

Name \_\_\_\_\_

## Dividing by 1-Digit Divisors

Dear Family,

In math class, your child will learn how to *divide with one-digit divisors*. Learning this skill will require his or her understanding in the areas of *estimating quotients, remainders, connecting models and symbols, dividing with one-digit divisors, and using zeros in quotients*. You can expect to see work that provides practice in *dividing whole numbers with one-digit divisors and checking the answer with multiplication*. Your child should continue to practice basic facts in multiplication and division.

Here is an activity that you can do with your child to help him or her learn about dividing by 1-digit divisors.

### Variations on a Theme

**Materials:** Pencil, index cards

**Step 1:** Write a  $\times$  symbol, a  $\div$  symbol, and an  $=$  symbol on three index cards.

**Step 2:** Write down a one-digit number on an index card. Write a two-, three-, or four-digit number on another index card. Write the product on a third card.

**Step 3:** Ask your child to arrange the cards to create a multiplication sentence.

**Step 4:** Then challenge your child to use the cards to make a division sentence.

**Step 5:** Repeat the activity with different sets of numbers.

Name \_\_\_\_\_

Topic 4  
Vocabulary Cards

<b>dividend</b>	<b>dividend</b> The number to be divided
<b>divisor</b>	<b>divisor</b> The number used to divide another number
<b>quotient</b>	<b>quotient</b> The answer to a division problem

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## Reteaching Master

Name \_\_\_\_\_

Reteaching  
4-1

### Dividing Multiples of 10 and 100

You can use math facts and patterns to help you divide mentally.

What is  $480 \div 6$ ?

What is  $60,000 \div 6$ ?

You already know that  $48 \div 6 = 8$ .

$60 \div 6 = 10$

480 has one more zero than 48, so place one more zero in the quotient.

60,000 has three more zeros than 60, so place three zeros in the quotient.

$480 \div 6 = 80$ .

$60,000 \div 6 = 10,000$ .

Find each quotient. Use mental math.

1.  $32 \div 8 =$   
4

2.  $320 \div 8 =$   
40

3.  $3,200 \div 8 =$   
400

4.  $32,000 \div 8 =$   
4,000

5.  $56 \div 7 =$   
8

6.  $560 \div 7 =$   
80

7.  $5,600 \div 7 =$   
800

8.  $56,000 \div 7 =$   
8,000

9.  $15 \div 3 =$   
5

10.  $150 \div 3 =$   
50

11.  $1,500 \div 3 =$   
500

12.  $15,000 \div 3 =$   
5,000

13. **Writing To Explain** Explain how dividing 720 by 9 is like dividing 72 by 9.

You divide 72 by 9. For 720, you add a zero for the ones place.

Arlo has a newspaper delivery job. He wants to wrap each of his newspapers in a plastic bag to protect them from the rain. The newspapers are in bundles.

**Arlo's Newspaper Delivery**

Number of bundles	12
Number of newspapers per bundle	9

Use mental math to answer the following questions.

14. How many bags will he use for 5 bundles?

45 bags

15. How many bags will he use for 7 bundles?

63 bags

16. How many bags will he use for all 12 bundles?

108 bags

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## Practice Master

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Practice  
4-1

### Dividing Multiples of 10 and 100

Use mental math to find each quotient.

1.  $27 \div 9 =$   
3

2.  $270 \div 9 =$   
30

3.  $2,700 \div 9 =$   
300

4.  $24 \div 4 =$   
6

5.  $240 \div 4 =$   
60

6.  $2,400 \div 4 =$   
600

7.  $720 \div 9 =$   
80

8.  $140 \div 7 =$   
20

9.  $2,100 \div 3 =$   
700

10. If a bike race covers 120 mi over 6 days and the cyclists ride the same distance each day, how many miles does each cyclist ride each day?

20 mi

Use mental math to answer the following questions.

11. If the vehicles are divided evenly between the sections, how many vehicles are in each section?

300 vehicles

**Dealership Vehicle Storage**

Sections of vehicles	4
Vehicles for sale	1,200
Rows per section	10

12. If the vehicles are divided evenly between the rows in each section, how many vehicles are in each row?

30 Vehicles

13. If  $160,000 \div n = 4$ , find  $n$ .

40,000

14. Find  $32,000 \div 8$  mentally.

A 4,000

B 400

C 40

D 4

15. Solve the equation  $n \times 50 = 5,000$ . Explain your solution.

$n = 100$ ; Sample answer: Divide each side by 50.

