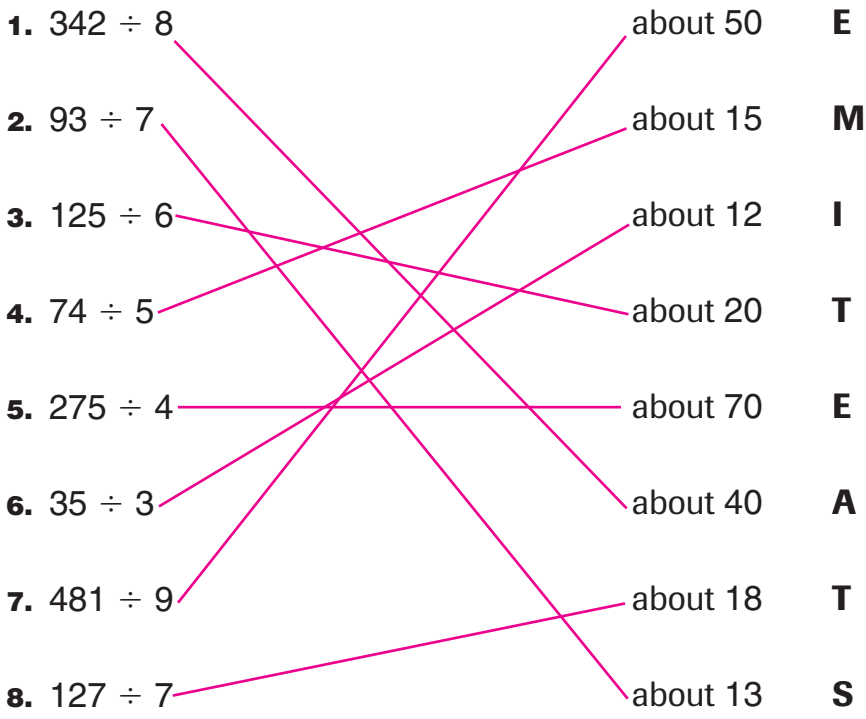
Name _____

Estimating Quotients

Match each quotient with its best estimate. Then write the letter of the estimate on the appropriate blank to answer the question below.



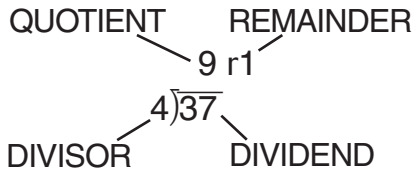
What did you do to find the missing word?

E	S	T	I	M	A	T	E
5	2	8	6	4	1	3	7

Name _____

Riddle Time

Use the clues to solve the riddles below. You will need to know the name for each part of a division equation. Use the division problem at the right as a reminder.



1. My divisor is 5.
I am greater than 4 × 5.
I am less than 5 × 5.
My remainder is 1.
What dividend am I?

21

2. My divisor is 9.
I am greater than 7 × 9.
I am less than 8 × 9.
My remainder is 7.
What dividend am I?

70

3. My divisor is 8.
I am less than 30.
I am greater than 3 × 8.
My remainder is 5.
What dividend am I?

29

4. My divisor is 6.
I am less than 60.
I am greater than 8 × 6.
I have no remainder.
What dividend am I?

54

5. My dividend is 50.
My remainder is 1.
I am an odd number.
What divisor am I?

7 or 49

6. My dividend is 8 times as large as my divisor.
I am an even number less than 15.
What quotient am I?

8

7. My remainder is 8.
My dividend is 80.
I am a 1-digit number.
What divisor am I?

9

8. My dividend is 24.
I am 2 more than my quotient.
I have no remainder.
What divisor am I?

6

9. Write Math Use Exercises 1–8 as models to write your own division number riddle. Check students' answers. Possible answer: My remainder is 1. My dividend is 61. My quotient is an odd, 2-digit number. What divisor am I? (4)

Name _____

Remainder Questions Possible answers are given.

Read each scenario. Use the scenario to write questions that would have the given answers.

1. There are 52 students in the fourth grade. Each minivan can hold 6 students. The students are going on a field trip.

8 How many minivans will be full?

9 How many minivans will be needed to hold all of the students?

4 How many students will be in the minivan that is not full?

2. Six friends are going on a hike. Becky made 64 ounces of trail mix.

$10\frac{4}{6}$ How many ounces of trail mix will each person get if Becky divides all the trail mix equally among the hikers?

4 Becky gives each hiker a whole number of ounces and eats the leftover trail mix herself. How many ounces of trail mix does Becky eat?

3. Write Math Why is it important to read division problems carefully before giving the answer?

Possible answer: there could be different answers depending on how the remainder should be interpreted.

Name _____

Dividend Riddles

Solve each riddle.

