Study Links

Common Core Units 4-6

Everyday Math Grade 4

Name: _____

Teacher: _____

Name Date Time

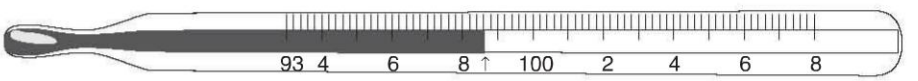
STUDY LINK 3•12

Unit 4: Family Letter

Decimals and Their Uses

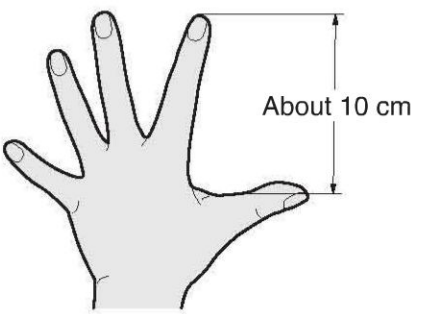
In previous grades, your child had many experiences with money written in decimal notation. In the next unit, the class will learn about other uses of decimals.

The class will focus on examples of decimals in everyday life. For example, some thermometers have marks that are spaced $\frac{2}{10}$ of a degree apart. These marks give a fairly precise measurement of body temperature, such as 98.6 °F.



Normal body temperature is about 98.6 °F.

Students will explore how decimals are used in measuring distances, times, and gasoline mileage.



We will also begin a yearlong measurement routine. Students will find their own "personal references," which they will use to estimate lengths, heights, and distances in metric units. For example, your child might discover that the distance from the base of his or her thumb to the tip of his or her index finger is about 10 centimeters and then use this fact to estimate other distances.

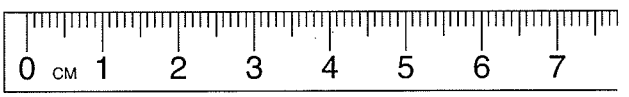
The World Tour will continue. In small groups, students will gather information about different countries in Africa and then share what they have learned with the class. Students can then compare and interpret data for a large number of countries from the same region.

Please keep this Family Letter for reference as your child works through Unit 4.

Vocabulary

Important terms in Unit 4:

centimeter (cm) In the metric system, a unit of length equivalent to $\frac{1}{100}$ of a meter; 10 millimeters; $\frac{1}{10}$ of a decimeter.



decimeter (dm) In the metric system, a unit of length equivalent to $\frac{1}{10}$ of a meter; 10 centimeters.

hundredths In base-10 *place-value* notation, the place in which a digit has a value equal to $\frac{1}{100}$ of itself; the second digit to the right of the decimal point.

meter (m) In the metric system, the unit of length from which other units of length are derived. One meter is the distance light will travel in a vacuum (empty space) in $\frac{1}{299,792,458}$ second; 100 centimeters; 10 decimeters.

millimeter (mm) A metric unit of length equivalent to $\frac{1}{1,000}$ of a meter; $\frac{1}{10}$ of a centimeter.

ONE Same as *whole.*

ones The place-value position in which a digit has a value equal to the digit itself.

personal measurement reference
A convenient approximation for a standard unit of measurement. For example, many people have thumbs that are approximately one inch wide.

place value A number writing system that gives a digit a value according to its position, or place, in the number. In our standard, base-10 system, each place has a value ten times that of the place to its right and 1 tenth the value of the place to its left.

1,000s	100s	10s	1s		0.1s	0.01s	0.001s
Thousands	Hundreds	Tens	Ones	.	Tenths	Hundredths	Thousandths

tens The place-value position in which a digit has a value equal to 10 times itself.

tenths In base-10 *place-value* notation, the place in which a digit has a value equal to $\frac{1}{10}$ of itself; the first digit to the right of the decimal point.

thousandths In base-10 *place-value* notation, the place in which a digit has a value equal to $\frac{1}{1,000}$ of itself; the third digit to the right of the decimal point.

whole (or ONE, or unit) In *Everyday Mathematics,* an entire object, collection of objects, or quantity being considered; 100%. Same as the ONE or unit whole.

Do-Anytime Activities

To work with your child on the concepts taught in this unit, try the interesting activities listed below. For each activity, discuss the use of decimals and the meanings of place values.

1. Have your child track the sports statistics of a favorite athlete.
2. Have your child compare prices of items in the supermarket.
3. Help your child create and use new personal reference measures.
4. Together, find statistics about countries in the World Tour. Look in newspapers and almanacs.

Building Skills through Games

In Unit 4, your child will play the following games.

Baseball Multiplication See *Student Reference Book,* pages 231 and 232. The game provides practice with multiplication facts.

Fishing for Digits See *Student Reference Book,* page 242. The game provides practice in identifying digits, the values of the digits, adding, and subtracting.

Name That Number See *Student Reference Book,* page 254. The game provides practice with using operations to represent numbers in different ways.

***Number Top-It* (Decimals)** See *Student Reference Book,* page 256. The game provides practice with comparing, ordering, reading, and identifying the value of digits in decimal numbers.

Polygon Pair-Up See *Student Reference Book,* page 258. The game provides practice in identifying properties of polygons.

Product Pile-Up See *Student Reference Book,* page 259. The game provides practice with multiplication facts.

Name Date Time

STUDY LINK 4•1

Place-Value Puzzles

Use the clues to write the digits in the boxes and find each number.

SRB 30 31

1.
- Write 5 in the tens place.
- Find $\frac{1}{2}$ of 24. Subtract 4. Write the result in the hundreds place.
- Add 7 to the digit in the tens place. Divide by 2. Write the result in the thousands place.
- In the ones place, write an even number greater than 2 that has not been used yet.

1,000s	100s	10s	1s

2.
- Divide 15 by 3. Write the result in the hundredths place.
- Multiply 2 by 10. Divide by 10. Write the result in the ones place.
- Write a digit in the tenths place that is 4 more than the digit in the hundredths place.
- Add 7 to the digit in the ones place. Write the result in the thousandths place.

100s	10s	1s		0.1s	0.01s	0.001s
			.			

3.
- Write the result of 6 * 9 divided by 18 in the ones place.
- Double 8. Divide by 4. Write the result in the thousandths place.
- Add 3 to the digit in the thousandths place. Write the result in the tens place.
- Write the same digit in the tenths and hundredths place so that the sum of all the digits is 14.

10s	1s		0.1s	0.01s	0.001s
		.			

Practice

Write true or false.

4. $6 * 5 = 15 + 15$ _____ **5.** $15 + 7 < 13 - 8$ _____ **6.** $72 / 9 > 9$ _____

Name Date Time

STUDY LINK 4•2

Decimals All Around

Find examples of decimals in newspapers, in magazines, in books, or on food packages. Ask people in your family for examples.

Write your numbers below or, if an adult says you may, cut them out and tape them on this page. Be sure to write what the numbers mean. For example, "The body temperature of a hibernating dormouse may go down to 35.6°F."

Practice

Write true or false.

1. 286 + 286 = 462 _____

2. 907 − 709 = 200 _____

3. 641 + 359 = 359 + 641 _____

4. 2,345 − 198 = 2,969 − 822 _____

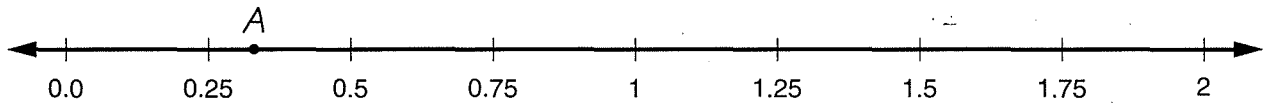
Name Date Time

STUDY LINK 4•3

Ordering Decimals

Mark the approximate locations of the decimals and fractions on the number lines below. Rename fractions as decimals as necessary.

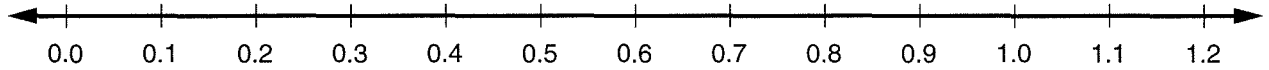
1.



A 0.33 *B* 1.6 *C* 0.7 *D* 1.01

E 1.99 *F* 1.33 *G* 0.1 *H* 0.8

2.



I 0.67 *J* 0.05 *K* $\frac{75}{100}$ *L* 0.49 *M* 0.99

N 1.15 *O* $\frac{25}{100}$ *P* 0.101 *Q* 0.55 *R* 0.88

Use decimals. Write 3 numbers that are between the following:

3. \$5 and \$6 \$_____ \$_____ \$_____

4. 4 centimeters and 5 centimeters _____ cm _____ cm _____ cm

5. 21 seconds and 22 seconds _____ sec _____ sec _____ sec

6. 8 dimes and 9 dimes \$_____ \$_____ \$_____

7. 2.15 meters and 2.17 meters _____ m _____ m _____ m

8. 0.8 meter and 0.9 meter _____ m _____ m _____ m

Practice

9. $x + 17 = 23$ $x =$ _____ **10.** $5 * n = 35$ $n =$ _____ **11.** $32 / b = 4$ $b =$ _____

Name Date Time

STUDY LINK 4•4

Railroad Tunnel Lengths

The table below shows the five longest railroad tunnels in the world.