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# Reteaching Master

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## Estimating Quotients

There are several ways to adjust whole numbers to estimate quotients.

Example:

There are 216 students. The school has 8 classrooms.  
How many students will be in each classroom?

Estimate  $216 \div 8$ .

### Rounding

You can use rounding to estimate a quotient.

Round 216 to the nearest hundred.

In this case, 216 rounds to 200.

$$200 \div 8 = 25$$

25 students per room is an underestimate, because 216 was rounded down to 200.

### Compatible Numbers

You can use compatible numbers to estimate a quotient.

Change 216 to a compatible number for 8.

Compatible numbers for 8 are numbers divisible by 8, such as 160, 240, and 320. Choose 240, because it is the closest compatible number to 216.

$$240 \div 8 = 30$$

30 students per class is an overestimate, because 216 was rounded up to 240.

### Multiplication

You can use multiplication to estimate a quotient.

Think: 8 times what number is about 216?

$$8 \times 25 = 200$$

$$8 \times 30 = 240$$

216 is between 200 and 240. So a good estimate is a little more than 25 and a little less than 30 students per classroom.

Estimate each quotient. You may use any method.

1.  $411 \div 2$

$$400 \div 2 = 200$$

2.  $162 \div 4$

$$160 \div 4 = 40$$

3. **Estimation** If you estimate  $342 \div 7$  by using  $350 \div 7 = 50$ , is 50 greater than or less than the exact answer? How did you decide? Is 50 an overestimate or an underestimate?

**It is greater, because you rounded 342 up to 350. So, 50 is an overestimate.**

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# Practice Master

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Practice  
4-2

## Estimating Quotients

Estimate each quotient. Tell which method you used.

**Sample answers for 1–8.**

1.  $195 \div 4$  **50** **Multiplication**

2.  $283 \div 5$  **60** **Rounding**

3.  $766 \div 8$  **100** **Rounding**

4.  $179 \div 2$  **90** **Compatible numbers**

5.  $\$395.20 \div 5$  **\\$80** **Rounding**

6.  $\$31.75 \div 8$  **\\$4** **Compatible numbers**

7.  $\$247.80 \div 5$  **\\$50** **Multiplication**

8. If you use  $\$63.00 \div 9$  to estimate  $\$62.59 \div 9$ , is  $\$7.00$  greater than or less than the exact answer? Explain.

**Greater than;  $9 \times 7 = 63$ , which is greater than  $\$62.59$ .**

9. A band played 3 concerts and earned a total of  $\$321.00$ . The band earned about the same amount for each concert. Estimate how much the band earned each night.

**About  $\$100$  each night**

10. At a department store, a woman's total was  $\$284.00$  for 7 items. Estimate the average cost per item.

**About  $\$40.00$**

11. Which is the closest estimate for  $213 \div 4$ ?

A 50       B 40       C 30       D 20

12. Explain how to estimate  $524 \div 9$ .

**Sample answer: Round 524 to 500, 9 to 10, and divide:  $500 \div 10 = 50$ .**

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### Problem Solving: Reasonableness

After you solve a problem, check to see if your answer is reasonable. Also check that you answered the right question.

Example:

74 students are going to a special class dinner where they will be seated 8 to a table. Will 9 tables be enough?

Reasonableness                      The answer is close to 9 tables.  
 $74 \div 8 = 9 \text{ R}2$

Answering the right question      All students must have seats, so there must be one more table to hold the remaining 2 students, making 10 tables in all.

Tell whether each answer is reasonable.

1. Kendra wants to paste 500 photographs into an album, 6 photos to a page. She figures that she will need about 100 pages.

**Six times 100 is 600, much more space than Kendra needs. Since 500 is between 480 ( $6 \times 80$ ) and 540 ( $6 \times 90$ ), she needs between 80 and 90 pages.**

2. Hwong has 39 muffins. If each of his guests will eat 2 muffins, Hwong figures that he can serve muffins to 19 guests.

**This is reasonable, since  $2 \times 19 = 38$ .**

3. Ivan has a piece of lumber 104 inches long. He is sawing it into 12-inch lengths to make fence posts. He says he can get about 9 fence posts out of the board.

**Although  $104 \div 12$  is closer to 9 than to 8, each post must be a full 12 inches, and therefore any remainder must be thrown away. Ivan can only make 8 posts.**

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## Practice Master

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Practice  
4-3

### Problem Solving: Reasonableness

Solve.

