Name _____

Reteaching
5-1

Estimating Quotients: 2-Digit Divisors

You can use compatible numbers to estimate a quotient.

Find 1,759 ÷ 32.

Step 1: Find compatible numbers for 1,759 and 32.

32 rounds to 30.

Think: 18 can be divided evenly by 3.

1,800 is close to 1,759 and 30 is close to 32.

1,800 and 30 are compatible numbers.

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

Think: 1,800 ÷ 30 is the same as 180 tens ÷ 3 tens.

18 ÷ 3 = 6

18 tens ÷ 3 tens = 6 tens

So, 1,800 ÷ 30 = 60.

Step 3: Check for reasonableness.

60 × 30 = 1,800

So, a good estimate of 1,759 ÷ 32 is 60.

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

1. 2,983 ÷ 25 — About 100
2. 5,391 ÷ 77 — About 70
3. 2,403 ÷ 12 — About 200
4. 2,765 ÷ 42 — About 70
5. 1,347 ÷ 54 — About 27
6. 5,564 ÷ 91 — About 60

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

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

About three times as great

Student	Amount Saved
Percy	$1,256
Emily	$800
George	$2,024
James	$401
Bertha	$1,599

Name _____

Practice
5-1

Estimating Quotients: 2-Digit Divisors

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

1. 5,682 ÷ 81 About 70

2. 4,506 ÷ 93 About 50

3. 1,423 ÷ 69 About 20

4. 8,631 ÷ 10 About 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 26 students in a class. A teacher has 1,022 and passes them out to the class. Estimate the number of pencils each student will receive.

About 40 pencils

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 4,983 ÷ 12.

Sample answer: Use compatible numbers: 5,000 ÷ 10 = 500.

Name _____

Enrichment
5-1

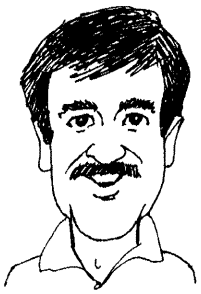
They Have Clues!

Each person below has information for you. Use it to write the best estimate from the box for each exercise.

Answer Box

$200 50 40 30 $20

My store donated 1,022 blankets. About how many should each of the 25 homeless shelters get?



1. 40 _____

Our team won the tournament. The prize was $3,362. About how much should each of 16 players get?

3. $20 _____

I have $2,293. About how much money should I give to each of my 12 grandchildren to save?

2. $200 _____

I have 1,988 paper clips. About how many should go into each of 43 boxes?

4. 50 _____

There are 14 bird cages at the zoo. About how many of 4,462 birds will go into each cage?

5. 30 _____

Name _____

Reteaching
5-2

Dividing Whole Numbers: 2-Digit Divisors

Find 8,365 ÷ 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?

$34\overline{)8{,}365} \longrightarrow 30\overline{)8{,}365}$

8 ÷ 3 = 2 R2

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

$$\begin{array}{r} 2 \\ 34\overline{)8{,}365} \\ -68\downarrow \\ \hline 156 \end{array}$$

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 tens place.

$$\begin{array}{r} 24 \\ 34\overline{)8{,}365} \\ -68 \\ \hline 156 \\ -136\downarrow \\ \hline 205 \end{array}$$

Multiply, 4 × 34 = 136. Subtract and bring down the next digit in the dividend.

Step 4: What basic division fact is the best estimate of the next division? Use this fact and write it over the ones place.

$$\begin{array}{r} 246\ \text{R1} \\ 34\overline{)8{,}365} \\ -68 \\ \hline 156 \\ -136 \\ \hline 205 \\ -204 \\ \hline 1 \end{array}$$

Multiply, 6 × 34 = 204. Subtract. Compare the remainder with the divisor. If the remainder is less than the divisor, write it in the quotient.

Check.
246 × 34 = 8,364
8,364 + 1 = 8,365

Complete.

1. $39\overline{)4{,}372}$ 112 R□ **4**
2. $24\overline{)6{,}315}$ □□□ R3 **263**
3. $26\overline{)9{,}289}$ □□□R□ **357 R7**

Divide. Check by multiplying.

4. $13\overline{)1{,}722}$ **132 R6**
5. $44\overline{)6{,}668}$ **151 R24**

6. April has 905 baseball cards. She wants to organize them on pages that hold 18 cards each. She has 50 pages. Does April have enough pages to organize all her cards?

No, she has room for only 900 cards.

