Name _____

Home-School Connection Topic **5** (English)

Dividing by 2-Digit Divisors

Dear Family,

In this chapter, your child will take division of whole numbers a step further. He or she will learn how to divide any whole number by a two-digit divisor. In order to do this, your child must understand how to divide multiples of ten. Certain skills such as estimation, substitution, finding one- and two-digit quotients, and dividing greater numbers will be learned and practiced.

Here is an activity that you can do with your child to help him or her learn about dividing by 2-digit divisors.

_____

Right on Target

Materials: Paper, pencil, timer

Step 1: Each player writes a four-digit number on a sheet of paper and passes it to the player on his or her left. If there are only two players, just exchange sheets.

Step 2: Players use the number they are passed as a dividend for a division problem. For example: $\overline{)5{,}896}$

Step 3: Players have one minute to find a divisor that will yield a quotient near 90. Encourage your child to round the dividend to the nearest hundred. Look for basic division facts he or she recognizes and use patterns to solve.

Step 4: Repeat with other four-digit dividends.

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Reteaching
5-1

Using Patterns to Divide

You can use basic facts and patterns to divide mentally.

Using basic facts	Using patterns
What is 350 ÷ 70?	What is 5,400 ÷ 60?
Think: 350 ÷ 70 is the same as 35 tens ÷ 7 tens.	5,400 ÷ 60 is the same as 540 ÷ 6.
35 ÷ 7 = 5	54 ÷ 6 = 9, so 540 ÷ 6 = 90.
So, 350 ÷ 70 = 5.	So, 5,400 ÷ 60 = 90.

Find each quotient. Use mental math.

1. 280 ÷ 70 = 4
2. 320 ÷ 40 = 8
3. 360 ÷ 60 = 6
4. 7,200 ÷ 80 = 90
5. 9,000 ÷ 30 = 300
6. 4,800 ÷ 80 = 60
7. 2,000 ÷ 40 = 50
8. 5,600 ÷ 70 = 80

9. How is dividing 250 by 50 the same as dividing 2,500 by 500?

Sample answer: 250 ÷ 50 = 5 and 2,500 ÷ 500 = 5. Both problems use the same basic fact that 25 ÷ 5 = 5.

10. Explain how you can mentally determine that 35,000 ÷ 70 = 500.

You know that 35 ÷ 7 = 5. Using math facts and patterns you also know that 3,500 ÷ 70 = 50 and 35,000 ÷ 70 = 500.

Practice Master

Name _____

Practice
5-1

Using Patterns to Divide

In **1** through **4**, find each quotient. Use mental math.

1. 360 ÷ 40 = 36 tens ÷ 4 tens = 9
2. 5,400 ÷ 90 = 540 tens ÷ 9 tens = 60
3. 240 ÷ 30 = 24 tens ÷ 3 tens = 8
4. 4,800 ÷ 10 = 480 tens ÷ 1 ten = 480

Use mental math to answer the following questions.

5. If the vehicles are divided evenly among 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

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

30 vehicles

7. Suppose there are 297 students going on a field trip. If each schoolbus can carry 58 students, estimate the number of buses that will be needed to transport all the students.

Since $\frac{300}{60} = 5$, about 5 school buses will be needed.

8. If 1,600 ÷ n = 4, what is the value of n?

A 40 (B) 400 C 4,000 D 40,000

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

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

Reteaching Master

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Reteaching
5-2

Estimating Quotients with 2-Digit Divisors

You can use compatible numbers to estimate a quotient.

Find 175 ÷ 32.

Step 1: Find compatible numbers for 175 and 32.

32 rounds to 30.

Think: 18 can be divided evenly by 3.

180 is close to 175 and 30 is close to 32.

180 and 30 are compatible numbers.

Step 2: Divide. Use patterns to help you, if possible.

Think: 180 ÷ 30 is the same as 18 tens ÷ 3 tens.

18 ÷ 3 = 6

So, 180 ÷ 30 = 6.

Step 3: Check for reasonableness.

6 × 30 = 180

So, a good estimate of 175 ÷ 32 is 6.