Tunnel	Location	Year Completed	Length in Miles
Seikan	Japan	1988	33.46
Channel	France/England	1994	31.35
Moscow Metro	Russia	1979	19.07
London Underground	United Kingdom	1939	17.30
Dai-Shimizu	Japan	1982	13.98

Use estimation to answer the following questions.

1. Which two tunnels have a combined length of about 60 miles?

_____ and _____

2. Which of the following is closest to the combined length of all five tunnels? Choose the best answer.

- ⬭ Less than 90 miles
- ⬭ Between 90 and 130 miles
- ⬭ Between 130 and 160 miles
- ⬭ More than 160 miles

3. Explain how you solved Problem 2.

_____

_____

4. About how many miles longer is the Channel Tunnel than the Moscow Metro Tunnel?

About _____ miles

Try This

5. The Cascade Tunnel in Washington State is the longest railroad tunnel in the United States. It is about $\frac{1}{4}$ the length of the Seikan. About how long is the Cascade Tunnel?

About _____ miles

Practice

6. $190 + b = 200$ $b =$ _____ **7.** $g - 500 = 225$ $g =$ _____

Name Date Time

STUDY LINK 4•5

Addition and Subtraction of Decimals

Add or subtract. Show your work.

1. 96.45 + 23.96 = _____

2. 1.06 + 0.4 = _____

3. 9.87 − 4.69 = _____

4. 0.4 − 0.37 = _____

Write <, >, or = to make each statement true.

5. 2.78 + 9.1 _____ 3.36 + 8.49

6. 0.08 + 0.97 _____ 1.04 + 0.03

7. 13.62 − 4.9 _____ 9.4 − 1.33

8. 9.4 − 5.6 _____ 8.3 − 4.7

9. Name two 3-digit numbers whose sum is 6.54. _____ + _____ = 6.54

10. Name two 3-digit numbers whose difference is 1.52. _____ − _____ = 1.52

Practice

11. 13 = 7 + s s = _____

12. 8 * g = 24 g = _____

13. 36 / p = 6 p = _____

14. m / 9 = 8 m = _____

Name Date Time

STUDY LINK 4•6

Rising Grocery Prices

The table below shows some USDA grocery prices for the year 2000 and estimates of grocery prices for the year 2025.

SRB 34–37

Grocery Item	Price in 2000	Estimated Price in 2025
dozen eggs	$1.02	$1.78
loaf of white bread	$0.88	$3.31
pound of butter	$2.72	$7.36
gallon of milk	$2.70	$5.65

1. How much more is each item predicted to cost in 2025?

a. eggs _____ **b.** bread _____ **c.** butter _____ **d.** milk _____

2. The year is 2000. You buy bread and butter. You hand the cashier a $20 bill. How much change should you receive? _____

3. The year is 2025. You buy eggs and milk. You hand the cashier a $10 bill. How much change should you receive? _____

4. The year is 2000. You buy all 4 items. What is the total cost? _____

5. The year is 2025. You buy all 4 items. What is the total cost? _____

6. If the predictions are correct, how much more will you pay in 2025 for the 4 items than you paid in 2000? _____

7. Which item is expected to have the greatest price increase? _____

Explain your answer. _____

_____

_____

Practice

8. List the first ten multiples of 3. ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

9. List the first ten multiples of 7. ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

Name Date Time

STUDY LINK 4•7

Tenths, Hundredths, Thousandths

Complete the table. The big cube is the ONE.

SRB 27 28

Base-10 Blocks	Fraction Notation	Decimal Notation
1. □□□ |||		
2. □□□ .		
3. ||||| ||		
4. □ |||||		

Write each number in decimal notation.

5. $\frac{346}{1{,}000}$ _____

6. $\frac{92}{1{,}000}$ _____

7. $\frac{3}{1{,}000}$ _____

8. $2\frac{7}{10}$ _____

Write each of the following in decimal notation.

9. 536 thousandths _____

10. 23 hundredths _____

11. 7 and 8 thousandths _____

12. 4 tenths _____

Write < or >.

13. 0.407 _____ 0.074

14. 0.65 _____ 0.437

15. 0.672 _____ 0.7

16. 2.38 _____ 2.4

Practice

17. 6.05 + 1.24 = _____

18. _____ = 47.90 + 0.76

19. _____ = 8.71 − 2.78

20. 46.8 − 3.77 = _____

Name Date Time

STUDY LINK 4•8

Measuring in Centimeters

Measure each line segment to the nearest centimeter. Record the measurement in centimeters and meters.

SRB 128 129

Example: _____

a. About 5 centimeters **b.** About 0.05 meter

1. _____

a. About _____ centimeters **b.** About _____ meter

2. _____

a. About _____ centimeters **b.** About _____ meter

3. _____

a. About _____ centimeters **b.** About _____ meter

4. _____

a. About _____ centimeters **b.** About _____ meter

5. _____

a. About _____ centimeters **b.** About _____ meter

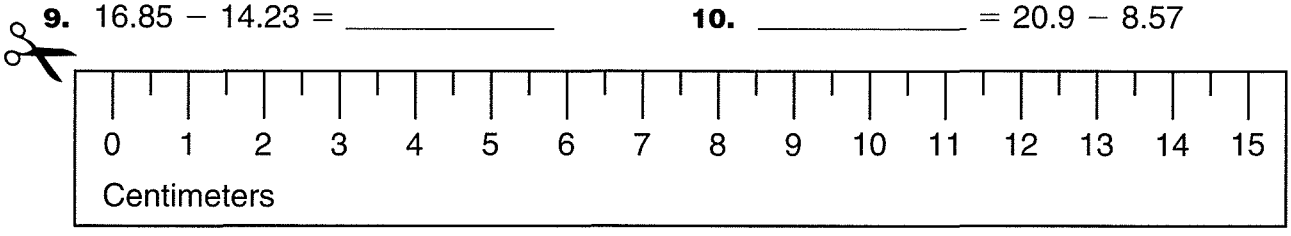
6. _____

a. About _____ centimeters **b.** About _____ meter

Practice

7. _____ = 10.06 + 10.04 **8.** 38.93 + 92.4 = _____

9. 16.85 − 14.23 = _____ **10.** _____ = 20.9 − 8.57



Name Date Time

STUDY LINK 4•9

Metric Measurements

1. Use your personal references to estimate the lengths of 4 objects in metric units. Then measure each object. Record your estimates and measurements.

Object	Estimated Length	Actual Length

Complete.

2. 18 cm = _____ mm

3. _____ cm = 40 mm

4. 3 m = _____ mm

5. 4 m = _____ cm

6. _____ m = 700 cm

7. 4.6 m = _____ cm

8. 7.94 m = _____ cm

9. _____ m = 450 cm

10. _____ m = 23 cm

11. 0.6 m = _____ cm

Measure each line segment to the nearest $\frac{1}{2}$ cm.

12. _____

About _____ centimeters

13. _____

About _____ centimeters

Practice

Insert < or >.

14. 0.68 _____ 0.32

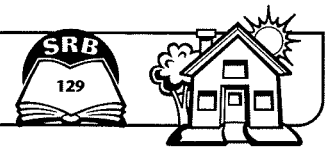
15. 9.13 _____ 9.03

16. 0.65 _____ 0.6

Name Date Time

STUDY LINK 4•10

Decimals and Metric Units

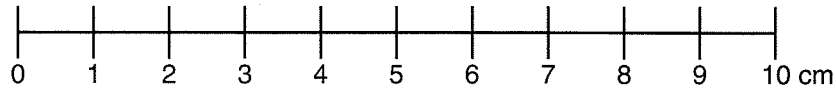


Symbols for Metric Units of Length
meter (m)
centimeter (cm)
decimeter (dm)
millimeter (mm)

1 decimeter

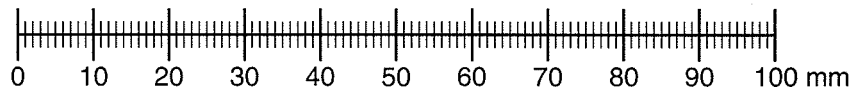
1 m = 10 dm 1 dm = 0.1 m

10 centimeters



1 m = 100 cm 1 cm = 0.01 m
1 dm = 10 cm 1 cm = 0.1 dm

100 millimeters



1 m = 1,000 mm 1 mm = 0.001 m
1 dm = 100 mm 1 mm = 0.01 dm
1 cm = 10 mm 1 mm = 0.1 cm

Use your tape measure or ruler to help you fill in the answers below.

1. a. 4.2 cm = 42 mm **b.** 64 mm = 6.4 cm **c.** 2.6 m = 260 cm

2. a. 6.5 cm = _____ mm **b.** 26 mm = _____ cm **c.** 6.1 m = _____ cm

3. a. 5 cm = _____ mm **b.** 30 mm = _____ cm **c.** 3 m = _____ cm

4. a. 80 cm = _____ mm **b.** 110 mm = _____ cm **c.** _____ m = 500 cm

5. a. 43 cm = _____ mm **b.** 98 mm = _____ cm **c.** _____ m = 34 cm

6. a. 0.6 cm = _____ mm **b.** 4 mm = _____ cm **c.** 5.2 m = _____ mm

Practice

7. 21, 49, and 56 are multiples of _____.

