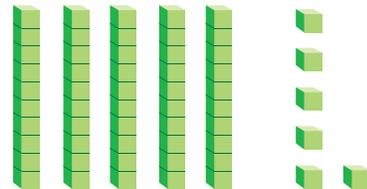
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6. Mindy is preparing fruit boxes for gifts. She divides 36 apples evenly into 6 boxes. Then she divided 54 bananas evenly into the same 6 boxes. How many pieces of fruit are in each of Mindy's boxes?

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7. Ami needs to divide these base-ten blocks among 4 equal groups.

Describe a model that would show how many are in each group.




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## Sense or Nonsense?

8. Adelita and Zach drew quick pictures to find  $68 \div 4$ . Whose quick picture makes sense? Whose quick picture is nonsense? Explain your reasoning.

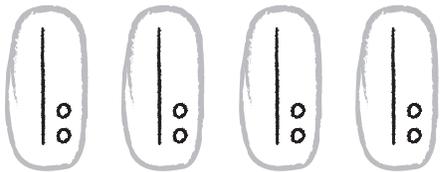
I drew 1 ten and 2 ones in each group.



I drew 1 ten and 7 ones in each group.



Zach's Quick Picture




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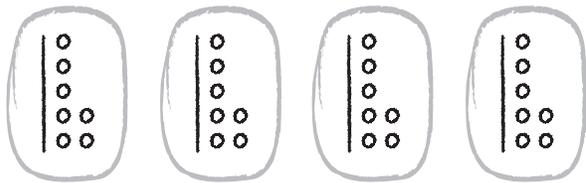
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Adelita's Quick Picture




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9. **MTR** What did Zach forget to do after he shared the tens equally among the 4 groups?

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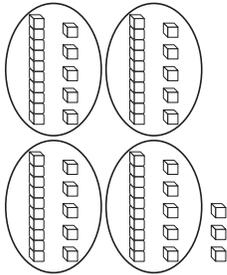
# Model Division with Regrouping

Go Online

Interactive Examples

Divide. Use base-ten blocks.

1.  $63 \div 4$      15 r3



2.  $83 \div 3$      \_\_\_\_\_

Divide. Draw quick pictures. Record the steps.

3.  $85 \div 5$      \_\_\_\_\_

4.  $97 \div 4$      \_\_\_\_\_

## Problem Solving

5. Tamara sold 92 cold drinks during her 2-hour shift at a festival food stand. If she sold the same number of drinks each hour, how many cold drinks did she sell each hour?

6. **WRITE**  *Math* Write a division problem that has a 2-digit dividend and a 1-digit divisor. Show how to solve it by drawing a quick picture.

## Lesson Check

7. Gloria bought 80 buttons to put on the shirts she makes. She uses 5 buttons for each shirt. How many shirts can Gloria make with the buttons she bought?
- 
8. Marty counted how many breaths he took in 3 minutes. In that time, he took 51 breaths. He took the same number of breaths each minute. How many breaths did Marty take in one minute?
- 

## Spiral Review

9. Ester is solving brain teasers. She solved 6 brain teasers in 72 minutes. How long did she spend on each brain teaser?
- 
10. Julia works at a package delivery store. She puts mailing stickers on packages. Each package needs 5 stickers. How many stickers will Julia use if she is mailing 105 packages?
- 
11. The Puzzle Company packs standard-sized puzzles into boxes that hold 8 puzzles. How many boxes would it take to pack up 192 standard-sized puzzles?
- 
12. Mt. Whitney in California is 14,494 feet tall. Denali in Alaska is 5,826 feet taller than Mt. Whitney. How tall is Denali?
-

Name \_\_\_\_\_

# Place the First Digit

**I Can** use place value to know where to place the first digit in the quotient.

## Florida's B.E.S.T.

- Number Sense & Operations 4.NSO.2.4, 4.NSO.2.1
- Mathematical Thinking & Reasoning MTR.1.1, MTR.2.1, MTR.3.1, MTR.4.1



## UNLOCK the Problem



Victor took 144 photos on a digital camera.  
The photos are to be placed equally in 6 photo albums.  
How many photos will be in each album?

- Underline what you are asked to find.
- Circle what you need to use.