Estimate each quotient using compatible numbers. **Sample answers given.**

1. 298 ÷ 25 **10**
2. 5,391 ÷ 77 **70**
3. 24,303 ÷ 12 **2,000**
4. 276 ÷ 42 **7**
5. 1,347 ÷ 54 **27**
6. 5,564 ÷ 91 **60**

At Elmer Elementary School, fifth-grade students are saving money for a summer trip to Washington, D.C.

Student	Amount Saved
Percy	$125
Emily	$ 80
George	$202
James	$ 41
Bertha	$159

7. The money Percy has saved is how many times as great as the money James has saved?

About three times as great

Practice Master

Name _____

Practice
5-2

Estimating Quotients with 2-Digit Divisors

In **1** through **4**, estimate the quotients using compatible numbers.

1. 566 ÷ 81 = **7**
2. 453 ÷ 93 = **5**
3. 1,423 ÷ 69 = **20**
4. 8,631 ÷ 10 = **860**

5. If you use $99.00 ÷ 11 to estimate $98.69 ÷ 11, is $9.00 greater than or less than the exact answer? Explain.

Greater than; Sample answer: 11 × 9 = 99, which is greater than $98.69.

6. Suppose there are 19 students in a class. A teacher has 122 pencils and passes them out to the class. Estimate the number of pencils each student will receive. **6**

7. At a department store, a package of 12 handkerchiefs costs $58.99. Estimate how much each handkerchief costs. **$5**

8. Which is the closest estimate for 2,130 ÷ 33?

A 7 **B** 17 **C** 70 **D** 700

9. Explain how to estimate 498 ÷ 12.

Sample answer: Use compatible numbers: 500 ÷ 10 = 50.

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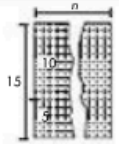
Reteaching
5-3

Connecting Models and Symbols

Divide 345 by 15.

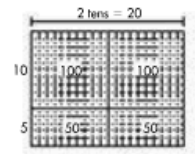


Construct a model and write an equation

$345 \div 15 = n$ or
$15 \times n = 345$

Step 1:
Divide the tens place.
15 goes in to 34 two times, so add two tens (20) to your area model.

What You Think

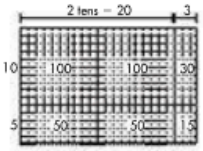


What You Write

$$15\overline{)345}\quad 2$$
$$-30$$
$$4$$

Step 2:
Divide the ones place.
15 goes into 45 three times, so add three ones to your area model.

What You Think



What You Write

$$15\overline{)345}\quad 23$$
$$-30\downarrow$$
$$45$$
$$-45$$
$$0$$

$345 \div 15 = 23$

Use models to help you divide.

1. $12\overline{)228}$ 19
2. $20\overline{)940}$ 47
3. $15\overline{)390}$ 26

Practice Master

Name _____

Practice
5-3

Connecting Models and Symbols

Use arrays, area models, or draw a diagram to help you solve.

1. $10\overline{)210}$ 21
2. $31\overline{)217}$ 7
3. $13\overline{)845}$ 65
4. $34\overline{)204}$ 6
5. $12\overline{)720}$ 60
6. $21\overline{)640}$ 30 R10

Complete each division problem. You may use area models or draw pictures to help.

7.
$$14\overline{)210}\quad 15$$
$$-14$$
$$70$$
$$-70$$
$$0$$

8.
$$19\overline{)228}\quad 12$$
$$-19$$
$$38$$
$$-38$$
$$0$$

9. If $1000 is divided equally among twelve people, about how much will each person receive?

A $92.00 (B) $83.00 C $91.00 D $87.00

10. Write a story problem using a 3-digit dividend, a 2-digit divisor, and a 2-digit quotient. Draw a picture or use a model to help you illustrate the problem.

Sample answer: Karl borrowed $168 from his sister. He pays her $14 each week. How many weeks will it take Karl to pay $168? Answer: 12 weeks

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Reteaching
5-4

Dividing by Multiples of 10

Find 623 ÷ 40.

