



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 $567 \div 6$ 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**.

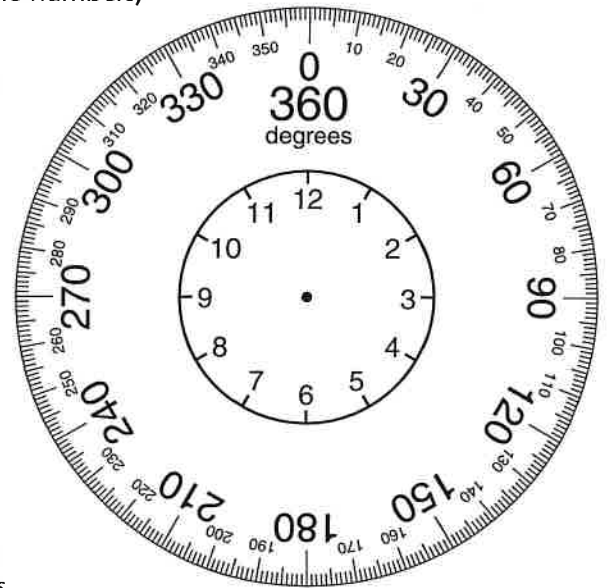
Students have had considerable practice with extended division facts, such as $420 \div 7 = 60$, and questions, such as “About how many 12s are in 150?” Using the partial-quotients method, your child will apply these skills to build partial quotients until the exact quotient and remainder are determined.

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.

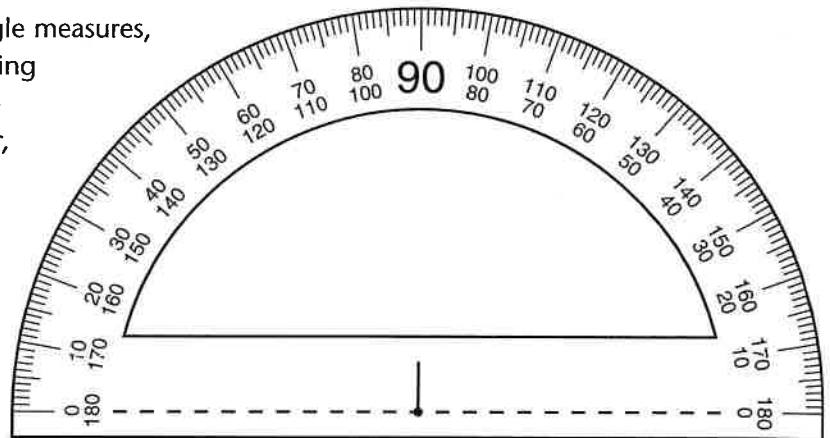
Because this global system is based on angle measures, the class will practice measuring and drawing angles with full-circle (360°) and half-circle (180°) protractors. If you have a protractor, ask your child to show you how to use this tool.

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.



Full-circle (360°) protractor



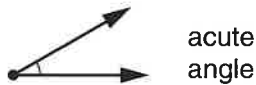
Half-circle (180°) protractor

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.

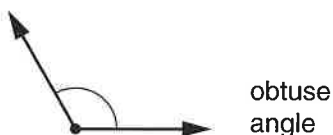
index of locations A list of places together with a reference frame for locating them on a map. For example, "Billings D3," indicates that Billings can be found within the rectangle where column 3 and row D of a grid meet on the map.

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

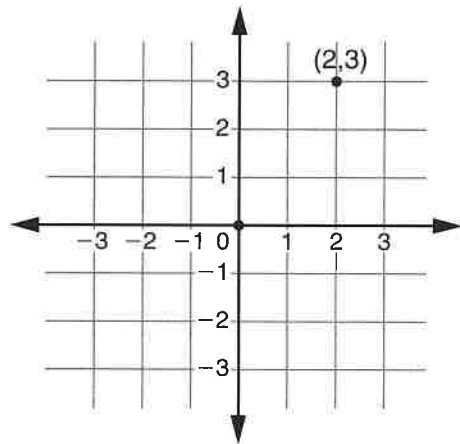
multiplication/division diagram A diagram used for problems in which a total is made up of several equal groups. The diagram has three parts: a number of groups, a number in each group, and a total number.