### Example 1 Divide. $144 \div 6$

**STEP 1** Use place value to place the first digit.

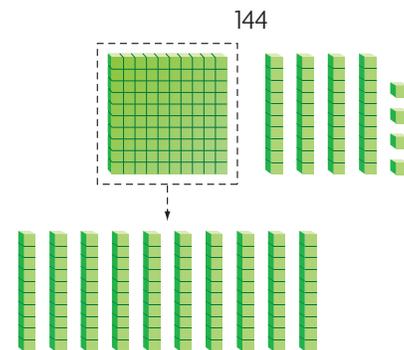
Look at the hundreds in 144.

1 hundred cannot be shared among 6 groups without regrouping.

Regroup 1 hundred as 10 tens.

Now there are \_\_\_\_\_ tens to share among 6 groups.

The first digit of the quotient will be in the \_\_\_\_\_ place.



**STEP 2** Divide the tens.

$$\begin{array}{r} 2 \\ 6 \overline{)144} \\ -12 \\ \hline \end{array}$$

Divide.  $14 \text{ tens} \div 6$

Multiply.  $6 \times 2 \text{ tens}$

Subtract.  $14 \text{ tens} - 12 \text{ tens}$

Check. 2 tens cannot be shared among 6 groups without regrouping.

**STEP 3** Divide the ones.

Regroup 2 tens as 20 ones.

Now there are \_\_\_\_\_ ones to share among 6 groups.

$$\begin{array}{r} 24 \\ 6 \overline{)144} \\ -12 \downarrow \\ \hline 24 \\ -24 \\ \hline \end{array}$$

Divide. \_\_\_\_\_ ones  $\div$  \_\_\_\_\_

Multiply. \_\_\_\_\_  $\times$  \_\_\_\_\_ ones

Subtract. \_\_\_\_\_ ones  $-$  \_\_\_\_\_ ones

Check. 0 ones cannot be shared among 6 groups.

### Math Idea

After you divide each place, the remainder should be less than the divisor.

### Math Talk

**MTR 4.1** Engage in discussions on mathematical thinking.

How would the answer change if Victor had 146 photos?

So, there will be \_\_\_\_\_ photos in each album.

## Example 2 Divide. $287 \div 2$

Omar has 287 photographs of animals. If he wants to put the photos into 2 groups of the same size, how many photos will be in each group?



### STEP 1

Use place value to place the first digit.  
Look at the hundreds in 287.  
2 hundreds can be shared between 2 groups.

So, the first digit of the quotient will be in the \_\_\_\_\_ place.

### STEP 2

Divide the hundreds.

$$\begin{array}{r} 1 \\ 2 \overline{)287} \\ \underline{-2} \phantom{00} \\ 0 \phantom{00} \end{array}$$

Divide. 2 hundreds  $\div$  2

Multiply.  $2 \times 1$  hundred

Subtract. 2 hundreds  $-$  2 hundreds.

0 hundreds are left.

### STEP 3

Divide the tens.

$$\begin{array}{r} 14 \\ 2 \overline{)287} \\ \underline{-2} \phantom{00} \\ 0 \phantom{00} \\ \underline{-0} \phantom{00} \\ 0 \phantom{00} \end{array}$$

Divide. \_\_\_\_\_ tens  $\div$  \_\_\_\_\_

Multiply. \_\_\_\_\_  $\times$  \_\_\_\_\_ tens

Subtract. \_\_\_\_\_ tens  $-$  \_\_\_\_\_ tens

0 tens are left.

### STEP 4

Divide the ones.

$$\begin{array}{r} 143 \text{ r}1 \\ 2 \overline{)287} \\ \underline{-2} \phantom{00} \\ 08 \\ \underline{-8} \phantom{00} \\ 07 \\ \underline{-0} \phantom{00} \\ 07 \end{array}$$

Divide. \_\_\_\_\_ ones  $\div$  \_\_\_\_\_

Multiply. \_\_\_\_\_  $\times$  \_\_\_\_\_ ones

Subtract. \_\_\_\_\_ ones  $-$  \_\_\_\_\_ ones

1 one cannot be equally shared between 2 groups.

So, there will be \_\_\_\_\_ photos in each group with 1 photo left.

## Share and Show



1. There are 452 pictures of dogs in 4 equal groups. How many pictures are in each group? Explain how you can use place value to place the first digit in the quotient.