8. 45, 63, and 18 are multiples of _____.

Name Date Time

LESSON 4•11

Self Assessment

Progress Check 4

Think about each skill listed below. Assess your own progress by checking the most appropriate box.

Skills	I can do this on my own and explain how to do it.	I can do this on my own.	I can do this if I get help or look at an example.
1. Read decimals through thousandths.			
2. Write decimals through thousandths.			
3. Compare and order decimals through thousandths.			
4. Add decimals like these: $23.62 + $7.95 15.8 + 2.23			
5. Subtract decimals like these: $14.35 − $6.27 5.9 − 4.61			
6. Measure objects to the nearest centimeter.			
7. Measure objects to the nearest $\frac{1}{2}$ centimeter.			

Name Date Time

STUDY LINK 4•11

Unit 5: Family Letter

Big Numbers, Estimation, and Computation

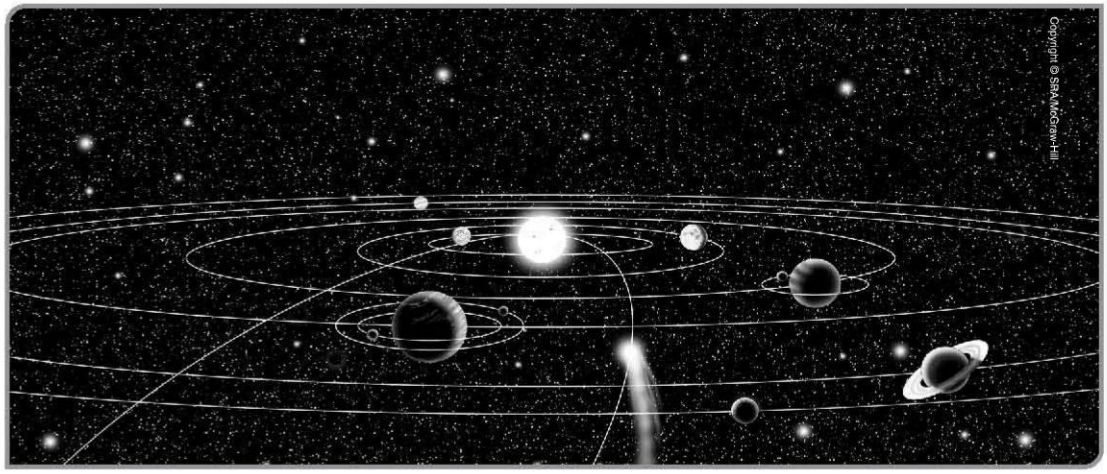
In this unit, your child will begin to multiply 1- and 2-digit numbers using what we call the **partial-products method.** In preparation for this, students will learn to play the game *Multiplication Wrestling.* Ask your child to explain the rules to you and play an occasional game together. While students are expected to learn the partial-products method, they will also investigate the **lattice multiplication method,** which students have often enjoyed in the past.

If your child is having trouble with multiplication facts, give short (five-minute) reviews at home, concentrating on the facts he or she finds difficult.

Another important focus in this unit is on reading and writing big numbers. Students will use big numbers to solve problems and make reasonable estimates. Help your child locate big numbers in newspapers and other sources, and ask your child to read them to you. Or, you can read the numbers and have your child write them.

Sometimes it is helpful to write big numbers in an abbreviated form so that they are easier to work with. One way is to use **exponents,** which tell how many times a number, called the base, is used as a factor. For example, 100,000 is equal to $10 * 10 * 10 * 10 * 10$. So 100,000 can be written as 10^5. The small raised 5 is called an exponent, and 10^5 is read as "10 to the fifth power." This will be most students' first experience with exponents, which will be studied in depth during fifth and sixth grades.

The class is well into the World Tour. Students are beginning to see how numerical information about a country helps them get a better understanding of the country—its size, climate, location, and population distribution—and how these characteristics affect the way people live. The next stop on the World Tour will be Budapest, Hungary, the starting point for an exploration of European countries. Encourage your child to bring to school materials about Europe, such as articles in the travel section of your newspaper, magazine articles, and travel brochures.



Please keep this Family Letter for reference as your child works through Unit 5.

Vocabulary

Important terms in Unit 5:

billion 1,000,000,000, or 10^9; 1,000 million.

estimate A close, rather than exact, answer; an approximate answer to a computation; a number close to another number.

exponent See *exponential notation.*

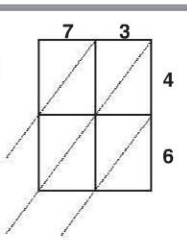
exponential notation A way to show repeated multiplication by the same factor. For example, 2^3 is exponential notation for $2 * 2 * 2$. The small, raised 3 is the exponent. It tells how many times the number 2, called the base, is used as a factor.

2^3 ← exponent
↑ base

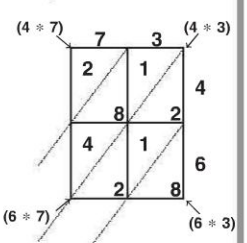
extended multiplication fact A multiplication fact involving multiples of 10, 100, and so on. In an extended multiplication fact, each factor has only one digit that is not 0. For example, $400 * 6 = 2{,}400$ and $20 * 30 = 600$ are extended multiplication facts.

lattice multiplication A very old way to multiply multidigit numbers. The steps below show how to find the product $46 * 73$ using lattice multiplication.

Step 1: Write the factors on the outside of the lattice.

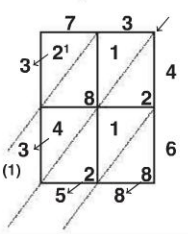


Step 2: Multiply each digit in one factor by each digit in the other factor.



Step 3: Add the numbers inside the lattice along each diagonal.

$46 * 73 = 3{,}358$



magnitude estimate A rough estimate of whether a number is in the 1s, 10s, 100s, 1,000s, and so on.

million 1,000,000, or 10^6; 1,000 thousand.

partial-products multiplication A way to multiply in which the value of each digit in one factor is multiplied by the value of each digit in the other factor. The final product is the sum of the partial products. The example shows how to use the method to find $73 * 46$.

Partial–Products Multiplication
Multiply each part of one factor by each part of the other factor. Then add the partial products.

$$\begin{array}{rr} & 73 \\ & * \ 46 \\ 40 * 70 \rightarrow & 2{,}800 \\ 40 * 3 \rightarrow & 120 \\ 6 * 70 \rightarrow & 420 \\ 6 * 3 \rightarrow & + \ 18 \\ & 3{,}358 \end{array}$$

power of 10 A whole number that can be written as a product using only 10s as factors. For example, 100 is equal to $10 * 10$, or 10^2. 100 is 10 to the second power or the second power of 10 or 10 squared.

round a number To approximate a number to make it easier to work with or to make it better reflect the precision of data. Often, numbers are rounded to a nearest *power of 10*. For example, 12,964 rounded to the nearest thousand is 13,000.

Do-Anytime Activities

To work with your child on concepts taught in this unit, try these interesting and rewarding activities:

1. To help your child practice handling big numbers, have him or her look up the distances from Earth to some of the planets in the solar system, such as the distance from Earth to Mars, to Jupiter, to Saturn, and so on.
2. Have your child look up the box-office gross of one or more favorite movies.
3. Help your child look up the populations and land areas of the state and city in which you live and compare them with the populations and areas of other states and cities.
4. Have your child locate big numbers in newspapers and other sources and ask him or her to read them to you. Or, you can read the numbers and have your child write them.

Building Skills through Games

In Unit 5, your child will practice multiplication skills and build his or her understanding of multidigit numbers by playing the following games. For detailed instructions, see the *Student Reference Book.*

Beat the Calculator See *Student Reference Book* page 233.
This game develops automaticity with extended multiplication facts.

High-Number Toss See *Student Reference Book* page 252.
This game reinforces understanding of place value.

Multiplication Wrestling See *Student Reference Book* page 253.
This game reinforces understanding of the partial-products method for multiplication.

Number Top-It See *Student Reference Book* page 255.
This game strengthens understanding of place value.

Product Pile Up See *Student Reference Book* page 259.
This game develops automaticity with multiplication facts.

Name Date Time

STUDY LINK 5•1

Multiplication/Division Puzzles

Solve the multiplication/division puzzles mentally. Fill in the blank boxes.

Examples:

*, /	300	2,000
2	600	4,000
3	900	6,000

*, /	80	50
4	320	200
8	640	400

1.

*, /	70	400
8		
9		

2.

*, /	5	7
80		
600		

3.

*, /	9	4
50		
7,000		

4.

*, /		600
7	3,500	
		2,400

5.

*, /		80
30	2,700	
		56,000

6.

*, /	4,000	
	36,000	
20		10,000

Make up and solve some puzzles of your own.

7.

*, /		

8.

*, /		

Practice

9. _____ = 0.56 + 0.92

10. _____ = 2.86 − 1.73

11. 19.11 − 10.94 = _____

12. _____ = 0.52 + 0.25

Name Date Time

STUDY LINK 5•2

Extended Multiplication Facts

Solve mentally.