1. One tray holds eight sandwiches. If there are 30 sandwiches in all, how many trays are needed?

**4 trays**

2. There are 53 students on a field trip. One chaperone is needed for every 6 students. How many chaperones are needed?

**9**

Mrs. Favicchio has 72 students in her science class. The table shows how many students can use each item of lab supplies she is ordering.

Lab Supplies	
Item	Number of Students
Packet of pH paper	10
Case of test tubes	5
Case of petri dishes	4

3. How many packets of pH paper does she need to order?

**8**

4. How many cases of test tubes does she need to order?

**15**

5. A loaf of banana bread serves 6 guests. There will be 47 guests attending the faculty breakfast. Which expression shows how many loaves are needed to serve them all?

A 47 divided by 6 is 7 R 5, so 7 loaves are needed.  
**B** 47 divided by 6 is 7 R 5, so 8 loaves are needed.  
C 47 plus 6 is 53, so 53 loaves are needed.  
D 47 minus 6 is 41, so 41 loaves are needed.

6. **Writing To Explain** You are in line at an amusement park. You count 34 people in front of you. Each rollercoaster fits 11 people. How many rollercoasters must run before you can get on? Explain.

**3 rides must go by, and you will get on the fourth one.**

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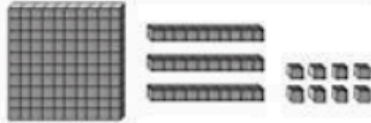
# Reteaching Master

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Reteaching  
4-4

## Connecting Models and Symbols

Divide 138 equally into 3 groups.



### Step 1:

You can model 138 as 13 groups of 10 plus 8 ones. Each group will get 4 groups of 10,  $40 \times 3 = 120$ ,  $130 - 120 = 10$ , so there is 1 group of 10 left.

### What You Think



### What You Write

$$\begin{array}{r} 4 \\ 3 \overline{) 138} \\ \underline{-12} \phantom{0} \\ 18 \\ \underline{-18} \\ 0 \end{array}$$

### Step 2:

There is 1 group of 10 plus 1 group of 8 ones left. You can model 18 as 18 ones.  $18 \div 3 = 6$ , so each group will also get 6 ones. There is nothing left.

### What You Think



### What You Write

$$\begin{array}{r} 46 \\ 3 \overline{) 138} \\ \underline{-12} \phantom{0} \\ 18 \\ \underline{-18} \\ 0 \end{array}$$

$$138 \div 3 = 46$$

Use models to help you divide.

1.  $4 \overline{) 19}$

2.  $2 \overline{) 47}$

3.  $5 \overline{) 130}$

4.  $7 \overline{) 238}$

5.  $6 \overline{) 426}$

6.  $3 \overline{) 264}$

7. If  $n \div 3 = 57$ , what is the value of  $n$ ? **171**

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## Connecting Models and Symbols

After mowing lawns for one week, John put the money he earned on the table. There were four \$100 bills, three \$10 bills, and five \$1 bills.

- If John's brother borrowed one of the \$100 bills and replaced it with ten \$10 bills,
  - how many \$100 bills would there be? **Three \$100 bills**
  - how many \$10 bills would there be? **Thirteen \$10 bills**
- If John needed to divide the money evenly with two other workers, how much would each person receive? **\$145**
- If John needed to divide the money evenly with four other workers, how much would each person receive? **\$87**

Complete each division problem. You may use play money or draw diagrams to help.

4. 
$$\begin{array}{r} 34 \\ 4 \overline{) 136} \\ \underline{-12} \phantom{0} \\ 16 \\ \underline{-16} \\ 0 \end{array}$$

5. 
$$\begin{array}{r} 54 \\ 3 \overline{) 162} \\ \underline{-15} \phantom{0} \\ 12 \\ \underline{-12} \\ 0 \end{array}$$

6. If \$644.00 is divided equally among 7 people, how much will each person receive?  
**A** \$82.00    **B** \$92.00    **C** \$93.00    **D** \$103.00
7. **Writing To Explain** Write a story problem using two \$100 bills, nine \$10 bills, and seven \$1 bills.  
**Sample answer: Karl borrowed \$297 from his sister. He pays her \$33 each week. How many weeks will it take Karl to pay \$297?**

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# Reteaching Master

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Reteaching  
4-5

## Dividing by 1-Digit Divisors

Find  $362 \div 5$ .