Name _____

Practice
5-2

Dividing Whole Numbers: 2-Digit Divisors

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

1. $14\overline{)4,139}$ **295 R9**

2. $29\overline{)6,304}$ **217 R11**

3. $35\overline{)7,168}$ **204 R28**

4. $19\overline{)4,001}$ **210 R11**

5. $45\overline{)3,942}$ **87 R27**

6. $26\overline{)5,073}$ **195 R3**

7. The school student council sponsored a Switch Week where students were able to switch classes every 20 minutes. The students are in school for 7 hours each day, Monday through Friday. If a student switched as often as possible, how many times in all did that student switch classes? (Hint: There are 60 minutes in 1 hour.)

105 times

8. 456 students participated in Switch Week. The students raised money for charity so that the principal would approve of the week. If the total amount of money raised was $8,208, and each student brought in the same amount of money, how much did each student raise?

$18.00

9. The total dinner bill at a buffet came out to $1,240 for 62 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 four-digit dividend, does the quotient always have the same number of digits?

Sample answer: No, the quotient can have two or three digits.

Name ______________________

Park Areas

Enrichment 5-2

The chart at the right shows the area, in square miles, of four parks. In the exercises below, write your answers in square miles.

Park	Area (square miles)
A	1,176
B	1,007
C	1,042
D	1,112

1. If you divided Park A into 58 equal parts, each containing the same whole number of square miles, how large would each part be? How large would the remaining area be?

Each section would be 20 mi², with a remaining area of 16 mi².

2. If you divided Park B into 53 equal parts, each containing the same whole number of square miles, how large would each part be? How large would the remaining area be?

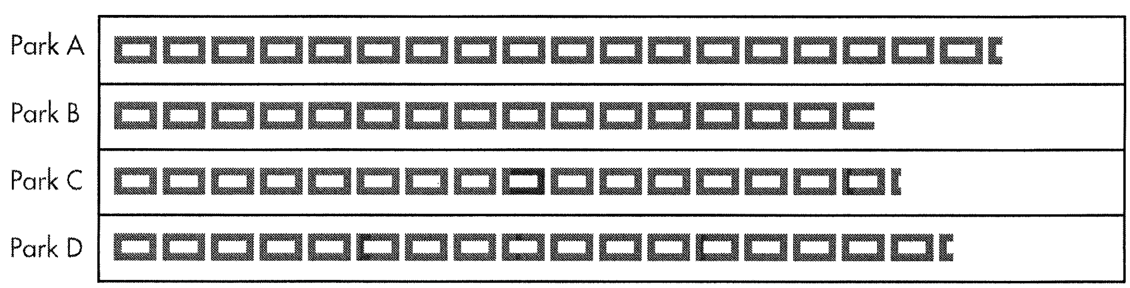
Each section would be 19 mi², with 0 remaining square miles

3. If you divided Park C into 16 equal parts, each containing the same whole number of square miles, how large would each part be? How large would the remaining area be?

Each section would be 65 mi², with a remaining area of 2 mi².

4. Complete the pictograph after choosing a picture to represent 64 mi². Be sure to represent any remaining area reasonably.

▭ = 64 mi^2 **Sample answer:**



Name _____

Reteaching
5-3

More Dividing Whole Numbers

Find 8,037 ÷ 77.

You can use estimation to check that a quotient is reasonable.

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, find the quotient.
8,037 ÷ 77

```
   104 R29
77)8,037
  -77↓
   33
  -0↓
   337
  -308
    29
```

Step 3: 104 R29 is close to the original estimate, 100, so the answer is reasonable.

Estimate first. Then find the quotient.

1. 78)3,796 — **48 R52**

2. 51)2,588 — **50 R38**

3. 38)3,914 — **103**

4. 37)7,492 — **202 R18**

5. 46)6,725 — **146 R9**

6. 62)9,911 — **159 R53**

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

Greater than 200

Name _____

Practice
5-3

More Dividing Whole Numbers

Estimate first. Then find the quotient.

1. 53)6,324 — 119 R17

2. 52)6,348 — 122 R4

3. 86)31,309 — 364 R5

4. 33)3,455 — 104 R23

5. 91)17,496 — 192 R24

6. 47)25,214 — 536 R22

7. 26)2,312 — 88 R24

8. 83)4,895 — 58 R81

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?

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.

Name _____

Enrichment
5-3

Teacher for a Day

You have been selected to be the teacher for a day. You are teaching division to your students. In the exercises below, explain how you can tell that each student has made an error. Then provide the correct quotient and remainder, if any.