1. 6 * 7 = _____

6 * 70 = _____

60 * 7 = _____

60 * 70 = _____

600 * 7 = _____

60 * 700 = _____

2. 9 * 3 = _____

9 * 30 = _____

90 * 3 = _____

90 * 30 = _____

900 * 3 = _____

90 * 300 = _____

3. 4 * 8 = _____

4 * 80 = _____

40 * 8 = _____

40 * 80 = _____

400 * 8 = _____

40 * 800 = _____

4. 5 * _____ = 15

30 * _____ = 150

30 * _____ = 1,500

_____ * 50 = 150

_____ * 500 = 1,500

30 * _____ = 15,000

5. _____ * 9 = 54

_____ * 90 = 540

_____ * 90 = 5,400

60 * _____ = 540

6 * _____ = 5,400

6 * _____ = 54,000

6. 8 * _____ = 40

8 * _____ = 4,000

80 * _____ = 4,000

_____ * 50 = 400

_____ * 5 = 400

_____ * 500 = 400,000

Practice

7. _____ = 6.3 + 8.7

8. 7.36 + 2.14 = _____

9. _____ = 9.74 − 5.48

10. _____ = 4.6 − 2.8

Name Date Time

STUDY LINK 5•3

Estimating Sums

For all problems, write a number model to estimate the sum.

- If the estimate is greater than or equal to 1,500, find the exact sum.
- If the estimate is less than 1,500, **do not** solve the problem.

1. 867 + 734 = _____

Number model:

_____

2. 374 + 962 + 488 = _____

Number model:

_____

3. 382 + 744 = _____

Number model:

_____

4. 581 + 648 + 366 = _____

Number model:

_____

5. 318 + 295 + 493 = _____

Number model:

_____

6. 845 + 702 = _____

Number model:

_____

7. 694 + 210 + 386 = _____

Number model:

_____

8. 132 + 692 + 803 = _____

Number model:

_____

9. 756 + 381 + 201 = _____

Number model:

_____

10. 575 + 832 = _____

Number model:

_____

Practice

11. 60 * 80 = _____

12. 30 * 70 = _____

13. 50 * 900 = _____

14. 40 * 800 = _____

Name Date Time

STUDY LINK 5•4

Estimating Products

SRB 184

Estimate whether the answer will be in the tens, hundreds, thousands, or more. Write a number model to show how you estimated. Then circle the box that shows your estimate.

1. A koala sleeps an average of 22 hours each day. About how many hours does a koala sleep in a year?

Number model: _____

10s	100s	1,000s	10,000s	100,000s	1,000,000s

2. A prairie vole (a mouselike rodent) has an average of 9 babies per litter. If it has 17 litters in a season, about how many babies are produced?

Number model: _____

10s	100s	1,000s	10,000s	100,000s	1,000,000s

3. Golfers lose, on average, about 5 golf balls per round of play. About how many golf balls will an average golfer lose playing one round every day for one year?

Number model: _____

10s	100s	1,000s	10,000s	100,000s	1,000,000s

4. In the next hour, the people in France will save 12,000 trees by recycling paper. About how many trees will they save in two days?

Number model: _____

10s	100s	1,000s	10,000s	100,000s	1,000,000s

Try This

5. How many digits can the product of two 2-digit numbers have? Give examples to support your answer.

_____

Practice

6. 60 * 7 = _____ **7.** 4 * 80 = _____ **8.** _____ = 200 * 9

Name Date Time

STUDY LINK 5•5

Multiplication

Multiply using the partial-product method. Show your work in the grid below.

SRB 18 184

1. 56 * 7 = _____ **2.** 8 * 275 = _____ **3.** _____ = 1,324 * 9

4. Maya goes to school for 7 hours each day. If she does not miss any of the 181 school days, how many hours will Maya spend in school this year?

a. Estimate whether the answer will be in the tens, hundreds, thousands, or more. Write a number model to show how you estimated. Circle the box that shows your estimate.

Number model: _____

10s	100s	1,000s	10,000s	100,000s	1,000,000s

b. Exact answer: _____ hours

5. The average eye blinks once every 5 seconds. Is that more than or less than a hundred thousand times per day? Explain your answer.

_____

_____

Practice

6. _____ = 495 + 7,389 **7.** 5,638 + 5,798 = _____

8. 3,007 − 1,749 = _____ **9.** _____ = 8,561 − 3,872

Name Date Time

STUDY LINK 5·6

More Multiplication

Multiply using the partial-products algorithm. Show your work.

SRB 18

1. 582 * 7 = _____

2. 56 * 30 = _____

3. 42 * 50 = _____

4. _____ = 27 * 18

5. _____ = 46 * 71

6. 340 * 50 = _____

Try This

7. _____ = 241 * 31

8. _____ = 768 * 49

Practice

9. _____ = 283 + 5,439

10. 6,473 + 4,278 = _____

11. 5,583 − 4,667 = _____

12. _____ = 9,141 − 6,372

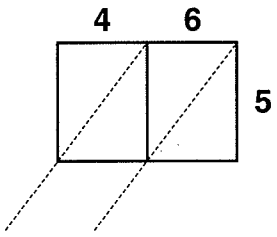
Name Date Time

STUDY LINK 5•7

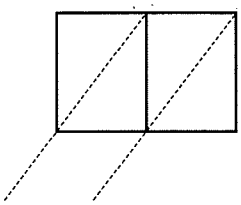
Lattice Multiplication

Use the lattice method to find the following products.

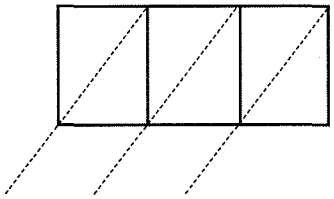
1. 5 * 46 = _____



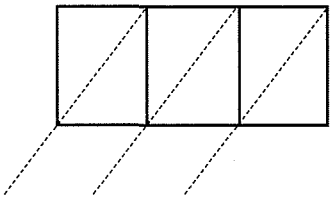
2. 8 * 67 = _____



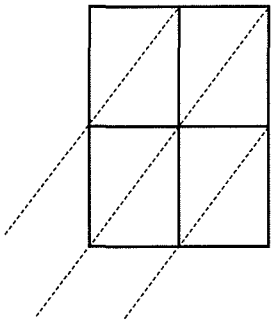
3. 7 * 836 = _____



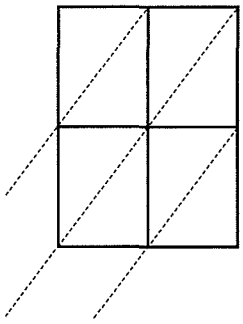
4. 4 * 329 = _____



5. 25 * 31 = _____



6. 49 * 52 = _____



7. Use the lattice method and the partial-products method to find the product.

84 * 78 = _____

Practice

8. _____ = 33.67 + 5.9

9. 68.4 + 5.82 = _____

10. 71.44 − 37.67 = _____

11. _____ = 101.06 − 29.91

Name Date Time

STUDY LINK 5•8

Place-Value Puzzle

Use the clues below to fill in the place-value chart.

Billions				Millions				Thousands				Ones		
100B	10B	1B	,	100M	10M	1M	,	100Th	10Th	1Th	,	100	10	1

1. Find $\frac{1}{2}$ of 24. Subtract 4. Write the result in the hundreds place.
2. Find $\frac{1}{2}$ of 30. Divide the result by 3. Write the answer in the ten-thousands place.
3. Find 30 ÷ 10. Double the result. Write it in the one-millions place.
4. Divide 12 by 4. Write the answer in the ones place.
5. Find 9 * 8. Reverse the digits in the result. Divide by 3. Write the answer in the hundred-thousands place.
6. Double 8. Divide the result by 4. Write the answer in the one-thousands place.
7. In the one-billions place, write the even number greater than 0 that has not been used yet.
8. Write the answer to 5 ÷ 5 in the hundred-millions place.
9. In the tens place, write the odd number that has not been used yet.
10. Find the sum of all the digits in the chart so far. Divide the result by 5, and write it in the ten-billions place.
11. Write 0 in the empty column whose place value is less than billions.
12. Write the number in words. For example, 17,450,206 could be written as "17 million, 450 thousand, 206."

_____

Practice

13. 74 * 5 = _____
14. _____ = 396 * 8
15. _____ = 92 * 18
16. 56 * 47 = _____

Name Date Time

STUDY LINK 5•9

Many Names for Powers of 10

Below are different names for powers of 10. Write the names in the appropriate name-collection boxes. Circle the names that do not fit in any of the boxes.