Step 1: Estimate the quotient using compatible numbers, 600 ÷ 40 = 15. Then, divide the tens.

```
   1
40)623   Divide 62 ÷ 40
 −40     Multiply 1 × 40 = 40
  22     Subtract 62 − 40 = 22
         Compare 22 < 40
```

Step 2: Bring down the ones. Then, divide the ones.

```
   15
40)623
 −40*
  223    Divide 223 ÷ 40
−200     Multiply 5 × 40 = 200
   23    Subtract 223 − 200 = 23
```

Step 3: Since 23 < 40, write 23 as the remainder in the quotient.

```
   15 R23
40)623
 −40*
  223
 −200
   23    Compare 23 < 40
```

Complete.

1. 60)288 — 4 R48; −240; 48
2. 20)455 — 22 R15; −40; 55; −40; 15
3. 80)866 — 10 R66; −80; 66
4. 30)233 — 7 R23; −210; 23
5. 50)498 — 9 R48; −450; 48

6. Celia plans to pack her books in boxes when her family moves. Each box will hold 20 books. Celia has 97 books. How many boxes will she need to pack all her books?

5 boxes

Practice Master

Name _____

Practice
5-4

Dividing by Multiples of 10

In **1** through **6**, divide.

1. 20)467 — **23 R7**
2. 40)321 — **8 R1**
3. 80)813 — **10 R13**
4. 40)284 — **7 R4**
5. 90)648 — **7 R18**
6. 10)587 — **58 R7**

7. To drive from New York City, NY, to Los Angeles, CA, you must drive about 2,779 miles. If you drive 60 miles per hour , about how many hours would you spend driving?

About 46 hours

8. Suppose one bottle of paint can cover 20 tiles. You have 348 tiles. How many bottles of paint do you need to buy to cover all 348 tiles? Explain.

18 bottles; Sample answer: You must buy whole bottles and paint all tiles.

9. A group of 483 students is taking a field trip. One bus is needed for every 50 students. How many buses are needed?

10 buses

10. A decagon is a ten-sided figure. If a regular decagon has a perimeter of 114 centimeters, how long is each side of the figure?

(A) 11.4 cm B 14 cm C 114 cm D 124 cm

11. To figure out how many hours it will take to drive from his home to his cousin's house, a student divides 289 by 60 and estimates that it will take about 4.5 hours. Explain whether you think this is a reasonable estimate.

Sample answer: Yes, because 60 × 4 = 240, and 60 × 5 = 300. Since 289 is between 240 and 300, 4.5 is a good estimate.

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Reteaching
5-5

1-Digit Quotients

Find 436 ÷ 53.

To find the answer, first estimate the quotient.

Think: 400 ÷ 50 = 8 or 450 ÷ 50 = 9

Try 9:

```
    9
53)436
 −477
```

Write 9 in the ones place.
Multiply, 9 × 53 = 477.
477 > 436.
This estimate is too high.

Try 8:

```
    8
53)436
 −424
   12
```

Write 8 in the ones place.
Multiply, 8 × 53 = 424.
Subtract, 436 − 424 = 12.
Compare, 12 < 53. Write the remainder in the quotient.

436 ÷ 53 = 8 R12
Check:
8 × 53 = 424
424 + 12 = 436

Complete.

1. 32)245 — 7 R21
2. 64)332 — 5 R12
3. 51)489 — 9 R30

Divide. Check by multiplying.

4. 49)216 — 4 R20
5. 79)698 — 8 R66
6. 25)194 — 7 R19

7. Explain how you know the answer to the problem below has an error.

```
   2 R86
77)240
 −154
   86
```

The remainder is greater than the divisor.

Practice Master

Name _____

Practice
5-5

1-Digit Quotients

In **1** through **6**, find each quotient.

1. 37)120 — 3 R9
2. 39)342 — 8 R30
3. 62)338 — 5 R28
4. 42)284 — 6 R32
5. 82)599 — 7 R25
6. 55)474 — 8 R34

7. Solomon has $118. He wants to purchase concert tickets for himself and 5 friends. Each ticket costs $19. Does he have enough money? Explain.

Yes, 118 ÷ 19 = 6 R4, so he has enough money to buy 6 tickets.

8. Which problem will have the greater quotient, 376.0 ÷ 93 OR 376 ÷ 93.01? Explain how you know.

376.0 ÷ 93; Sample answer: The same number, 376, is divided by a smaller divisor.