1. Julie has written 4,411 ÷ 22 = 220.
   Sample answer: There must be a zero in the tens place. Q = 200, R = 11

2. Jorge has written 7,128 ÷ 36 = 202.
   Sample answer: There must be a one in the hundreds place. Q = 198

3. Jack has written 11,716 ÷ 58 = 212.
   Sample answer: There must be a zero in the tens place. Q = 202

4. Jamie has written 2,244 ÷ 22 = 120.
   Sample answer: There must be a zero in the tens place instead of the ones. Q = 102

Here are two divisibility rules to teach your students:

- A number is divisible by **8** if the last 3 digits are divisible by 8.
- A number is divisible by **9** if the sum of its digits is divisible by 9.

Are the following numbers divisible by 8 or 9, or both?

5. 202,008 **8**
6. 45,600 **8**
7. 30,030,003 **9**
8. 2,160 **Both**

Name _____

Reteaching
5-4

Dividing Decimals by a Whole Number

Find 196.8 ÷ 32.

Step 1

Put the decimal in the quotient right above the decimal in the dividend. Divide. Subtract.

$$\begin{array}{r} 6. \\ 32\overline{)\,196.8} \\ -192 \\ \hline 4 \end{array}$$

Step 2

Bring down the 8. Divide. Subtract.

$$\begin{array}{r} 6.1 \\ 32\overline{)\,196.8} \\ -192 \\ \hline 48 \\ -32 \\ \hline 16 \end{array}$$

Step 3

Annex a zero to the end of the dividend. Bring down the zero. Divide. Subtract.

$$\begin{array}{r} 6.15 \\ 32\overline{)\,196.80} \\ -192 \\ \hline 48 \\ -32 \\ \hline 160 \\ -160 \\ \hline 0 \end{array}$$

Remember, you can use estimation to see if your answer is reasonable: 180 ÷ 30 = 6. You can check your answer using multiplication: 32 × 6.15 = 196.8

Find the quotient.

1. $\begin{array}{r} 2. \\ 9\overline{)\,20.7} \\ -18 \\ \hline 2 \end{array}$ **2.3**

2. $\begin{array}{r} 3. \\ 7\overline{)\,22.61} \\ -21 \\ \hline \end{array}$ **3.23**

3. $\begin{array}{r} \$\ 3. \\ 12\overline{)\,\$44.40} \\ -\ 36 \\ \hline 8 \end{array}$ **$3.70**

4. $11\overline{)\,93.5}$ **8.5**

5. $30\overline{)\,1.56}$ **0.052**

6. $8\overline{)\,412.0}$ **51.5**

7. Writing to Explain Destiny said that 0.6 ÷ 2 = 0.3. Is she correct? Explain why or why not.

$$2\overline{)\,0.6}$$

0.3

Destiny is correct. . The dividend has a decimal, so the quotient has a decimal in the same place.

Name _____

Practice
5-4

Dividing Decimals by a Whole Number

Find the quotient.

1. $42.78 ÷ 3

$14.26

2. 85.5 ÷ 6

14.25

3. 3.4 ÷ 10

0.34

4. 9 ÷ 900

0.01

5. 59.6 ÷ 8

7.45

6. 188.4 ÷ 60

3.14

7. $1.24 ÷ 4

$0.31

8. 231 ÷ 42

5.5

9. 11.2 ÷ 25

0.448

10. Yolanda bought 8 tickets to a concert for $214. What was the cost of each ticket?

$26.75

11. **Algebra** Tony bought a 72-ounce box of dog biscuits. How many pounds of dog biscuits did he buy? (Remember: 1 pound = 16 ounces.)

A 4 pounds

(B) 4.5 pounds

C 90 pounds

D 4,320 pounds

12. **Number Sense** Vicky uses 42 beads for each necklace she makes. She bought a bag of 500 beads. How many necklaces can she make?

11 necklaces

13. **Writing to Explain** In what place is the first digit of the quotient for 12.88 ÷ 4? Tell how you know.

The first digit will be in ones place. 4 does not divide into 1, so you have to divide into 12.

Name _____

Enrichment
5-4

Fruit Market

Algebra

Howard went grocery shopping and bought different amounts of fruit. The table shows partial data for the kinds, prices, and amounts of fruit Howard bought. Complete the table and then answer the questions.

	Fruit	Number of Pounds	Price per Pound	Total Price
1.	Strawberries	4	$1.89	$ 7.56
2.	Cherries	6	$1.59	$ 9.54
3.	Bananas	12	$0.69	$ 8.28
4.	Raspberries	5	$2.01	$10.05

5. How does the price per pound of raspberries compare to the price per pound of strawberries?

Sample answer: A pound of raspberries is $0.12 more than a pound of strawberries.

6. How does the price per pound of cherries compare to the price per pound of bananas?

Sample answer: A pound of cherries is $0.90 more than a pound of bananas.

7. Howard is using the fruit to make a salad for a party. His friend said he would pay half the cost of the fruit. How much will each person pay?