1,000,000	10,000	1,000
100	10	10 [100,000s]
10 [10,000s]	10^6	10 [1,000s]
10^3	10 * 10 * 10 * 10	one thousand
10^5	10 * 10 * 10 * 10 * 10	10 [10s]
10 * 10	ten	10^1
10 [tenths]	10^0	1

1. **100,000**

2. **10^2**

3. **1 million**

4. **one**

5. **10 * 10 * 10**

6. **10^4**

Practice

7. 63 * 7 = _____ **8.** _____ = 495 * 6 **9.** _____ = 97 * 53

Name Date Time

STUDY LINK 5•10

Rounding

SRB 182 183

1. Round the seating capacities in the table below to the nearest thousand.

Women's National Basketball Association Seating Capacity of Home Courts

Team	Seating Capacity	Rounded to the Nearest 1,000
Charlotte Sting	24,042	
Cleveland Rockers	20,562	
Detroit Shock	22,076	
New York Liberty	19,763	
Phoenix Mercury	19,023	
Sacramento Monarchs	17,317	
San Antonio Stars	18,500	
Seattle Storm	17,072	

2. Look at your rounded numbers. Which stadiums have about the same capacity?

_____

3. Round the population figures in the table below to the nearest million.

U.S. Population by Official Census from 1940 to 2000

Year	Population	Rounded to the Nearest Million
1940	132,164,569	
1960	179,323,175	
1980	226,542,203	
2000	281,421,906	

Source for both tables: The World Almanac and Book of Facts 2004

Practice

4. _____ = 692 * 6 **5.** _____ = 38 * 21 **6.** 44 * 73 = _____

Name Date Time

STUDY LINK 5•11

Comparing Data

SRB 4

This table shows the number of pounds of fruit produced by the top 10 fruit-producing countries in 2001. Read each of these numbers to a friend or a family member.

Country	Pounds of Fruit
Brazil	77,268,294,000
China	167,046,420,000
France	26,823,740,000
India	118,036,194,000
Iran	28,599,912,000
Italy	44,410,538,000
Mexico	34,549,912,000
Philippines	27,028,556,000
Spain	36,260,392,000
United States	73,148,598,000

1. Which country produced the most fruit?

_____

2. Which country produced the least fruit?

_____

3. For each pair, circle the country that produced more fruit.

a. India Mexico **b.** United States Iran

c. Brazil Philippines **d.** Spain Italy

4. Which two countries together produced about as much fruit as India?

_____

Practice

Estimate the sum. Write a number model.

5. 687 + 935 _____

6. 2,409 + 1,196 + 1,327 _____

7. 11,899 + 35,201 _____

Name Date Time

LESSON 5•12

Self Assessment

Progress Check 5

Think about each skill listed below. Assess your own progress by checking the most appropriate box.

Skills	I can do this on my own and explain how to do it.	I can do this on my own.	I can do this if I get help or look at an example.
1. Multiply numbers like these: 23 * 5 214 * 3			
2. Multiply numbers like these: 26 * 31 78 * 64			
3. Estimate sums like this: 493 + 262 is about 800			
4. Add and subtract decimals like these: 8.4 + 6.3 14.75 − 8.32			
5. Measure line segments in inches and centimeters.			
6. Complete a "What's My Rule?" table.			

Name Date Time

STUDY LINK 5•12

Unit 6: Family Letter

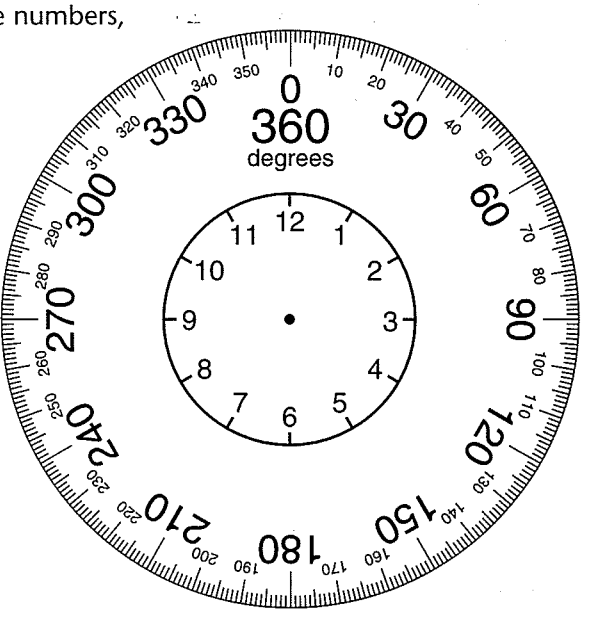
Division; Map Reference Frames; Measures of Angles

The first four lessons and the last lesson of Unit 6 focus on understanding the division operation, developing a method for dividing whole numbers, and solving division number stories.

Though most adults reach for a calculator to do a long-division problem, it is useful to know a paper-and-pencil procedure for computations such as 567 ÷ 6 and $15\overline{)235}$. Fortunately, there is a method that is similar to the one most of us learned in school but is much easier to understand and use. This method is called the **partial-quotients method.**

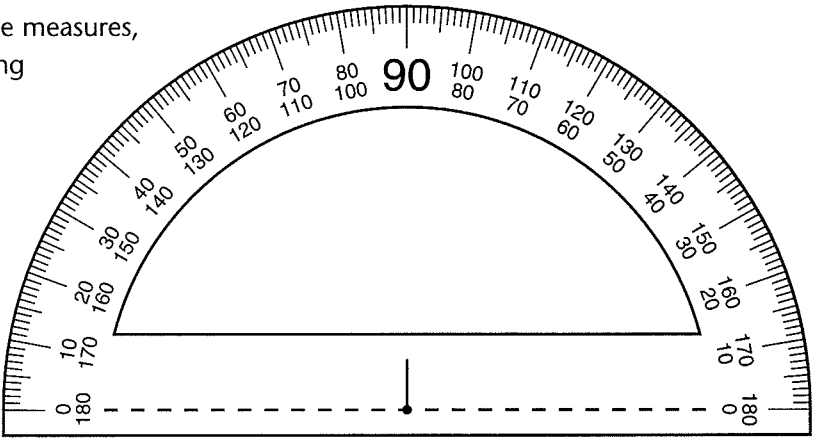
Students have had considerable practice with extended division facts, such as 420 ÷ 7 = 60, and questions, such as "About how many 12s are in 150?" Using the partial-quotients method, your child will apply these skills to build partial quotients until the exact quotient and remainder are determined.

This unit also focuses on numbers in map coordinate systems. For maps of relatively small areas, rectangular coordinate grids are used. For world maps and the world globe, the system of latitude and longitude is used to locate places.



Full-circle (360°) protractor

Because this global system is based on angle measures, the class will practice measuring and drawing angles with full-circle (360°) and half-circle (180°) protractors. If you have a protractor, ask your child to show you how to use this tool.



Half-circle (180°) protractor

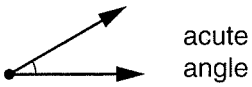
The class is well into the World Tour. Students have visited Africa and are now traveling in Europe. They are beginning to see how numerical information about a country helps them get a better understanding of the country—its size, climate, location, and population distribution—and how these characteristics affect the way people live. Your child may want to share with you information about some of the countries the class has visited. Encourage your child to take materials about Europe to school, such as magazine articles, travel brochures, and articles in the travel section of your newspaper.

Please keep this Family Letter for reference as your child works through Unit 6.

Vocabulary

Important terms in Unit 6:

acute angle An angle with a measure greater than 0° and less than 90°.



coordinate grid (also called a *rectangular coordinate grid*) A reference frame for locating points in a plane using *ordered number pairs,* or *coordinates.*

equal-groups notation A way to denote a number of equal-sized groups. The size of the groups is written inside square brackets and the number of groups is written in front of the brackets. For example, 3 [6s] means 3 groups with 6 in each group.

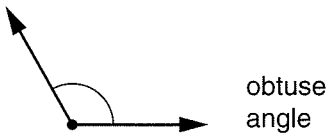
index of locations A list of places together with a reference frame for locating them on a map. For example, "Billings D3," indicates that Billings can be found within the rectangle where column 3 and row D of a grid meet on the map.

meridian bar A device on a globe that shows degrees of latitude north and south of the equator.

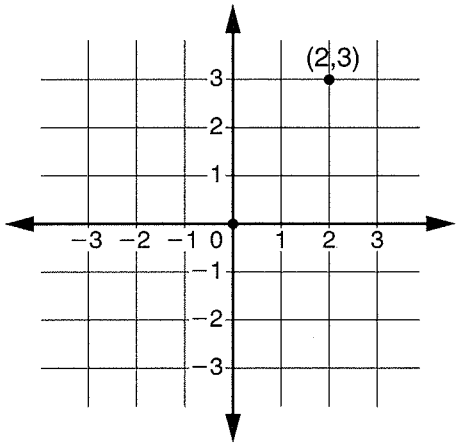
multiplication/division diagram A diagram used for problems in which a total is made up of several equal groups. The diagram has three parts: a number of groups, a number in each group, and a total number.

rows	chairs per row	chairs in all
6	4	24

obtuse angle An angle with a measure greater than 90° and less than 180°.



ordered number pair Two numbers that are used to locate a point on a *coordinate grid.* The first number gives the position along the horizontal axis, and the second number gives the position along the vertical axis. The numbers in an ordered pair are called *coordinates.* Ordered pairs are usually written inside parentheses: (2,3).



protractor A tool used for measuring or drawing angles. A half-circle protractor can be used to measure and draw angles up to 180°. A full-circle protractor can be used to measure and draw angles up to 360°. One of each type is on the Geometry Template.

quotient The result of dividing one number by another number. For example, in 35 ÷ 5 = 7, the quotient is 7.

reflex angle An angle with a measure greater than 180° and less than 360°.

straight angle An angle with a measure of 180°.

vertex The point at which the rays of an angle, the sides of a polygon, or the edges of a polyhedron meet. Plural is vertexes or vertices.