---



---



**Divide.**

✓ 2.  $4 \overline{)166}$

✓ 3.  $5 \overline{)775}$



**MTR 3.1** Complete tasks with mathematical fluency.  
How did you know where to place the first digit of the quotient in Problem 2?

## On Your Own

**Divide.**

4.  $4 \overline{)284}$

5.  $5 \overline{)394}$

6.  $3 \overline{)465}$

7.  $8 \overline{)272}$

8.  $516 \div 2$

9.  $516 \div 3$

10.  $516 \div 4$

11.  $516 \div 5$

12. **MTR** Look back at your answers to Problems 8–11. What happens to the quotient when the divisor increases? Explain.

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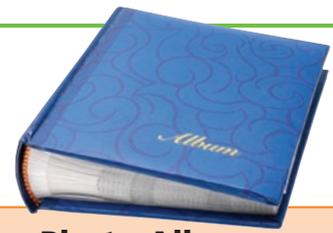
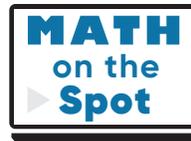
13. Reggie has 192 pictures of animals. He wants to keep half and then divide the rest equally among 3 friends. How many pictures will each friend get?

---

14. There are 146 students, 5 teachers, and 8 chaperones going to the theater. To reserve their seats, they need to reserve entire rows. Each row has 8 seats. How many rows must they reserve?

---

## Problem Solving · Applications



**Photo Albums**

Color of cover	Pictures per page
Blue	4
Green	6
Red	8

15. Nan wants to put 234 pictures in an album with a blue cover. How many full pages will she have in her album?

a. What do you need to find?

\_\_\_\_\_

b. How will you use division to find the number of full pages?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

c. Show the steps you will use to solve the problem.

d. Complete the following sentences.

Nan has \_\_\_\_\_ pictures.

She wants to put the pictures in an album

with pages that each hold \_\_\_\_\_ pictures.

She will have an album with \_\_\_\_\_ full

pages and \_\_\_\_\_ pictures on another page.

16. Mr. Parsons bought 293 apples to make pies for his shop. Six apples are needed for each pie. If Mr. Parsons makes the greatest number of apple pies possible, how many apples will be left?

\_\_\_\_\_

17. Carol needs to divide 320 stickers equally among 4 classes. In which place is the first digit of the quotient? Choose the word that completes the sentence.

The first digit of the quotient is in

the 

ones
tens
hundreds
thousands

 place.

# Place the First Digit

Go Online

Interactive Examples

**Divide.**

$$\begin{array}{r}
 62 \\
 3 \overline{)186} \\
 \underline{-18} \phantom{0} \\
 06 \\
 \underline{-6} \\
 0
 \end{array}$$

2.  $4 \overline{)298}$

3.  $3 \overline{)461}$

4.  $9 \overline{)315}$

5.  $2 \overline{)988}$

6.  $4 \overline{)604}$

7.  $6 \overline{)796}$

8.  $5 \overline{)449}$

## Problem Solving

9. There are 132 projects in the science fair. If 8 projects can fit in a row, how many full rows of projects can be made? How many projects are in the row that is not full?
10. There are 798 calories in six 10-ounce bottles of apple juice. How many calories are there in one 10-ounce bottle of apple juice?

---

11.  *Math* Write a division problem that will have a 2-digit quotient and another division problem that will have a 3-digit quotient. Explain how you chose the divisors and dividends.

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## Lesson Check

12. To divide  $572 \div 4$ , Stanley estimated to place the first digit of the quotient. In which place is the first digit of the quotient?
13. Onetta biked 325 miles in 5 days. If she biked the same number of miles each day, how far did she bike each day?

---

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## Spiral Review

14. Mario makes beaded necklaces that he sells for \$32 each. About how much will Mario make if he sells 36 necklaces at the local art fair?
15. Estimate the product  $54 \times 68$ .

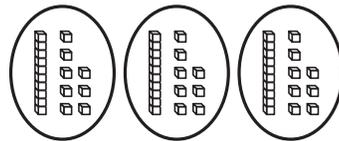
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16. Ms. Eisner pays \$888 for 6 nights in a hotel. How much does Ms. Eisner pay per night?
17. What division problem does the model show?



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Name \_\_\_\_\_

# Divide by 1-Digit Numbers

**I Can** divide numbers up to 9,999 by a 1-digit number.

Florida's B.E.S.T.