Each will pay about $17.72.

8. How much does each pound of fruit salad cost to make?

Each pound costs about $1.31.

9. If each pound of fruit salad feeds two people, how many people will Howard's fruit salad feed?

54 people

Name _____

Reteaching
5-5

Dividing Decimals

When you divide by a decimal, you need to rewrite the dividend and the divisor so that you are dividing by a whole number.

Find 2.48 ÷ 0.8.

Step 1: Estimate. Use compatible numbers.

Step 2: Make the divisor a whole number. Multiply the divisor AND the dividend by the same power of 10.

Place the decimal in the quotient.

Step 3: Divide as you would with whole numbers. Remember that sometimes you may need to annex zeros to complete your division.

Step 4: Compare the quotient with your estimate.

240 ÷ 80 = 3

$0.8\overline{)2.48}$

$0.8 \times 10 = 8$
$2.48 \times 10 = 24.8$

$8\overline{)24.8}$ → $8\overline{)24.8}$ (3.1)

-24

8

-8

0

Since 3.1 is close to 3, the answer checks.

Find each quotient.

1. $0.2\overline{)1.5}$ = 7.5

Estimate: 16 ÷ 2 = 8

Multiply dividend and divisor by what power of 10? 10

Place the decimal point in the quotient.

Divide. How many zeros do you need to annex? 1

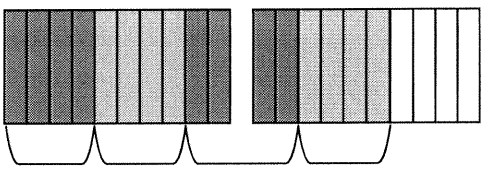
Compare the quotient to your estimate. Is the answer reasonable? Yes, 7.5 is close to 8.

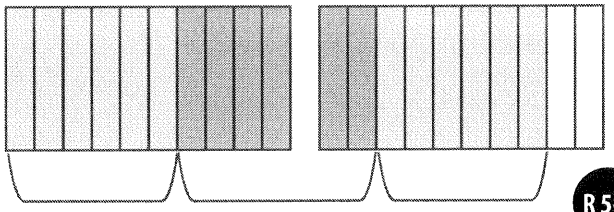
2. $0.6\overline{)0.36}$ = 0.6

3. $0.4\overline{)9.6}$ = 24

4. $0.75\overline{)0.3}$ = 0.4

5. **Draw a Picture** Fernando used tenths grids to draw this picture showing 1.6 ÷ 0.4 = 4. Draw a picture to show 1.8 ÷ 0.6. Write the quotient.





; 1.8 ÷ 0.6 = 3

Name _____

Practice
5-5

Dividing Decimals

Find each quotient.

1. $8.4 \div 0.3 =$ 28
2. $66.15 \div 0.63 =$ 105
3. $10.5 \div 1.5 =$ 7
4. $86 \div 0.4 =$ 215
5. $72.8 \div 1.4 =$ 52
6. $14.36 \div 0.4 =$ 35.9
7. $2.87 \div 0.01 =$ 287
8. $78.32 \div 0.22 =$ 356

9. **Reasoning** Why would multiplying both the dividend and the divisor by 10 sometimes make a problem easier to solve?

Sample answer: It is easier to divide whole numbers than decimals.

For each item, find how many times greater the 2002 cost is than the 1960 cost. Round your answer to the nearest hundredth.

Item	1960 Cost	2002 Cost
Movie admission	$0.75	$8.50
Regular popcorn	$0.25	$3.25
Regular drink	$0.35	$2.75

10. movie admission 11.33
11. regular popcorn 13
12. regular drink 7.86

13. Which item has increased the greatest amount of times from its original cost? Popcorn

14. Divide. Round to the nearest hundredth. $250.6 \div 1.6$

A 156

B 156.6

C 156.61

D 156.63

15. **Writing to Explain** Lynn and Randi got different quotients when they divided 3.60 by 0.12. Whose work is correct? Explain why.

Lynn

$$12\overline{)3.60} \quad 0.30$$

Randi

$$12\overline{)360.0} \quad 30.0$$

Sample answer: Randi is correct. You have to multiply both the divisor and the dividend by 100.

Name ______________________________

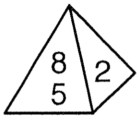
Pyramid Division

Enrichment
5-5

Number Sense

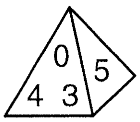
Use the digits on the pyramids to form the divisor and dividend for each quotient.

1.



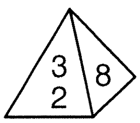
$$\begin{array}{r} 3.4 \\ 2.5\overline{)\,8.5} \end{array}$$

2.