1. When divided by 5, I am 60. When divided by 6, I am 50. What number am I?

300

2. When divided by 3, I am 700. When divided by 7, I am 300. What number am I?

2,100

3. When divided by 8, I am 70. When divided by 7, I am 80. What number am I?

560

4. When divided by 7, I am 400. When divided by 4, I am 700. What number am I?

2,800

5. When divided by 6, I am 200. When divided by 4, I am 300. What number am I?

1,200

6. When divided by 8, I am 30. When divided by 6, I am 40. What number am I?

240

7. Stretch Your Thinking Find the sum of the six answers to the riddles. Write your own riddle so that the answer is this sum.

Possible answer: When divided by 8, I am 900. When divided by 9, I am 800. What number am I? Answer: 7,200

Name _____

Make the Best Estimate

One of the division expressions in columns A, B, and C is the best match for the Estimate column. Circle the best choice for each. Possible choices are given.

Estimate	A	B	C
1. 70	408 ÷ 7	8)545	816 ÷ 9
2. 80	3)251	342 ÷ 5	477 ÷ 7
3. 90	332 ÷ 5	8)628	9)780
4. 40	9)350	423 ÷ 8	538 ÷ 9
5. 100	410 ÷ 2	593 ÷ 6	4)849
6. 400	4)1,584	5)1,126	712 ÷ 3
7. 200	2,384 ÷ 5	3,006 ÷ 8	1,742 ÷ 9
8. 700	2,663 ÷ 5	6)3,411	7)5,026
9. 300	2)532	4)767	2)289
10. 120	628 ÷ 8	3)296	483 ÷ 4
11. 50	115 ÷ 4	4)198	317 ÷ 5
12. 20	8)274	221 ÷ 7	6)141
13. 900	8,250 ÷ 9	5,740 ÷ 8	2,992 ÷ 4
14. 150	6)909	8)1,040	7)881
15. 60	256 ÷ 6	189 ÷ 3	182 ÷ 5

16. Write Math What strategy did you use to help you choose the best match?

Possible answer: I used compatible numbers to estimate each quotient, and I chose the closest estimate as the best choice.

17. Stretch Your Thinking Create three of your own division expressions as estimates for Exercise 15. Circle the choice that has the best estimate.

Possible answer:

375 ÷ 6, 238 ÷ 6,

179 ÷ 2

Name _____

True or Not True?

The Associative Property of Multiplication states that when you change the grouping of factors, the product remains the same: $(3 \times 4) \times 5 = 12 \times 5$, or 60, and $3 \times (4 \times 5) = 3 \times 20$, or 60.

Is the Associative Property also true for division? Complete Exercises 1–4.

1. $(8 \div 4) \div 1 =$ 2 and $8 \div (4 \div 1) =$ 2

2. $(10 \div 2) \div 1 =$ 5 and $10 \div (2 \div 1) =$ 5

3. When you changed the grouping in Exercises 1 and 2, what happened to the quotient?

   The quotient stayed the same.

4. Now use the numbers 2, 4, and 8 to write and evaluate a division expression. Then change the grouping of the numbers and evaluate the new expression.

   $(8 \div 4) \div 2 = 2 \div 2$, or 1

   $8 \div (4 \div 2) = 8 \div 2$, or 4

5. When you changed the grouping in Exercise 3, what happened to the quotient?

   The quotient changed.

6. Write Math Is the Associative Property true for division? **Explain**.

   No. Possible explanation: since there is at least one example that shows it is not true, then the property is not true for division.

Name _____

Subtraction Situations

Each situation below involves repeated subtraction. Read each situation. Use the given information to solve the related division problem. Explain your reasoning.

1. There are 51 fourth-graders going on a field trip. One group of 16 students rides in one van. A second group of 16 students rides in a second van. A third group of 16 students rides in a third van. The 3 students who are left ride in a car.

Find the quotient. 51 ÷ 8

One group of 16 is equal to 2 groups of 8. Since 16 is subtracted 3 times, this would be the same as subtracting 8 six (3 × 2) times. There is a remainder of 3. So, for 51 ÷ 8, the quotient is 6 and the remainder is 3, or 6 r3.

2. Kate bakes 144 cookies for a bake sale. She places 3 cookies in one bag, 3 cookies in a second bag, and so on, until there are no cookies left. She has 48 bags of 3 cookies each.

Find the quotient. 144 ÷ 9

Three groups of 3 are equal to one group of 9. Since 3 is subtracted 48 times, this would be the same as subtracting 9 sixteen (48 ÷ 3) times. There is no remainder. So, 144 ÷ 9 = 16.

3. Write Math Describe how the given situations helped you solve the division problems.

Possible answer: since I knew how many times a factor or multiple of the divisor had been subtracted from the dividend, I used this information to find the number of times the divisor would be subtracted from the dividend.

Name _____

Special Delivery

Mailbox #2 only accepts letters with numbers that can be evenly divided by 2.
Mailbox #3 only accepts letters with numbers that can be evenly divided by 3.
Mailbox #5 only accepts letters with numbers that can be evenly divided by 5.