- Number Sense & Operations 4.NSO.2.4, 4.NSO.2.1
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.6.1



## UNLOCK the Problem Real World

Students in the third, fourth, and fifth grades made 525 origami animals to display in the library. Each grade made the same number of animals. How many animals did each grade make?

**Example 1** Divide.  $525 \div 3$

**STEP 1** Use place value to place the first digit. Look at the hundreds in 525. 5 hundreds can be shared among 3 groups without regrouping. The first digit of the quotient will be in the \_\_\_\_\_ place.

**STEP 2** Divide the hundreds.

$$\begin{array}{r} 3 \overline{) 525} \\ \underline{\phantom{0}3} \phantom{0} \\ \phantom{0}2 \phantom{0} \end{array}$$

Divide. Share \_\_\_\_\_ hundreds equally among \_\_\_\_\_ groups.

Multiply. \_\_\_\_\_  $\times$  \_\_\_\_\_

Subtract. \_\_\_\_\_  $-$  \_\_\_\_\_.

Check. \_\_\_\_\_ hundreds cannot be shared among 3 groups without regrouping.

**STEP 3** Divide the tens.

$$\begin{array}{r} 17 \\ 3 \overline{) 525} \\ \underline{-3} \phantom{0} \\ \phantom{0}22 \\ \underline{-21} \\ \phantom{0}15 \end{array}$$

Divide. Share \_\_\_\_\_ equally among \_\_\_\_\_ groups.

Multiply. \_\_\_\_\_

Subtract. \_\_\_\_\_  $-$  \_\_\_\_\_

Check. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

So, each class made \_\_\_\_\_ origami animals.



**Math Talk**

**MTR 4.1** Engage in discussions on mathematical thinking.

At the checking step, what would you do if the number is greater than the divisor?

**STEP 4** Divide the ones.

$$\begin{array}{r} 175 \\ 3 \overline{) 525} \\ \underline{-3} \phantom{0} \\ \phantom{0}22 \\ \underline{-21} \\ \phantom{0}15 \\ \underline{-15} \\ \phantom{0}0 \end{array}$$

Divide. Share \_\_\_\_\_ equally among \_\_\_\_\_ groups.

Multiply. \_\_\_\_\_

Subtract. \_\_\_\_\_  $-$  \_\_\_\_\_

Check. \_\_\_\_\_ are left.



## Share and Show

Math Board

1. Ollie used 852 beads to make 4 bracelets. He put the same number of beads on each bracelet. How many beads does each bracelet have? Check your answer.



Divide.

		2			
4	)	8	5	2	

Check.


Math Talk

**MTR** 4.1 Engage in discussions on mathematical thinking.

How could you check to see if your quotient is correct?

So, each bracelet has \_\_\_\_\_ beads.

Divide and check.

2.  $2 \overline{)394}$

3.  $2 \overline{)803}$

4.  $4 \overline{)3,448}$

## On Your Own

Divide and check.

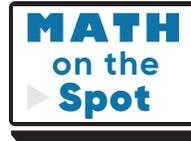
5.  $2 \overline{)816}$

6.  $4 \overline{)709}$

7.  $3 \overline{)267}$

8. The flower shop received a shipment of 248 pink roses and 256 red roses. The shop owner uses 6 roses to make one arrangement. How many arrangements can the shop owner make if he uses all the roses?
- \_\_\_\_\_

Use the table for 9–11.




The Craft Store	
Item	Price
Origami Book	\$24 each
Origami Paper	\$6 per pack
Origami Kit	\$8 each

9. Four teachers bought 10 origami books and 100 packs of origami paper for their classrooms. They will share the cost of the items equally. How much should each teacher pay?

---

10. **MTR** Six students shared equally the cost of 18 of one of the items in the chart. Each student paid \$24. What item did they buy? Explain how you found your answer.

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11. Ms. Alvarez has \$1,482 to spend on origami paper. How many packs can she buy?

---

12. Evan made origami cranes with red, blue, and yellow paper. The number of cranes in each color is the same. If there are 342 cranes, how many of them are blue or yellow?

---

13. On Monday 336 fourth graders went on a field trip to a local park. The teachers divided the students into 8 groups.

Use a basic fact. Estimate the number of students in each group. Show your work.