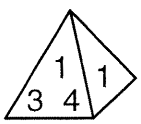
$$\begin{array}{r} 1.24 \\ 3.25\overline{)\,4.03} \end{array}$$

3.



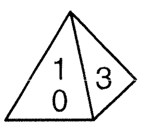
$$\begin{array}{r} 0.863 \\ 3\overline{)\,2.589} \end{array}$$

4.



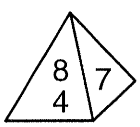
$$\begin{array}{r} 2.365 \\ 1.4\overline{)\,3.311} \end{array}$$

5.



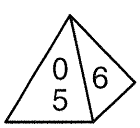
$10.8 \div 3 = 3.6$

6.



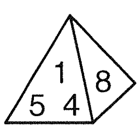
$81.4 \div 3.7 = 22$

7.



$5.6 \div 7.0 = 0.8$

8.



$5.418 \div 1.4 = 3.87$

Name _____

Reteaching
5-6

Evaluating Expressions with Decimals

To evaluate an expression, follow these steps:

1. Substitute or replace the variable with the value given in the problem.
2. Perform the operation or operations.
3. If there is more than one operation, use the order of operations.

Evaluate $5.1 + 3n$ for $n = 2.6$.

Replace n with 2.6.	$5.1 + 3 \times 2.6$
Multiply first.	$5.1 + 7.8$
Then add.	12.9

The value of the expression is 12.9.

Evaluate $x^2 + 2x - x \div 3$ for $x = 3.3$.

Replace x with 3.3.	$3.3^2 + 2 \times 3.3 - 3.3 \div 3$
Evaluate terms with exponents.	$10.89 + 2 \times 3.3 - 3.3 \div 3$
Then multiply and divide.	$10.89 + 6.6 - 1.1$
Then add and subtract.	16.39

The value of the expression is 16.39.

Evaluate each expression by using substitution.

1. $6n$; $n = 2.3$
$6 \times 2.3 = 13.8$

2. $3x - 8.1$; $x = 6.4$
$3 \times 6.4 - 8.1 = 11.1$

3. $r + 53.3 \div r$; $r = 6.5$
$6.5 + 53.3 \div 6.5 = 14.7$

For **4** through **6**, evaluate each expression for $x = 3.1$, $x = 6.2$, and $x = 8.3$.

4. $5x$
15.5; 31; 41.5

5. $8.2 + x \div 2$
9.75; 11.3; 12.35

6. $2x + 1.5x$
10.85; 21.7; 29.05

7. Juan rented a paddle board for $5.75 per hour plus a $17.50 fee. Write an expression that shows how much it will cost Juan to rent the paddle board for x hours. Then solve the expression for 3 hours.
$5.75x + 17.5$; 34.75

8. **Writing to Explain** Katie is solving the problem $12.6 + 8.3 \div q \times 5$ for $q = 3$. List in order the steps Katie should follow.
Sample answer: She should divide 8.3 by 3, multiply the result by 5, and then add 12.6.

Name _____

Practice
5-6

Evaluating Expressions with Decimals

Evaluate each expression by using substitution.

1. $n \times 8.62$; $n = 8$

$8 \times 8.62 = 68.96$

2. $x \div 3.2$; $x = 28.8$

$28.8 \div 3.2 = 9$

3. $5r + (r \div 3)$; $r = 5.1$

$5 \times 5.1 + (5.1 \div 3) = 27.2$

4. $7s - 4$; $s = 11.7$

$7 \times 11.7 - 4 = 77.9$

5. $2.94 + h \div 4$; $h = 21.6$

$2.94 + 21.6 \div 4 = 8.34$

6. $12.5 - g^2$; $g = 2.5$

$12.5 - 2.5^2 = 6.25$

For **7** through **9**, evaluate each expression for $x = 1.2$, $x = 6$, and $x = 9.6$.

7. $x \div 8$

0.15; 0.75; 1.2

8. $3x + 2.7$

6.3; 20.7; 31.5

9. $4x + 1.4x$

6.48; 32.4; 51.84

10. The table shows how much a frozen yogurt shop charges for its yogurt. Write an expression to show how much it costs to buy a small yogurt with no toppings and a large yogurt with x toppings. Then solve for buying a small yogurt with no toppings and a large yogurt with 3 toppings.