**Step 1:** To decide where to place the first digit in the quotient, compare the first digit of the dividend with the divisor.

$3 < 5$ , so the first digit in the quotient will not go in the hundreds place.

Now, compare the first two digits of the dividend with the divisor.

$36 > 5$ , so the first digit in the quotient will go in the tens place.

**Step 2:** Divide the tens. Use multiplication facts and compatible numbers. Think  $5 \times ? = 35$ .

Write 7 in the tens place of the quotient. Multiply,  $5 \times 7 = 35$ .

$$\begin{array}{r} 7 \\ 5 \overline{)36} \\ \underline{-35} \\ 1 \end{array}$$

Subtract,  $36 - 35 = 1$ . Compare,  $1 < 5$ . Bring down the ones.

**Step 3:** Divide the ones. Use multiplication facts and compatible numbers. Think  $5 \times ? = 10$ .

Write 2 in the ones place of the quotient. Multiply,  $5 \times 2 = 10$ .

$$\begin{array}{r} 72R2 \\ 5 \overline{)362} \\ \underline{-35} \\ 12 \\ \underline{-10} \\ 2 \end{array}$$

Subtract,  $12 - 10 = 2$ . Compare,  $2 < 5$ . There are no more digits to bring down, so 2 is the remainder.

**Step 4:** Check by multiplying.

$$\begin{array}{l} 5 \times 72 = 360 \\ 360 + 2 = 362 \end{array}$$

Divide. Check by multiplying.

1.  $8 \overline{)955}$  **119 R3**      2.  $7 \overline{)249}$  **35 R4**      3.  $5 \overline{)365}$  **73**

4.  $8 \overline{)448}$  **56**      5.  $2 \overline{)499}$  **249 R1**      6.  $6 \overline{)396}$  **66**

7. How can you tell before you divide 425 by 9 that the first digit of the quotient is in the tens place?

**$4 < 9$**

# Practice Master

Name \_\_\_\_\_

Practice  
4-5

## Dividing by 1-Digit Divisors

Find each quotient.

1.  $2 \overline{)586}$  **293**      2.  $3 \overline{)565}$  **188 R1**      3.  $5 \overline{)718}$  **143 R3**      4.  $4 \overline{)599}$  **149 R3**
5.  $5 \overline{)642}$  **128 R2**      6.  $6 \overline{)354}$  **59**      7.  $9 \overline{)210}$  **23 R3**      8.  $8 \overline{)927}$  **115 R7**

The Paez family lives in Louisville, Kentucky, and has decided to take a road trip for their summer vacation.

9. How many miles will the Paez family drive each day if they decide to take 5 days to drive 865 mi to Dallas? **173 mi each day**
10. The Paez family decides they want to drive 996 mi to Boston in 6 days. How many miles will they drive each day? **166 mi**
11. If a staff of 9 people had to clean a hotel with 198 rooms, how many rooms would each person have to clean if they divided the rooms equally?  
A 29      B 25      C 23      **D 22**
12. Explain how to check the quotient from a division problem.

**Sample answer: You need to multiply the quotient by the divisor and then add the remainder. This should equal the dividend.**



# Reteaching Master

Name \_\_\_\_\_

Reteaching  
4-6

## Zeros in the Quotient

Find  $816 \div 4$ .

**Step 1:** Compare the first digit of the dividend with the divisor.  $8 > 4$ , so the first digit in the quotient will go in the hundreds place.

Divide the hundreds. Think  $4 \times ? = 8$ .

Write 2 in the hundreds place of the quotient. Multiply.  $4 \times 2 = 8$

$$\begin{array}{r} 2 \\ 4 \overline{)816} \\ \underline{-8} \phantom{0} \\ 01 \phantom{0} \end{array}$$

Subtract.  $8 - 8 = 0$

Compare.  $0 < 4$

Bring down the tens.

**Step 2:** Compare.  $1 < 4$   
You cannot divide the tens, so place 0 in the tens place of the quotient.

Bring down the ones.

$$\begin{array}{r} 20 \\ 4 \overline{)816} \\ \underline{-8} \phantom{0} \\ 016 \end{array}$$

**Step 3:** Compare.  $16 > 4$

Divide the ones. Think  $4 \times ? = 16$ .

Write 4 in the ones place of the quotient.