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 $35 \div 5 = 7$, 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.

As You Help Your Child with Homework

As your child brings assignments home, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through some of the Study Links in this unit.

Study Link 6•1

1. 8 rows 2. 120,000 quills 3. 21 boxes

Study Link 6•2

1. 38 2. 23 3. 47

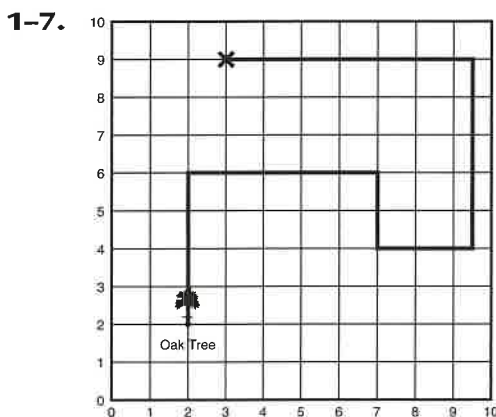
Study Link 6•3

1. 13 marbles; 5 left 2. 72 prizes, 0 left
3. 22 R3 4. 53 R3

Study Link 6•4

1. $15\frac{4}{8}$ or $15\frac{1}{2}$; Reported it as a fraction or decimal; Sample answer: You can cut the remaining strawberries into halves to divide them evenly among 8 students.
2. 21; Ignored it; Sample answer: There are not enough remaining pens to form another group of 16.

Study Link 6•5



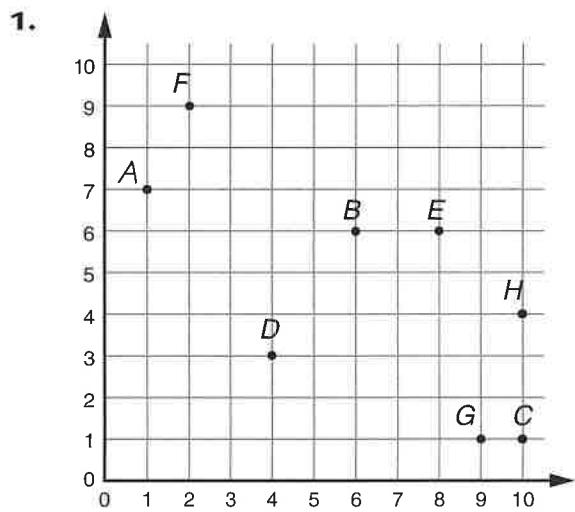
Study Link 6•6

1. $>$; 101° 2. $<$; 52°
3. $>$; 144° 4. $<$; 137°
6. 24 7. 8 R2 8. 157 9. 185 R3

Study Link 6•7

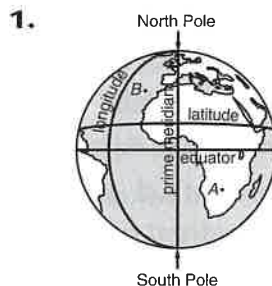
1. 60° 2. 150° 3. 84° 4. 105°
5. 32° 6. 300°

Study Link 6•8



2. K(4,8); L(7,7); M(10,5); N(1,8); O(6,2);
P(8,4); Q(10,2); R(3,10)

Study Link 6•9



2. Eastern Hemisphere 3. water
4. 15 R2 5. 14 6. 43 R2 7. 134

Study Link 6•10

1. 8 pitchers; 0 oranges left
2. 22 bouquets; 8 flowers left
3. 45 R6 4. 69 5. 180
6. 2,233 7. 1,827 8. 16,287

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. _____ = $12.13 - 4.44$

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?