---



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## Show the Math

Demonstrate Your Thinking

# Divide by 1-Digit Numbers

Go Online

Interactive Examples

Divide and check.

$$\begin{array}{r}
 318 \\
 2 \overline{)636} \\
 \underline{-6} \phantom{0} \\
 03 \phantom{0} \\
 \underline{-2} \phantom{0} \\
 16 \\
 \underline{-16} \\
 0
 \end{array}$$

$$\begin{array}{r}
 318 \\
 \times 2 \\
 \hline
 636
 \end{array}$$

2.  $4 \overline{)631}$

3.  $8 \overline{)906}$

## Problem Solving

Use the table for 4 and 5.

4. The Briggs rented a car for 5 weeks. What was the cost of their rental car per week?

\_\_\_\_\_

5. The Lees rented a car for 4 weeks. The Santos rented a car for 2 weeks. Whose weekly rental cost was lower? Explain.

\_\_\_\_\_

\_\_\_\_\_

6.  *Math* Josey got an answer of 167 r4 for  $3 \overline{)505}$ . Explain and correct Josey's error.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Rental Car Costs	
Family	Total Cost
Lee	\$632
Brigg	\$985
Santo	\$328

## Lesson Check

7. Write an expression that can be used to check the quotient of  $646 \div 3$ .
8. There are 8 volunteers at the telethon. The goal for the evening is to raise \$952. If each volunteer raises the same amount, what is the minimum amount each needs to raise to meet the goal?

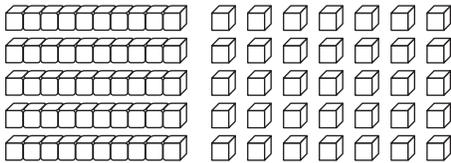
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## Spiral Review

9. What product is shown by the model?
10. The computer lab at a high school ordered 26 packages of CDs. There were 50 CDs in each package. How many CDs did the computer lab order?



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11. Write a division problem whose quotient has its first digit in the hundreds place.
12. Sharon has 64 fluid ounces of juice. She is going to use the juice to fill as many 6-ounce glasses as possible. She will drink the leftover juice. How much juice will Sharon drink?

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Name \_\_\_\_\_

## Multi-Step Division Problems

**I Can** solve multi-step real world division problems.



### UNLOCK the Problem Real World

Lucia picked 3 times as much corn as Eli. Together, they picked 96 ears of corn. Eli wants to divide the number of ears he picked equally among 8 bags. How many ears of corn will Eli put in each of the 8 bags?

#### Florida's B.E.S.T.

- Algebraic Reasoning 4.AR.1.1
- Number Sense & Operations 4.NSO.2.4, 4.NSO.2.3
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.6.1



### Read the Problem

#### What do I need to find?

I need to find the number of \_\_\_\_\_ that will go in each bag.

#### What information do I need to use?

Lucia picked \_\_\_\_\_ times as much corn as Eli. Together they picked \_\_\_\_\_ ears of corn. The number of ears Eli picked are divided equally among \_\_\_\_\_ bags.

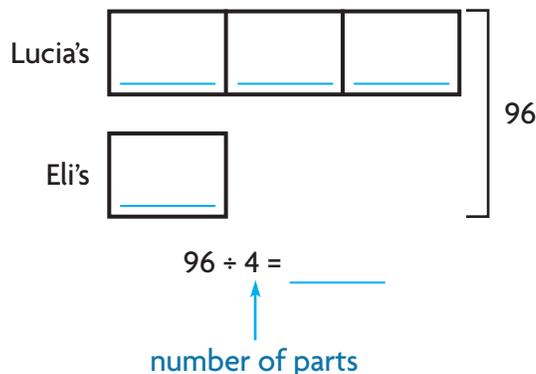
#### How will I use the information?

I will make a bar model for each step to visualize the information. Then I will \_\_\_\_\_ to find the number of ears Eli picked and \_\_\_\_\_ to find the number for each bag.

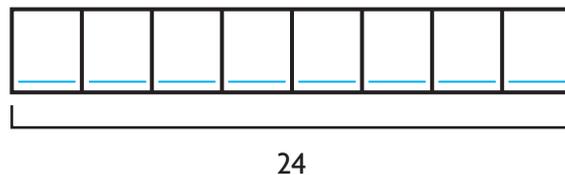
### Solve the Problem

I can draw bar models to visualize the information given.