Do-Anytime Activities

To work with your child on concepts taught in this unit, try these interesting and rewarding activities:

1. Help your child practice division by solving problems for everyday situations.
2. Name places on the world globe and ask your child to give the latitude and longitude for each.
3. Encourage your child to identify and classify acute, right, obtuse, straight, and reflex angles in buildings, bridges, and other structures.
4. Work together with your child to construct a map, coordinate system, and index of locations for your neighborhood.

Building Skills through Games

In Unit 6, your child will practice using division and reference frames and measuring angles by playing the following games. For detailed instructions, see the *Student Reference Book.*

Angle Tangle See *Student Reference Book,* page 230.

This is a game for two players and will require a protractor. The game helps students practice drawing, estimating the measure of, and measuring angles.

Division Dash See *Student Reference Book,* page 241.

This is a game for one or two players. Each player will need a calculator. The game helps students practice division and mental calculation.

Grid Search See *Student Reference Book,* pages 250 and 251.

This is a game for two players, and each player will require *two* playing grids. The game helps students practice using a letter-number coordinate system and developing a search strategy.

Over and Up Squares See *Student Reference Book,* page 257.

This is a game for two players and will require a playing grid. The game helps students practice using ordered pairs of numbers to locate points on a rectangular grid.

Name Date Time

STUDY LINK 6•1

Multiplication/Division Number Stories

Fill in each Multiplication/Division Diagram. Then write a number model. Be sure to include a unit with your answer.

1. Trung wants to rearrange his collection of 72 animals on a shelf in his room. How many equal rows of 9 animals can he make?

rows	animals per row	animals in all

Number model: _____

Answer: _____

2. An average porcupine has about 30,000 quills. About how many quills would 4 porcupines have?

porcupines	quills per porcupine	quills in all

Number model: _____

Answer: _____

3. There are 168 calculators for the students at Madison School. A box holds 8 calculators. How many boxes are needed to hold all of the calculators?

boxes	calculators per box	calculators in all

Number model: _____

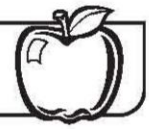
Answer: _____

Practice

4. _____ = 6.17 + 8.77 **5.** _____ = 12.13 − 4.44

Name Date Time

Multiplication/Division Diagrams



_____	_____ **per** _____	_____ **in all**

Number model: _____

Answer: _____

Summary number model: _____

_____	_____ **per** _____	_____ **in all**

Number model: _____

Answer: _____

Summary number model: _____

_____	_____ **per** _____	**total** _____

Number model: _____

Answer: _____

Summary number model: _____

Name Date Time

STUDY LINK 6•2

Equal-Grouping Division Problems

For Problems 1–3, fill in the multiples-of-10 list if it is helpful. If you prefer to solve the division problems in another way, show your work.

1. The community center bought 228 juice boxes for a picnic. How many 6-packs is that?

10 [6s] = _____ Number model: _____

20 [6s] = _____ Answer: _____ 6-packs

30 [6s] = _____

40 [6s] = _____

50 [6s] = _____

2. There are 8 girls on each basketball team. There are 184 girls in the league. How many teams are there?

10 [8s] = _____ Number model: _____

20 [8s] = _____ Answer: _____ teams

30 [8s] = _____

40 [8s] = _____

50 [8s] = _____

3. How many 3s are in 142?

10 [3s] = _____ Number model: _____

20 [3s] = _____ Answer: _____

30 [3s] = _____

40 [3s] = _____

50 [3s] = _____

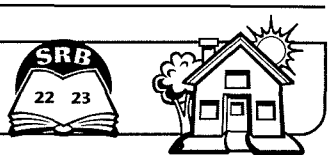
Practice

4. _____ = 661 * 4 **5.** 13 * 96 = _____ **6.** _____ = 59 * 82

Name Date Time

STUDY LINK 6•3

Division



1. Bernardo divided a bag of 83 marbles evenly among five friends and himself. How many marbles did each get?

Number model: _____

Answer: _____ marbles

How many marbles are left over?

_____ marbles

2. The carnival committee has 360 small prizes to share equally with 5 carnival booths. How many prizes will each booth get?

Number model: _____

Answer: _____ prizes

How many prizes are left over?

_____ prizes

3. $4\overline{)91}$ Answer: _____

4. 427 / 8 Answer: _____

Practice

5. _____ = 34.96 + 1.58

6. _____ = 300.2 + 2.378

7. 43.27 − 12.67 = _____

8. 74.6 − 31.055 = _____

Name Date Time

STUDY LINK 6•4

Interpreting Remainders

SRB 179

1. Mrs. Patel brought a box of 124 strawberries to the party. She wants to divide the strawberries evenly among 8 people. How many strawberries will each person get?

Picture:

Number model: _____

Answer: _____ strawberries

What did you do about the remainder? Circle the answer.

A. Ignored it

B. Reported it as a fraction or decimal

C. Rounded the answer up

Why? _____

_____

_____

2. Mr. Chew has a box of 348 pens. He asks Maurice to divide the pens into groups of 16. How many groups can Maurice make?

Picture:

Number model: _____

Answer: _____ groups

What did you do about the remainder? Circle the answer.

A. Ignored it

B. Reported it as a fraction or decimal

C. Rounded the answer up

Why? _____

_____

_____

Practice

3. $68 \div 7 =$ _____

4. _____ $= 74 \div 4$

5. $\frac{468}{9} =$ _____

6. $3\overline{)95} =$ _____

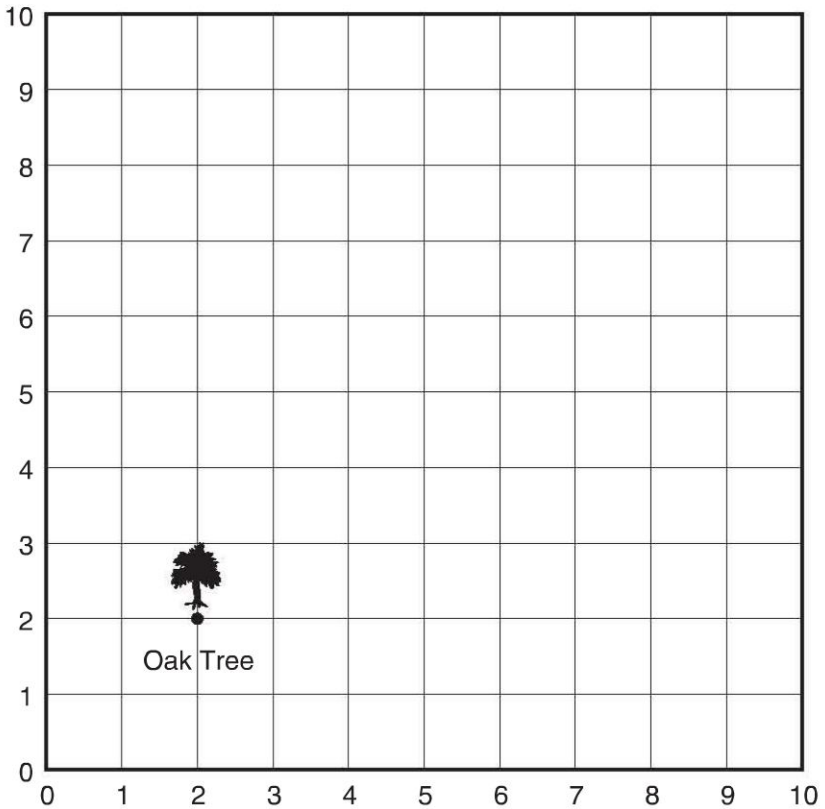
Name Date Time

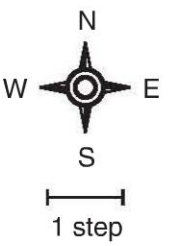
STUDY LINK 6•5

Treasure Hunt

Marge and her friends are playing Treasure Hunt. Help them find the treasure. Follow the directions. Draw the path from the oak tree to the treasure. Mark the spot where the treasure is buried.

1. Start at the dot under the oak tree; face north. Walk 4 steps.
2. Make a quarter turn, clockwise. Walk 5 steps.
3. Face south. Walk 2 steps.
4. Face east. Walk $2\frac{1}{2}$ steps.
5. Make a $\frac{3}{4}$ turn, clockwise. Walk 5 steps.
6. Make a $\frac{3}{4}$ turn, clockwise. Walk $6\frac{1}{2}$ steps.
7. Make an X to mark the spot where you end.





Practice

8. $88 \div 3 =$ _____

9. _____ $= 71 \div 6$

10. _____ $= 603 / 7$

11. $934 / 5 =$ _____

Name Date Time

STUDY LINK 6•6

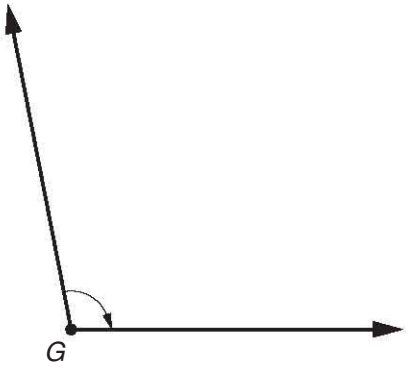
Measuring Angles

SRB 141 142

First estimate and then use your full-circle protractor to measure each angle.