$7.5 + 0.35x$; \$8.55

Size of cup	Cost of cup	Cost per topping
Small	\$2.85	\$0.25
Medium	\$3.75	\$0.30
Large	\$4.65	\$0.35

11. What is the value of the expression $7.2 + 10.8 \div p$ for $p = 2.4$?

A 7.5 **B** 9 **C** 11.7 **D** 12.5

12. Writing to Explain Explain in words how you would evaluate the expression $5.1 + q \div 3.4$ for $q = 28.9$.

Sample answer: Replace q with 28.9. Divide 28.9 by 3.4 and then add 5.1 to the quotient.

Name _____

Enrichment
5-6

Sorting Bacteria

Number Sense

The table shows the diameters (in micrometers) of several types of known bacteria.

Bacteria	Diameter
A	2.0–5.0
B	0.501–1.0
C	0.5
D	0.2–0.49
E	0.15
F	0.1–0.25

1. Three bacteria have the following diameters: 0.34 micrometers, 0.42 micrometers, and 0.47 micrometers. Name the type of bacteria you think these are. Explain your answer.

   Bacteria D; They are all in the same size range.

2. Four unknown bacteria have the following diameters: 2.086 micrometers, 3.001 micrometers, 4.89 micrometers, and 0.89 micrometers. How would you classify these bacteria?

   The first 3 bacteria are Bacteria A. The fourth bacterium is Bacteria B.

3. Give sample diameters for two bacteria that would belong in the group labeled Bacteria F.

   Sample answer: 0.189 and 0.22 micrometers

4. You observe an entire colony of bacteria, each with a diameter of 0.149–0.1495 micrometers. How would you classify this colony? Explain your answer.

   The bacteria could be classified as E or F. Since the diameters are closer to 0.15, E is a better classification.

Name _____

Reteaching
5-7

Solving Equations with Decimals

To solve an equation, make the two sides of the equation equal with the variable alone on one side. You can use inverse operations and Properties of Equality.

Inverse operations are operations that "undo" each other. The **Division** and **Multiplication Properties of Equality** say you can multiply or divide both sides of an equation by the same number and the two sides remain equal to each other.

Use division to "undo" multiplication.

With numbers:

$3.2 \times 2.5 = 8$

$3.2 \times 2.5 \div \mathbf{2.5} = 8 \div \mathbf{2.5}$

$3.2 = 3.2$

With variables:

$q \times 1.8 = 10.8$

$q \times 1.8 \div \mathbf{1.8} = 10.8 \div \mathbf{1.8}$

$q = 6$

Use multiplication to "undo" division.

With numbers:

$12.8 \div 3.2 = 4$

$12.8 \div 3.2 \times \mathbf{3.2} = 4 \times \mathbf{3.2}$

$12.8 = 12.8$

With variables:

$r \div 7.2 = 6$

$r \div 7.2 \times \mathbf{7.2} = 6 \times \mathbf{7.2}$

$r = 43.2$

Evaluate each expression by using substitution.

1. $6n$; $n = 2.3$
$6 \times 2.3 = 13.8$

2. $3x - 8.1$; $x = 6.4$
$3 \times 6.4 - 8.1 = 11.1$

3. $r + 53.3 \div r$; $r = 6.5$
$6.5 + 53.3 \div 6.5 = 14.7$

For **4** through **6**, evaluate each expression for $x = 3.1$, $x = 6.2$, and $x = 8.3$.

4. $5x$
15.5; 31; 41.5

5. $8.2 + x \div 2$
9.75; 11.3; 12.35

6. $2x + 1.5x$
10.85; 21.7; 29.05

7. Writing to Explain Explain how you would solve the equation $3.2x = 38.4$ by describing the inverse operation and the property of equality needed.
Division is the inverse operation of multiplication. Divide both sides of the equation by 3.2 to get x by itself on one side of the equal sign. By the Division Property of Equality, x is equal to the quotient of 38.4 and 3.2.

Name _____

Practice
5-7

Solving Equations with Decimals

Explain how to get the variable alone in each equation.

1. $7n = 6.3$
Divide both sides by 7.

2. $x \div 3.2 = 8$
Multiply both sides by 3.2.

3. $67.3 = 3.2q$
Divide both sides by 3.2.

For **4** through **9**, solve each equation. Check your answers.

4. $x \div 8 = 5.6$
$x = 44.8$

5. $p \times 3.4 = 7.48$
$p = 2.2$

6. $4z = 50.8$
$z = 12.7$

7. $56 = 1.4t$
$t = 40$

8. $n \div 2.1 = 12$
$n = 25.2$

9. $5 = s \div 3.7$
$s = 18.5$

10. Sonja purchased some pens that cost 65 cents each. She spent a total of $9.10. How many pens did she purchase? Write an equation to describe the situation and solve.
$0.65x = 9.1$; 14 pens

11. Critical Thinking If $32n = 99.2$, then what is the value of the expression $8n$?

A 3.1 **B** 12.4 **(C)** 24.8 **D** 32

12. Which equation has the same solution as $m \div 2.6 = 3.5$?

(A) $m \div 3.5 = 2.6$ **C** $2.6m = 3.5$

B $m \div 9.1 = 2.6$ **D** $3.5m = 2.6$

13. Writing to Explain Tell how you would get the variable p alone on one side of the equation $32.4 = 4p$.
Sample answer: Since $4p$ means 4 times p, undo multiplication by dividing both sides of the equation by 4.