9. Which is 458 ÷ 73?

A 5 R19 B 5 R20 C 6 R19 (D) 6 R20

10. A student solves the problem 354 ÷ 24. The student finds an answer of 13 R40. Explain how you can tell that the answer is incorrect just by looking at the remainder.

Sample answer: The remainder of 40 is greater than the divisor of 24, so an error must have been made.

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Reteaching
5-6

2-Digit Quotients

Find 866 ÷ 34.

Step 1: Round the divisor to the nearest ten. Look at the first digit in the divisor and the first digit in the dividend. What basic division fact is the best estimate of the quotient of these two numbers?

$34\overline{)866}$ → $30\overline{)866}$

8 ÷ 3 = 2 R2

Step 2: Use this fact to begin the quotient. Write it over the tens place.

$$\begin{array}{r} 2 \\ 34\overline{)866} \\ -68 \\ \hline 186 \end{array}$$

Multiply. 2 × 34 = 68.
Subtract and bring down the next digit in the dividend.

Step 3: What basic division fact is the best estimate of the next division? Use this fact and write it over the ones place.

$$\begin{array}{r} 25\ \text{R}16 \\ 34\overline{)866} \\ -68 \\ \hline 186 \\ -170 \\ \hline 16 \end{array}$$

Multiply. 5 × 34 = 170.
Subtract. Compare the remainder with the divisor.
If the remainder is less than the divisor, write it in the quotient.

Check.
25 × 34 = 850
850 + 16 = 866

Complete.

1. $39\overline{)437}$ 11 R ☐ **8**
2. $24\overline{)627}$ ☐☐ R3 **26**
3. $26\overline{)917}$ ☐☐ R ☐ **35 R7**

Divide. Check by multiplying.

4. $13\overline{)175}$ **13 R6**
5. $44\overline{)508}$ **11 R24**

6. April has 95 baseball cards. She wants to organize them on pages that hold 18 cards each. She has 5 pages. Does April have enough pages to organize all her cards?
No, she has room for only 90 cards.

Practice Master

Name _____

Practice
5-6

2-Digit Quotients

In **1** through **6**, find each quotient.

1. $14\overline{)413}$ **29 R7**
2. $29\overline{)634}$ **21 R25**
3. $35\overline{)768}$ **21 R33**
4. $19\overline{)401}$ **21 R2**
5. $45\overline{)942}$ **20 R42**
6. $26\overline{)503}$ **19 R9**

7. The school student council sponsored a Switch Day where students were able to switch classes every 20 minutes. The students are in school for 7 hours. If a student switched as often as possible, how many classrooms in all did that student visit? (Hint: There are 60 minutes in 1 hour.)
21 classrooms

8. 456 students participated in Switch Day. The students raised money for charity so that the principal would approve of the day. If the total amount of money raised was $912, and each student brought in the same amount of money, how much did each student raise?
$2.00

9. The total dinner bill at a buffet came out to $589 for 31 people. About how much was the buffet cost per person?

A $15.00 **B** $20.00 **C** $22.00 **D** $25.00

10. If you have a two-digit divisor and a three-digit dividend, does the quotient always have the same number of digits?
Sample answer: No, the quotient can have one or two digits.

Reteaching Master

Name _____

Reteaching
5-7

Estimating and Dividing with Greater Numbers

Find 8,037 ÷ 77.

You can use a calculator to divide large numbers.

Step 1: Estimate. Round the divisor and the dividend.
8,037 ÷ 77 →
8,000 ÷ 80 = 100

The quotient should be close to 100.

Step 2: Now, use a calculator to find the quotient.
8,037 ÷ 77

Step 3: Round the quotient to the required place. Remember, if the digit is 5 or more, add 1 to the rounding digit. If the digit is less than 5, leave the rounding digit alone.

Round the quotient to the nearest hundredth.
104.3766234 rounded to the nearest hundredth is 104.38. This is close to the original estimate, so the answer is reasonable.

Estimate first. Then use a calculator to find the quotient. Round to the nearest hundredth if necessary.