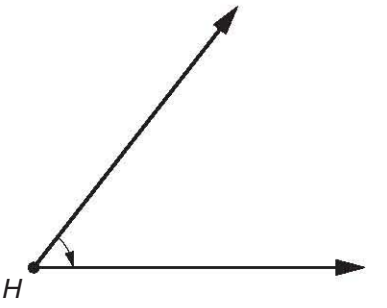
1. This angle measures _____ (>, <) 90°.

measure of ∠*G*: _____°



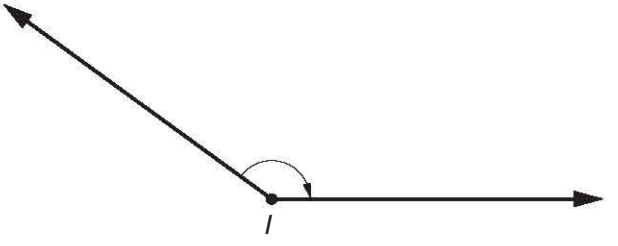
2. This angle measures _____ (>, <) 90°.

measure of ∠*H*: _____°



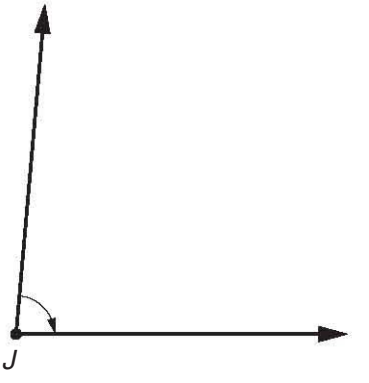
3. This angle measures _____ (>, <) 90°.

measure of ∠*I*: _____°



4. This angle measures _____ (>, <) 90°.

measure of ∠*J*: _____°



Try This

5. On the back of this page, draw and label angles with the following degree measures:

∠*ABC* 78° ∠*DEF* 145° ∠*GHI* 213° ∠*JKL* 331°

Practice

6. _____ = 96 ÷ 4

7. 66 ÷ 8 = _____

8. _____ = 314 ÷ 2

9. 928 ÷ 5 = _____

Name Date Time

Angle Add-Up

Materials
- ☐ number cards 1–8 (4 of each)
- ☐ number cards 0 and 9 (1 of each)
- ☐ dry-erase marker
- ☐ straightedge
- ☐ full-circle protractor (transparency of *Math Masters,* p. 439)
- ☐ *Angle Add-Up* Record Sheet (*Math Masters,* p. 509)

Players 2

Skills
- ◆ Drawing angles of a given measure
- ◆ Recognizing angle measures as additive
- ◆ Solving addition and subtraction problems to find the measures of unknown angles

Objective To score the most points in 3 rounds.

Directions

1. Shuffle the cards and place the deck number-side down on the table.
2. In each round, each player draws the number of cards indicated on the Record Sheet.
3. Each player uses the number cards to fill in the blanks and form angle measures so the unknown angle measure is as large as possible.
4. Players add or subtract to find the measure of the unknown angle and record it in the circle on the Record Sheet. The measure of the unknown angle is the player's score for the round.
5. Each player uses a full-circle protractor, straightedge, and marker to show that the angle measure of the whole is the sum of the angle measures of the parts.
6. Players play 3 rounds for a game. The player with the largest total number of points at the end of the 3 rounds wins the game.

Name Date Time

Angle Add-Up Example

Example: In Round 1, Suma draws a 2, 7, 1, and 5. She creates the angle measures 51° and 72° and records them on her record sheet.

Round 1:
Draw 4 cards.

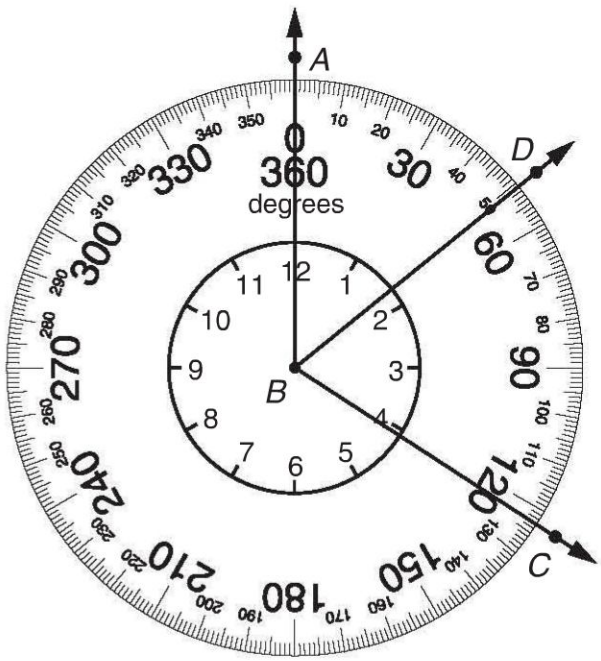
$$\underset{m\angle ABD}{5\ 1^\circ} + \underset{m\angle DBC}{7\ 2^\circ} = \underset{m\angle ABC}{\bigcirc^\circ}$$

Using addition, Suma finds the sum of the measures of angles *ABD* and *DBC*. She records the measure of angle *ABC* on her record sheet and scores 123 points for the round.

Round 1:
Draw 4 cards.

$$\underset{m\angle ABD}{5\ 1^\circ} + \underset{m\angle DBC}{7\ 2^\circ} = \underset{m\angle ABC}{123^\circ}$$

Suma uses her full-circle protractor to show that m∠*ABD* + m∠*DBC* = m∠*ABC*.



Name Date Time

Angle Add-Up Record Sheet

Game 1

Round 1:
Draw 4 cards.

_____ _____ ° + _____ _____ ° = ○ °

m∠*ABD* m∠*DBC* m∠*ABC*

Round 2:
Draw 2 cards.

_____ _____ ° + ○ ° = 90°

m∠*ABD* m∠*DBC* m∠*ABC*

Round 3:
Draw 2 cards.

○ ° + _____ _____ ° = 180°

m∠*ABD* m∠*DBC* m∠*ABC*

Total Points = _____

Game 2

Round 1:
Draw 4 cards.

_____ _____ ° + _____ _____ ° = ○ °

m∠*ABD* m∠*DBC* m∠*ABC*

Round 2:
Draw 2 cards.

_____ _____ ° + ○ ° = 90°

m∠*ABD* m∠*DBC* m∠*ABC*

Round 3:
Draw 2 cards.

○ ° + _____ _____ ° = 180°

m∠*ABD* m∠*DBC* m∠*ABC*

Total Points = _____

Name Date Time

STUDY LINK 6•7

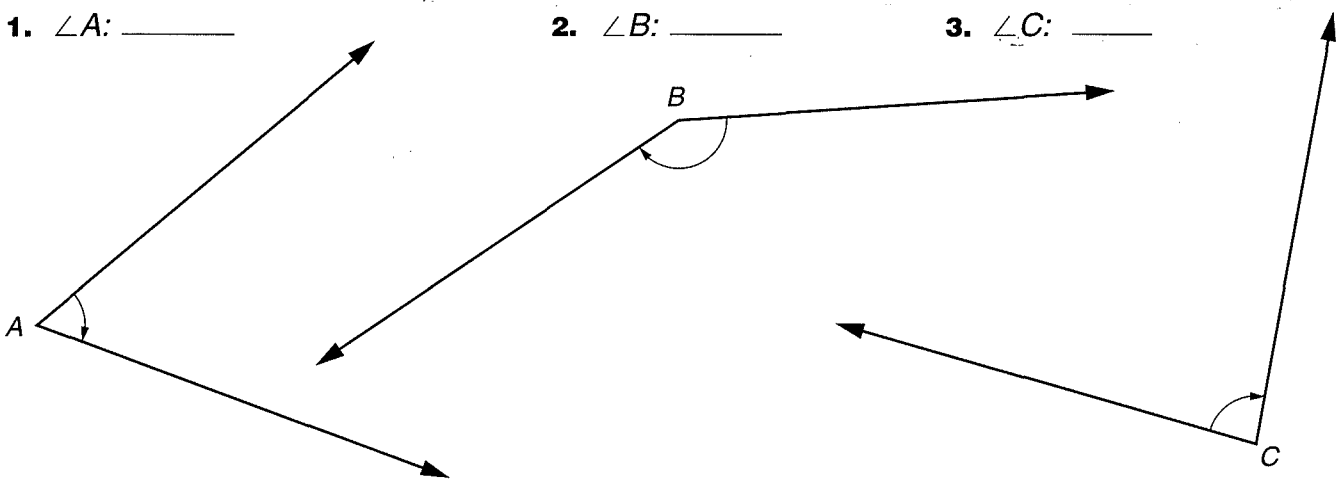
Measuring Angles with a Protractor

First estimate whether the angles measure more or less than 90°. Then use a half-circle protractor to measure them.