First, I will model and compare to find the number of ears of corn that Eli picked.



Then I will model and divide to find how many ears of corn Eli will put in each bag.



1. How many ears of corn will Eli put in each bag? \_\_\_\_\_

2. How can you check your answers? \_\_\_\_\_

\_\_\_\_\_

## Try Another Problem

There are 8 dinner rolls in a package. How many packages will be needed to feed 64 people if each person has 2 dinner rolls?



Read the Problem	Solve the Problem
<b>What do I need to find?</b>	
<b>What information do I need to use?</b>	
<b>How will I use the information?</b>	

3. How many packages of rolls will be needed? \_\_\_\_\_

4. How did drawing a bar model help you solve the problem?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**MTR**  
**3.1** Complete tasks with mathematical fluency.

What other method could you have used to solve the problem?

# Share and Show



1. A firehouse pantry has 52 cans of vegetables and 74 cans of soup. Each shelf holds 9 cans. What is the least number of shelves needed for all the cans?

**First**, draw a bar model for the total number of cans.

**Next**, add to find the total number of cans.

**Then**, draw a bar model to show the number of shelves needed.

**Finally**, divide to find the number of shelves needed.

So, \_\_\_\_\_ shelves are needed to hold all of the cans.

2. What if 18 cans fit on a shelf? What is the least number of shelves needed? Describe how your answer would be different.

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3. Julio's dad bought 10 dozen potatoes. The potatoes were equally divided into 6 bags. How many potatoes are in each bag?

---

4. At the garden shop, each large tree costs \$225. Three neighbors equally share the cost of 4 large trees. How much does each neighbor pay?



**MTR 3.1** Complete tasks with mathematical fluency.

How could you check to see that your answer is correct?

## Show the Math

Demonstrate Your Thinking

## On Your Own

5. Ms. Johnson bought 6 bags of balloons. Each bag has 25 balloons. She fills all the balloons and puts 5 balloons in each bunch. How many bunches can she make?

---

6. An adult's dinner costs \$8. A family of 2 adults and 2 children pays \$26 for their dinners. How much does a child's dinner cost? Explain.

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7. **MTR** Use the table at the right. Maria bought 80 ounces of apples. She needs 10 apples to make a pie. How many apples will be left over? Explain.

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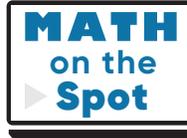
8. Taylor has 16 tacks. She buys 2 packages of 36 tacks each. How many garage sale posters can she put up if she uses 4 tacks for each poster?

---

9. Ryan bought 8 dozen bandages for the track team first-aid kit. The bandages were divided equally into 4 boxes.

How many bandages are in each box?

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Fruit	Average weight
Peach	6 ounces
Apple	5 ounces
Plum	2 ounces

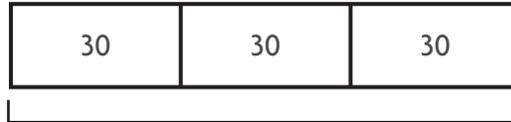
# Multi-Step Division Problems

Go Online

Interactive Examples

Solve. Draw a diagram to help you.

1. There are 3 trays of eggs. Each tray holds 30 eggs. How many people can be served if each person eats 2 eggs?

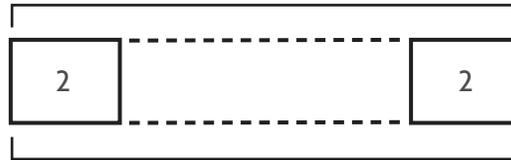


Multiply to find the total number of eggs.

90

45

**Think:** What do I need to find? How can I draw a diagram to help?



Divide to find how many people can be served 2 eggs.

45 people can be served.

90

2. There are 8 pencils in a package. How many packages will be needed for 28 children if each child gets 4 pencils?

\_\_\_\_\_

3. There are 3 boxes of tangerines. Each box has 93 tangerines. The tangerines will be divided equally among 9 classrooms. How many tangerines will each classroom get?

\_\_\_\_\_

4. **WRITE** *Math* Write a two-step problem that you can solve using the strategy *draw a diagram*. Explain how you can use the strategy to find the solution.