1. 78)3,796 — 48.67
2. 51)2,588 — 50.75
3. 38)3,914 — 103
4. 37)7,492 — 202.49
5. 46)6,725 — 146.20
6. 62)9,911 — 159.85

7. Is 5,309 ÷ 26 less than 20, greater than 20 but less than 200, or greater than 200?
Greater than 200

Practice Master

Name _____

Practice
5-7

Estimating and Dividing with Greater Numbers

Estimate first. Then use a calculator to find the quotient. Round to the nearest hundredth if necessary.

1. 53)6,324 — 119.32
2. 52)6,348 — 122.08
3. 86)31,309 — 364.06
4. 33)3,455 — 104.70

5. 17,496 ÷ 91 = 192.26
6. 25,214 ÷ 47 = 536.47
7. 2,312 ÷ 26 = 88.92
8. 4,895 ÷ 83 = 58.98

The Humphrey family decided to fly from San Francisco to New York City, and from there to Rome, New Delhi, and finally Tokyo.

9. It took the Humphrey family 6 hours to travel from San Francisco to New York. How many kilometers did they travel per hour?
690 km per h

Distances by Plane	
San Francisco to New York	4,140 km
New York to Rome	6,907 km
Rome to New Delhi	5,929 km
New Delhi to Tokyo	5,857 km

10. During the flight from New Delhi to Tokyo, flight attendants came through with snacks every 600 km. How many times did they come through?
SF_PR05_04_04
9 times

11. When the family arrived in New Delhi from Rome, the youngest son asked the pilot how fast he was flying the plane. The pilot told him about 847 km per hour. How many hours did it take the family to fly from Rome to New Delhi?
A 5 h **B** 6 h **C** 7 h **D** 8 h

12. Write a word problem that would require you to use 5,621 ÷ 23.
Check students' problems.

Reteaching Master

Name _____

Reteaching
5-8

Problem Solving: Missing or Extra Information

Aiko bought 6 red balloons and 11 clear balloons for a party. During the party, 3 clear balloons burst but none of the red balloons did. How many clear balloons did Aiko have after the party?

Read and Understand

What do you know?	Aiko bought 6 red balloons. Aiko bought 11 clear balloons. Three clear balloons burst during the party. No red balloons burst during the party.
What are you trying to find?	The number of clear balloons remaining after the party

Plan and Solve

Draw a picture of what you know.

Solve the problem.	$11 - 3 = 8$
Write the answer in a complete sentence.	Aiko had 8 clear balloons after the party.

Look Back and Check

Is your answer correct?	Yes, $8 + 3 = 11$

Look back at the items listed in "What you know."

1. What information helped you solve the problem?
   The number of clear balloons Aiko bought; the number of clear balloons that burst
2. What information did **NOT** help you solve the problem?
   The number of red balloons Aiko bought; no red balloons burst

Practice Master

Name _____

Practice
5-8

Problem Solving: Missing or Extra Information

Decide if each problem has extra or missing information. Solve if possible.

1. It takes 4 hours to drive from Boston to New York. Jordan has a meeting in New York at 2:00 P.M. Can she arrive at her meeting on time?
   Missing information: Where Jordan is and when she is leaving for the meeting.
2. Franco hikes 4 miles each day for 5 days. He carries 100 ounces of water with him. It takes him 1 hour to hike 4 miles. How many hours did he hike in 5 days?
   He hikes 5 hours. Extra information: How much water he carries with him
3. Write a real-world problem that gives extra information. Under the problem write what the extra information is.
   Check students' work. Answers will vary.
4. Jorge buys T-shirts for $4 each and paints designs on them. He sells the designed T-shirts for $7 each. What information is needed to find how much profit he makes in one week?
   - **A** The price of T-shirts at a store
   - **B** The color of the T-shirts that he buys
   - **C** The types of designs he draws on the T-shirts
   - **D** The number of T-shirts he sells in one week
5. Krista can type 60 words per minute. She wrote an essay by hand in 5 hours, and it is now 4 pages long and has 500 words in it. She wants to type up her essay. About how long will it take to type her essay? Write what the extra or missing information is. Then solve if possible.
   Extra info: Wrote it in 5 hours and it is 4 pages long. It will take her between 8 and 9 minutes to type her essay.