Multiply.  $4 \times 4 = 16$

Subtract.  $16 - 16 = 0$

Compare.  $0 < 4$

There are no more digits to bring down, so the problem is done.

$$\begin{array}{r} 204 \\ 4 \overline{)816} \\ \underline{-8} \phantom{0} \\ 016 \\ \underline{-16} \\ 0 \end{array}$$

**Step 4:** Check by multiplying.  $4 \times 204 = 816$

Find each quotient. Check your answers by multiplying.

1.  $8 \overline{)640}$  **80**

2.  $3 \overline{)322}$  **107 R1**

3.  $4 \overline{)908}$  **227**

4.  $15 \overline{)225}$  **15**

5.  $6 \overline{)624}$  **104**

6.  $6 \overline{)965}$  **160 R5**

7. Is  $593 \div 6$  a little less than 10, a little more than 10, a little less than 100, or a little more than 100? Explain.

**A little less than 100;**

**$593 \div 6 = 98 \text{ R}5 < 100.$**

# Practice Master

Name \_\_\_\_\_

Practice  
4-6

## Zeros in the Quotient

Find each quotient. Check your answers by multiplying.

1.  $490 \div 7 =$  **70**

2.  $326 \div 3 =$  **108 R2**

3.  $916 \div 3 =$  **305 R1**

4.  $720 \div 2 =$  **360**

5.  $2 \overline{)941}$  **470 R1**

6.  $9 \overline{)982}$  **109 R1**

7.  $7 \overline{)740}$  **105 R5**

8.  $5 \overline{)703}$  **140 R3**

9. If there are 505 seats in an auditorium divided equally into 5 sections, how many seats are in each section?

**101 seats**

10. A book company publishes 749 copies of a novel and distributes them to 7 bookstores. If each bookstore were to receive the same number of copies, how many copies would be sent to each store?

**107 copies**

11. In one year, Dolores and Tom's four children saved \$420 by recycling cans. When they divided the money equally, how much money did each child receive?

A \$50

B \$100

**C \$105**

D \$1,500

12. **Writing To Explain** Explain why estimating before you divide  $624 \div 6$  helps you place the first digit in the quotient.

**Sample answer: By estimating you will know if the answer will be in the hundreds, tens, or ones.**



## Reteaching Master

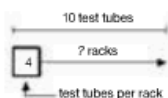
Name \_\_\_\_\_

Reteaching  
4-7

### Problem Solving: Draw a Picture and Write an Equation

Mr. Rodriguez needs to store 10 test tubes in racks that hold 4 test tubes apiece. How many racks does he need?

Draw a picture.



Write an equation.

Let  $r$  be the number of test-tube racks needed.

$$10 \div 4 = r$$

Solve the problem.

$$r = 2 \text{ R } 2$$

*Think: R 2 means that 2 test tubes are still left. Since they must be in a rack, one more rack is needed.*

Write the answer in a complete sentence.

Mr. Rodriguez will need three test-tube racks.

Mr. Rodriguez could also use racks that hold three test tubes or racks that hold five test tubes. Which racks should he use if he wants each rack completely filled? Explain.

**He should use the racks that hold 5 test tubes, because 10 is evenly divisible by 5.**

## Practice Master

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Practice  
4-7

### Problem Solving: Draw a Picture and Write an Equation

Draw a picture and write an equation. Then solve.

1. Tommy paid \$39 to fill up the gas tank in his car. If one gallon of gas costs \$3, how many gallons of gas did Tommy put in?

**Check students' diagrams.  $39 \div 3 =$   
 $g$ ;  $g = 13$ ; 13 gallons of gas**

2. To prepare for the brunch, Ivana needs to place 8 muffins in each basket. If she has 115 muffins, how many baskets will she need?

**Check students' diagrams.  $115 \div 8 =$   
 $b$ ;  $b = 14 \text{ R } 3$ ; 15 baskets**

3. Write a real-world problem that you can solve by writing an equation. The answer to the problem must be 6.

**Answer will vary. Check students' work.**

4. The perimeter is the distance around an object. The perimeter of a square is 84 centimeters. What is the length of one side of the square?

A 75 cm    B 42 cm    **C 21 cm**    D 14 cm

5. **Writing to Explain** A perfect score on a quiz is 100. Mrs. Frisoli gives students 1 point for putting their name on the paper. If there are only 9 questions on the quiz, how much is each question worth? Explain how you found your answer.

**$100 - 1 = 99$ .  $99 \div 9 = 11$ . Each question is worth 11 points.**