1. Deliver the letters by writing each number below the correct mailbox. Some letters will be undeliverable.

		458		41			129		236		625			
243			284			29		149		355			163	
		813		152			85		120		339			925

#2	#3	#5
284	813	355
120	129	925
236	339	85
152	243	120
458	120	625

2. Write Math Could any letter be delivered to all three mailboxes? **Explain** your reasoning.

Yes; possible explanation: 120 has no remainder when divided by 2, 3, and 5.

Name _____

Division Drying

To find the answer to the riddle, complete each division. Then use the KEY to find the answer to the riddle.

1. 78 ÷ 6

13

2. 58 ÷ 3

19 r1

3. 92 ÷ 4

23

4. 88 ÷ 7

12 r4

5. 57 ÷ 2

28 r1

6. 89 ÷ 5

17 r4

KEY:

A	D	E	L	O	T	U	V	W
13	23 r1	28 r1	17 r4	23	19 r1	17 r2	16 r2	12 r4

Riddle: The more I dry, the wetter I get. What am I?

A	T	O	W	E	L
1	2	3	4	5	6

7. Stretch Your Thinking Make up a new division problem for Exercise 2 so that when using the quotient and the key, the result will be the answer to this riddle: "What is the difference between SHELL and SHALL?"

Possible answer: 50 ÷ 3 is 16 r2; A VOWEL

Name _____

How Many Digits?

Circle how many digits will be in the quotient. Find the quotient to check that you are correct. Then, look at the riddle below. To answer the riddle, write the letter of the number you circled on the line above the exercise number.

1. 346 ÷ 2 = **173**

1 = P 2 = R (3 = N)

2. 108 ÷ 9 = **12**

1 = T (2 = A) 3 = C

3. 652 ÷ 4 = **163**

1 = L 2 = I (3 = H)

4. 210 ÷ 5 = **42**

1 = R (2 = S) 3 = N

5. 120 ÷ 8 = **15**

1 = S (2 = C) 3 = W

6. 162 ÷ 6 = **27**

1 = G (2 = E) 3 = J

7. 420 ÷ 7 = **60**

1 = C (2 = M) 3 = E

8. 444 ÷ 4 = **111**

1 = K 2 = E (3 = I)

What can run but cannot walk?

M	**A**	**C**	**H**	**I**	**N**	**E**	**S**
7	2	5	3	8	1	6	4

Name _____

What Is Left Over?

Find the "leftover" in each situation. Then use the code key to see which letters match each of your answers. Write the letters in order of the exercises to find the answer to the riddle.

1. Jude puts 6 lemons in each bag. If he has 170 lemons, how many will be left over?

2

2. Selena has a piece of ribbon that is 130 inches long. If she wants to make bracelets that are 9 inches long, how many inches of ribbon will be left over?

4

3. Justin prepares 229 hamburgers for a company picnic. If buns come in packages of 8, how many will be left over?

5

4. Mrs. Bradley has $204 to divide equally between her 7 grandchildren. How many dollars will she have left over?

1

5. Mr. White has 115 tulips for bouquets. He puts 9 tulips in each bouquet. How many tulips will be left over?

7

1	2	3	4	5	6	7	8
G	F	E	L	A	N	S	T

What flies around all day but never goes anywhere?

FLAGS

Name _____

It's a Riddle!

Solve each problem. Look for the answer in the riddle below and write the letter of the problem on the line. Not all letters will be used.

C	Maria takes 24 photos at the circus and 72 photos on her vacation. If each page in her scrapbook can hold 6 photos, how many pages can Maria fill? **16**	**I**	Carmen and Wayne sell 25 birdhouses at a craft fair. They share the money equally. If each birdhouse costs $14, how much money will Carmen and Wayne each receive? **$175**
R	José uses 3 flowers for each corsage he makes. He has orders for 18 corsages each from two different stores. How many flowers will he need? **108**	**L**	Mr. Davis sells sleeping bags. He has 30 red sleeping bags and 26 green sleeping bags to put on shelves. Each shelf can hold 8 sleeping bags. How many shelves can he fill? **7**
Y	Taren makes 62 chocolate chip cookies and 74 oatmeal cookies. If she places 8 cookies on a plate for the bake sale, how many plates will Taren need? **17**	**T**	Keisha bought 10 bags of apples. There are 15 apples in each bag. If Keisha repacks the apples into 5 bags, how many apples will be in each bag? **30**
N	Chan and his two sisters make and sell jewelry. They sell each piece of jewelry for $9 and agree to share the money equally. If they sell 38 pieces of jewelry in all, how much money will each person receive? **$114**	**E**	Linh orders 16 blueberry muffins and 24 cranberry muffins from a bakery. The bakery places 8 muffins in each package. How many packages will Linh have to pick up? **5**

Which city has no people?

E	**L**	**E**	**C**	**T**	**R**	**I**	**C**	**I**	**T**	**Y**
5	7	5	16	30	108	175	16	175	30	17