\_\_\_\_\_

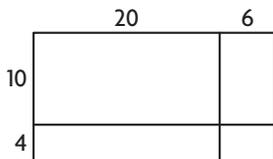
\_\_\_\_\_

## Lesson Check

5. Gavin buys 89 blue pansies and 86 yellow pansies. He will plant the flowers in 5 rows with an equal number of plants in each row. Draw a bar model to help you find how many plants will be in each row.
6. A pet store receives 7 boxes of cat food. Each box has 48 cans. The store wants to put the cans in equal stacks of 8 cans. Draw a bar model to help you find how many stacks can be formed.

## Spiral Review

7. What product does the model show?



8. Mr. Hatch bought 4 round-trip airplane tickets for \$417 each. He also paid \$50 in baggage fees. How much did Mr. Hatch spend?

9. Mae read 976 pages in 8 weeks. She read the same number of pages each week. How many pages did she read each week?

10. Yolanda and her 3 brothers shared a box of 156 toy dinosaurs. About how many dinosaurs did each child get?

Name \_\_\_\_\_

## Chapter Review

1. There are 9 showings of a film about endangered species at the science museum. A total of 459 people saw the film. The same number of people were at each showing. How many people were at each showing? Explain how to check your answer.

2. Solve.

$$4,216 \div 8 = \underline{\hspace{2cm}}$$

3. Bianca sorts 488 shirts by size. The shirts come in 4 different sizes, and there are the same number of each size shirt. She uses division to find out how many shirts are in each size. In what place is the first digit of the quotient?

- (A) ones                       (B) tens  
 (C) hundreds                 (D) thousands

4. Pablo collects seashells. He sorts the shells by type into different buckets when he collects them. He collects 46 shells. Pablo has 4 buckets with the same number of shells in them, and one bucket with 2 shells. How many shells are in each of the 4 equal buckets?

\_\_\_\_\_ shells

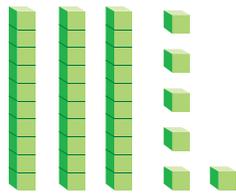
5. There are 3,736 yearbooks to be divided equally among 8 schools.  
How many yearbooks will each school get?

\_\_\_\_\_ yearbooks

6. Anna buys 8 books for \$112. If each book costs the same amount,  
what is the cost of 5 books?

\_\_\_\_\_

7. Dani needs to divide these base-ten blocks among 4 equal groups.



Describe a model that would show how many are in each group.

---

---

8. A florist used 76 roses, 47 lilies, and 21 snap dragons to make  
garlands. Each garland has 8 flowers. How many garlands did the  
florist make? Draw bar models to solve.

Name \_\_\_\_\_

9. Koi read 1,080 minutes in 9 days. If he read the same number of minutes each day, how much time did he read each day?  
\_\_\_\_\_ minutes

10. To divide  $624 \div 3$ , Raquel estimated to place the first digit of the quotient. In which place is the first digit of the quotient?  
\_\_\_\_\_

11. There are 7 volunteers at the park. The volunteers need to clean an area of 861 square meters. If each volunteer cleans the same area, what area does each volunteer clean?  
\_\_\_\_\_ square meters

12. For Problems 12a–12d, choose True or False to show whether each statement correctly uses repeated subtraction to divide.

12a.  $36 \div 9 = 36 - 9 - 9 - 9 - 9$        True       False

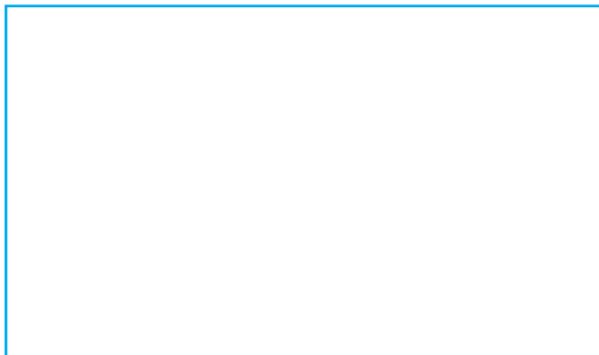
12b.  $18 \div 3 = 18 - 3 - 3 - 3$        True       False

12c.  $24 \div 6 = 24 - 6 - 6 - 6 - 6$        True       False

12d.  $19 \div 2 = 19 - 19$        True       False

13. There are 136 people waiting for a river raft ride. Each raft holds 8 people. Silvia did the work below to find the number of rafts needed. Explain how Silvia's work shows how to find the number of rafts needed.

$$\begin{array}{r} 8 \overline{)136} \\ \underline{-80} \\ 56 \\ \underline{-56} \\ 0 \end{array}$$



14. A traveling circus brings along everything it needs for a show in big trucks.

### Part A

The circus sets up chairs in rows with 9 seats in each row. How many rows will need to be set up if 513 people are expected to attend the show?