Name _____

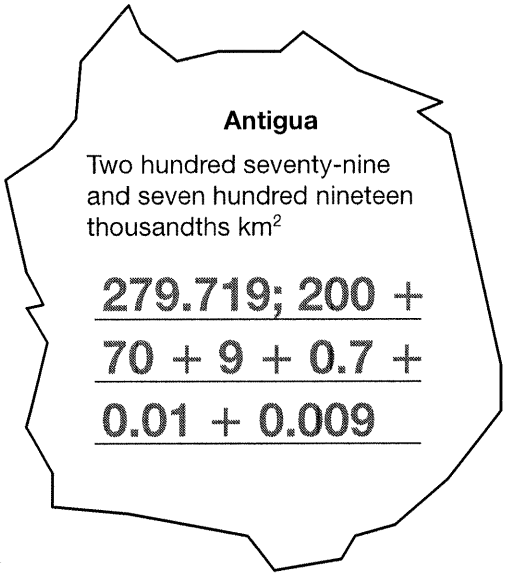
Enrichment
5-7

Decimal Geography

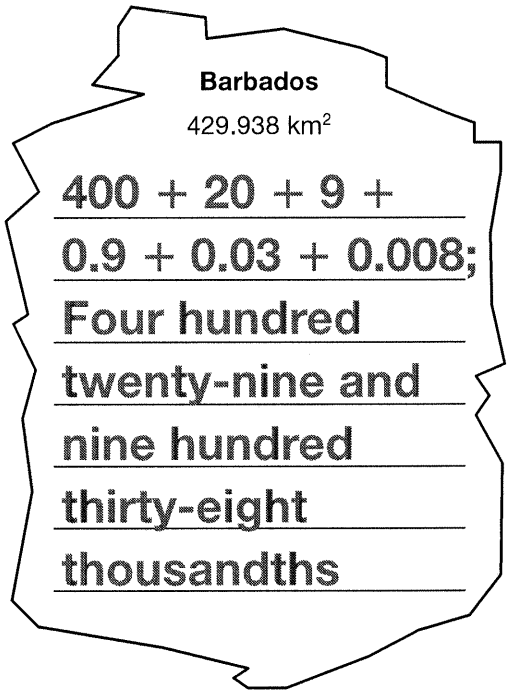
Data

The area in square kilometers of four Caribbean islands is shown below. The standard form, word form, or expanded form of each area is given. Write the area of each island in two other ways.

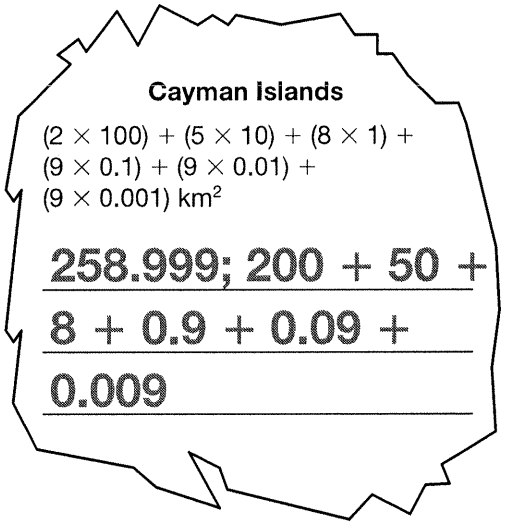
1.



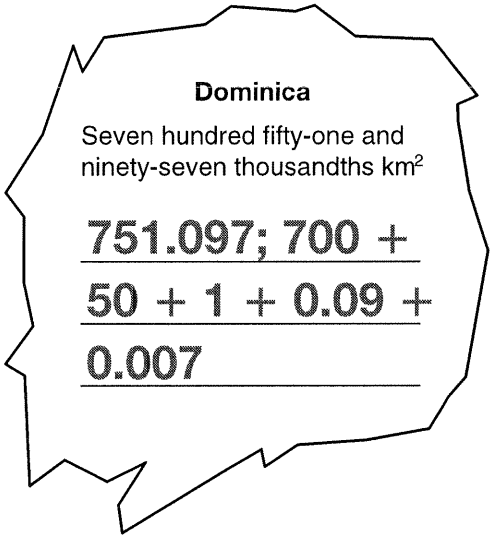
2.