1. ∠*A*: _____ °

2. ∠*B*: _____ °

3. ∠*C*: _____ °

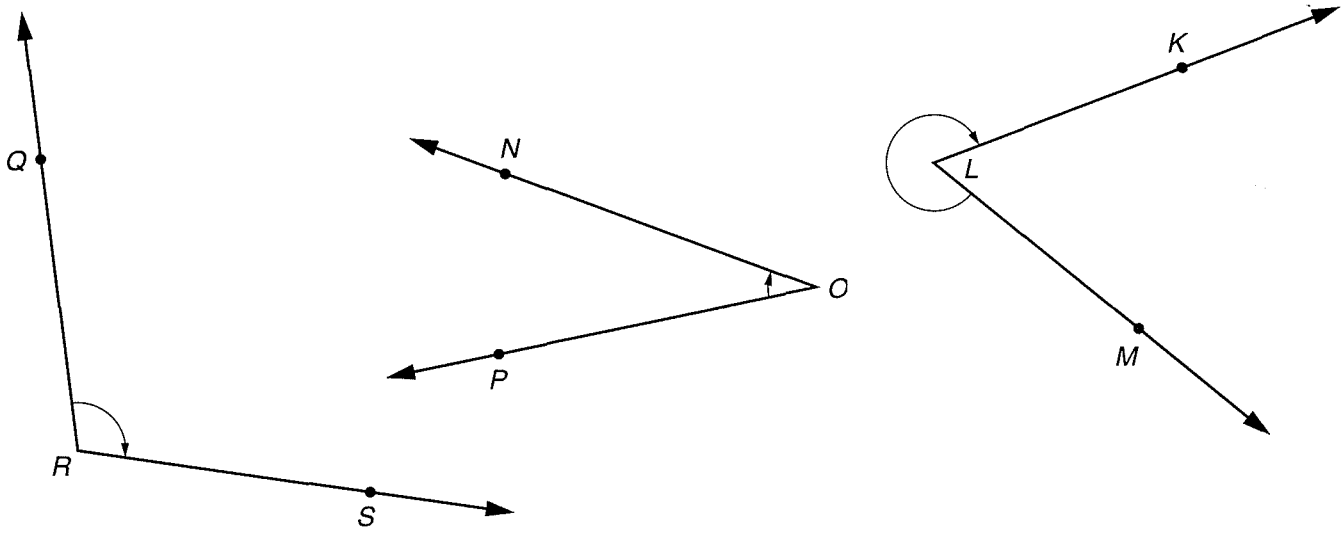


Try This

4. ∠*QRS*: _____ °

5. ∠*NOP*: _____ °

6. ∠*KLM*: _____ °



Practice

7. 93 * 6 = _____

8. _____ = 547 * 7

9. _____ = 48 * 39

10. 51 * 64 = _____

Name Date Time

STUDY LINK 6•8

Coordinate Grids

1. Plot and label each point on the coordinate grid.

A (1,7)

B (6,6)

C (10,1)

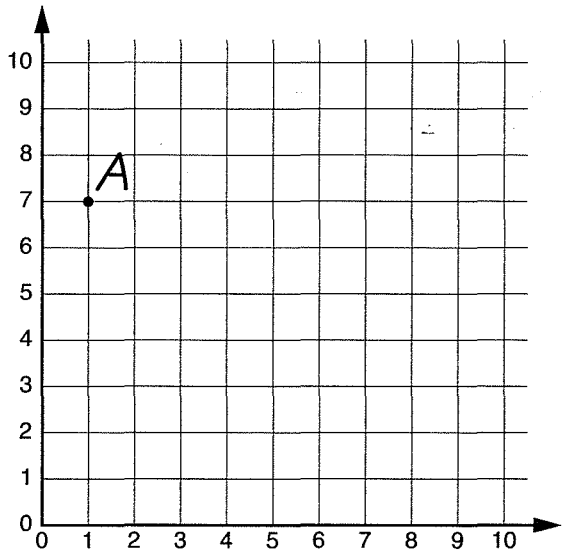
D (4,3)

E (8,6)

F (2,9)

G (9,1)

H (10,4)



2. Write the ordered number pair for each point plotted on the coordinate grid.

I (5, 3)

J (7, 2)

K (____, ____)

L (____, ____)

M (____, ____)

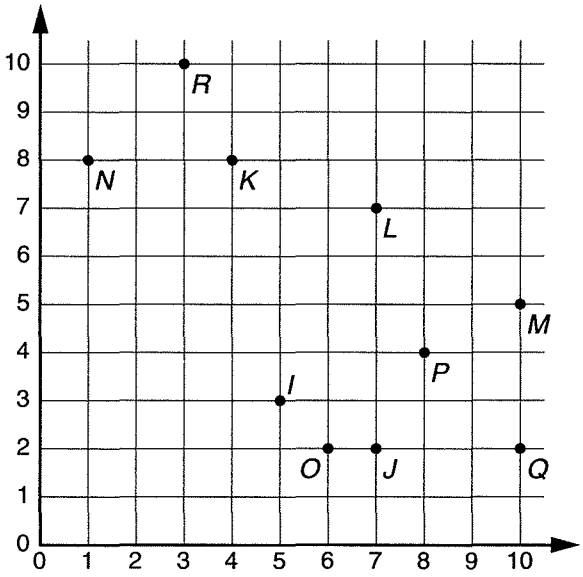
N (____, ____)

O (____, ____)

P (____, ____)

Q (____, ____)

R (____, ____)



Practice

3. 28 * 7 = _____

4. 304 * 5 = _____

5. _____ = 52 * 89

6. _____ = 43 * 36

Name Date Time

STUDY LINK 6•9

Latitude and Longitude

Use your *Student Reference Book* to help you complete this Study Link. Read the examples and study the figures on pages 272 and 273.

SRB 272 273

1. Do the following on the picture of the world globe.

a. Label the North and South Poles.

b. Draw and label the equator.

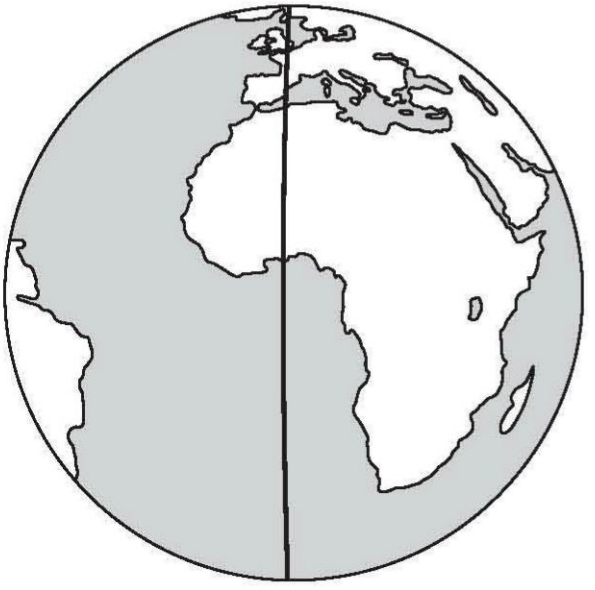
c. Label the prime meridian.

d. Draw and label a line of latitude that is north of the equator.

e. Draw and label a line of longitude that is west of the prime meridian.

f. Mark a point that is in the Southern Hemisphere and also in the Eastern Hemisphere. Label the point *A*.

g. Mark a point that is in the Northern Hemisphere and also in the Western Hemisphere. Label the point *B*.



2. The entire continent of Africa is shown in the figure above. Is Africa mostly in the Western Hemisphere or in the Eastern Hemisphere?

_____

3. Do the equator and prime meridian meet over water or over land? _____

Practice

4. _____ = 47 / 3

5. $7\overline{)98}$ _____

6. 217 ÷ 5 = _____

7. _____ = 804 / 6

Name Date Time

STUDY LINK 6•10

Division

1. It takes 14 oranges to make a small pitcher of juice. Annette has 112 oranges. How many pitchers of juice can she make?

SRB 22 23

Number model: _____

Answer: _____ pitchers of juice

How many oranges are left over? _____ oranges

2. Each bouquet needs 17 flowers. The florist has 382 flowers in his store. How many bouquets can the florist make?

Number model: _____

Answer: _____ bouquets

How many flowers are left over? _____ flowers

3. 726 ÷ 16 = _____

4. $4\overline{)276}$ _____

Practice

5. 45 * 4 = _____

6. _____ = 319 * 7

7. _____ = 29 * 63

8. 89 * 183 = _____

Name Date Time

LESSON 6•11

Self Assessment

Progress Check 6

Think about each skill listed below. Assess your own progress by checking the most appropriate box.

Skills	I can do this on my own and explain how to do it.	I can do this on my own.	I can do this if I get help or look at an example.
1. Divide numbers like these: 322 ÷ 4, 457 ÷ 3.			
2. Divide numbers like these: 181 ÷ 66, 719 ÷ 12.			
3. Round numbers to the nearest ten thousand.			
4. Measure angles like these: 25°, 60°, 155°.			
5. Draw angles like these: 30°, 95°, 160°.			
6. Plot ordered number pairs on a coordinate grid.			