\_\_\_\_\_ rows

### Part B

Can the rows be divided into a number of equal sections? Explain how you found your answer.

### Part C

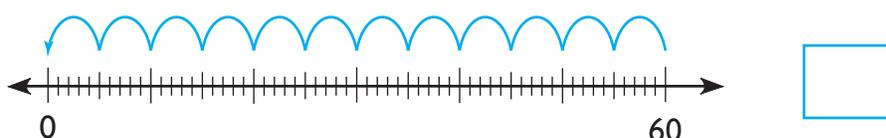
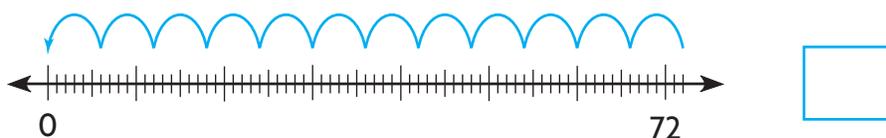
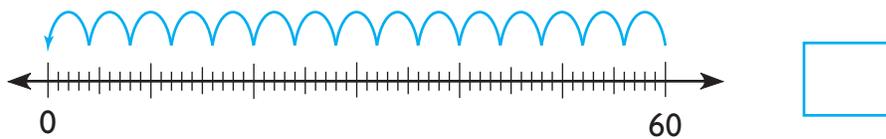
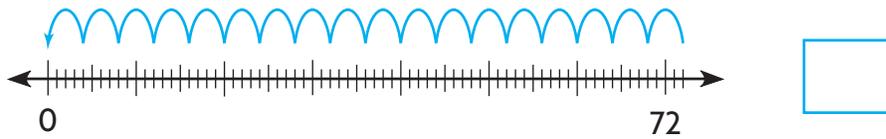
Circus horses eat about 250 pounds of horse food per week. About how many pounds of food does a circus horse eat each day? Explain.

15. Hilda wants to save 825 digital photographs in an online album. Each folder of the album can save 6 photographs. She uses division to find out how many full folders she will need. In what place is the first digit of the quotient?
-

Name \_\_\_\_\_

16. Which model matches each expression? Write the letter in the box next to the model.

- A  $60 \div 5$     
 B  $72 \div 4$     
 C  $60 \div 4$     
 D  $72 \div 6$



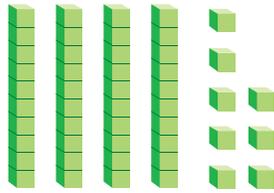
17. Popcorn was donated for the school fair by 3 different popcorn vendors. They donated a total of 627 bags of popcorn. Each vendor donated the same number of bags. How many bags of popcorn did each vendor donate?

\_\_\_\_\_ bags

18. Use partial quotients. Fill in the blanks.

$8 \overline{)832}$		
$\begin{array}{r} \underline{\phantom{00}00} \\ \phantom{00}32 \end{array}$	$100 \times 8$	
$\begin{array}{r} \underline{\phantom{00}00} \\ \phantom{00}32 \end{array}$	$4 \times 8$	
$\begin{array}{r} \underline{\phantom{00}00} \\ \phantom{00}32 \end{array}$		

19. Zack needs to divide these base-ten blocks into 3 equal groups.



Draw or describe a model to show how many are in each group.

20. Jim needs to divide 750 coupon books equally among 9 stores. In which place is the first digit of the quotient? Choose the word that makes the sentence true.

The first digit of the quotient is in the \_\_\_\_\_ place.

ones

tens

hundreds

thousands

21. Ursula bought 9 dozen rolls of first aid tape for the health office. The rolls were divided equally into 4 boxes. How many rolls are in each box?

\_\_\_\_\_ rolls

22. There are 112 seats in the school auditorium. There are 7 seats in each row. There are 70 people seated, filling up full rows of seats. How many rows are empty?

\_\_\_\_\_ rows