3.



4.



Sample answers are given.

Name _____

Reteaching
5-8

Problem Solving: Multiple-Step Problems

Multiple-step problems often contain hidden questions. Sometimes you cannot answer the problem until you have answered these hidden questions.

James and Raul designed and printed T-shirts for school spirit week. James had 35 T-shirts printed and Raul had 3 times that number printed. It costs $3.25 each to print the T-shirts. How much did it cost altogether for James and Raul to print the T-shirts?

Hidden question: How many T-shirts did Raul have printed?

35 T-shirts $\times$ 3 = 105 T-shirts

Solve the problem:

35 + 105 = 140

140 $\times$ $3.25 = $455

Answer: It cost $455 to print the T-shirts.

1. The school store offers a discount for purchases made during lunchtime. The usual price of pencils is $0.25. The discount price is $0.15. How much can you save by buying 5 pencils during lunchtime?

   $0.50

2. Janine practiced piano for 1.25 hours each day Monday through Friday. Her sister Emily practiced twice as long as Janine on Wednesday, Thursday, and Friday. Who practiced more hours during the week?

   Emily

3. During a week-long dry spell, the water level in a pond decreased by 4 in. per day, except for two days when it decreased by half that amount. How much did the water level decrease in the pond in one week?

   24 in.

4. **Critical Thinking** What hidden questions did you have to answer to solve the above problem?

   Sample answer: Hidden Question #1: By how many in. did the pond decrease each day for two days? Hidden Question #2: On how many days did the pond decrease by 4 in.?

Name _____

Practice
5-8

Problem Solving: Multiple-Step Problems

1. At a school concert, the orchestra plays 8 songs that are 4.25 min long and 3 songs that are twice as long as each of the others. How long is the concert?

   59.5 min

2. A shoe store sold 53 pairs of shoes on Monday and 35 pairs on Tuesday. On Wednesday, the store sold as many pairs of shoes as they sold on Monday and Tuesday combined. They sold half as many on Thursday as Wednesday. How many pairs of shoes did the shoe store sell Monday through Thursday?

   220 pairs of shoes

3. **Write a Problem** Use a real-life situation to create a problem in which there is a hidden question. Then identify the hidden question and the answer. Sample answer: Tamika paid $0.07 per page for black and white photocopies and $0.10 per page for color photocopies. She made 18 black and white photocopies and one-half as many color photocopies. What was the total cost of the photocopies? Hidden question: How many color photocopies did she make? She paid $2.16 for the photocopies.

4. **Critical Thinking** Jackson is writing a report on California missions. He spent 2 hours researching missions on the Internet and three times as long writing the report. What is the hidden question if you want to find how many total hours Jackson spent on the report?

   A How many hours did he spend researching and writing the report?

   B How many hours did he spend researching the report?

   C How much longer did it take to write the report than research it?

   (D) How many hours did he spend writing the report?

5. **Writing to Explain** Explain how you can find the hidden questions in problem 2.

   The problem asks you to find the pairs of shoes sold Monday through Thursday. You know how many were sold on Monday and Tuesday, so you need to find how many were sold on Wednesday and Thursday.

Name _____

Enrichment
5-8

Quite a Move

Patterns

Use the first number and a positive and a negative power of ten to write both a multiplication and a division equation. The second number is the product or quotient.

1. 514.4 ⇒ 0.5144

Multiply: $514.4 \times 10^{-3} = 0.5144$

Divide: $514.4 \div 10^{3} = 0.5144$

2. 0.784 ⇒ 78,400

Multiply: $0.784 \times 10^{5} = 78{,}400$

Divide: $0.784 \div 10^{-5} = 78{,}400$

3. 0.00233 ⇒ 23.3

Multiply: $0.00233 \times 10^{4} = 23.3$

Divide: $0.00233 \div 10^{-4} = 23.3$

4. 10,014,899 ⇒ 1.0014899

Multiply: $10{,}014{,}899 \times 10^{-7} = 1.0014899$

Divide: $10{,}014{,}899 \div 10^{7} = 1.0014899$

5. 1.2589 ⇒ 125.89

Multiply: $1.2589 \times 10^{2} = 125.89$

Divide: $1.2589 \div 10^{-2} = 125.89$

6. 3,587.21 ⇒ 0.0358721

Multiply: $3{,}587.21 \times 10^{-5} = 0.0358721$

Divide: $3{,}587.21 \div 10^{5} = 0.0358721$