$10 [6s] = \underline{\hspace{2cm}}$

Number model: _____

$20 [6s] = \underline{\hspace{2cm}}$

Answer: _____ 6-packs

$30 [6s] = \underline{\hspace{2cm}}$

$40 [6s] = \underline{\hspace{2cm}}$

$50 [6s] = \underline{\hspace{2cm}}$

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

$10 [8s] = \underline{\hspace{2cm}}$

Number model: _____

$20 [8s] = \underline{\hspace{2cm}}$

Answer: _____ teams

$30 [8s] = \underline{\hspace{2cm}}$

$40 [8s] = \underline{\hspace{2cm}}$

$50 [8s] = \underline{\hspace{2cm}}$

- 3.** How many 3s are in 142?

$10 [3s] = \underline{\hspace{2cm}}$

Number model: _____

$20 [3s] = \underline{\hspace{2cm}}$

Answer: _____

$30 [3s] = \underline{\hspace{2cm}}$

$40 [3s] = \underline{\hspace{2cm}}$

$50 [3s] = \underline{\hspace{2cm}}$

Practice

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

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. $427 \div 8$ Answer: _____

Practice

5. _____ = $34.96 + 1.58$

6. _____ = $300.2 + 2.378$

7. $43.27 - 12.67 =$ _____

8. $74.6 - 31.055 =$ _____

STUDY LINK
6•4

Interpreting Remainders



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

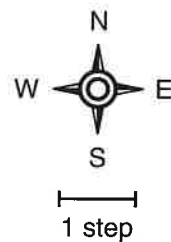
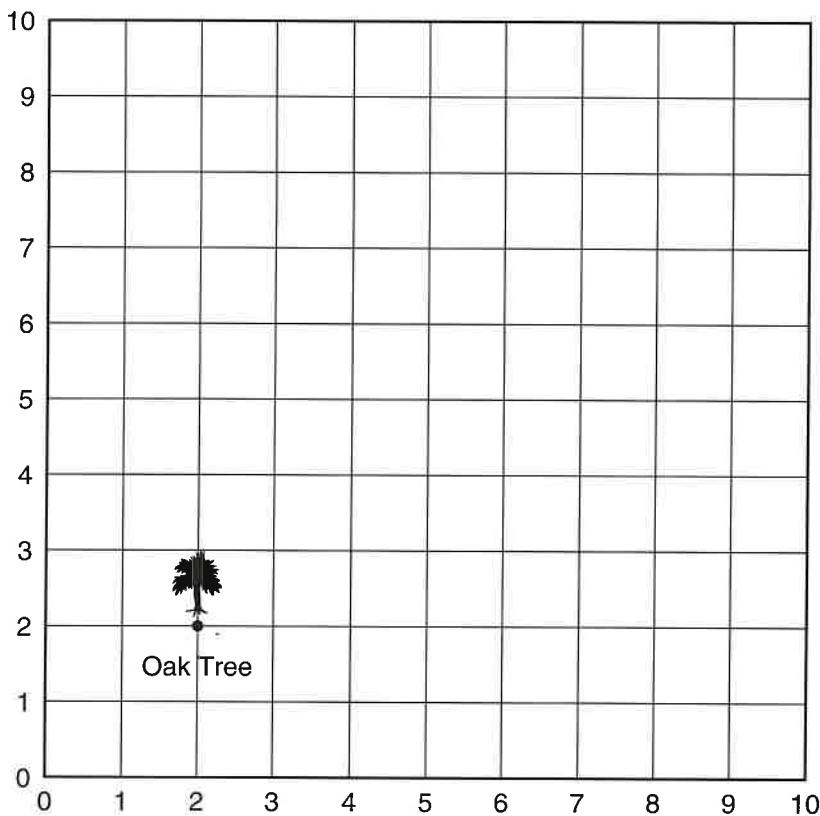
STUDY LINK
6•5

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. $934 / 5 =$ _____

STUDY LINK
6•6

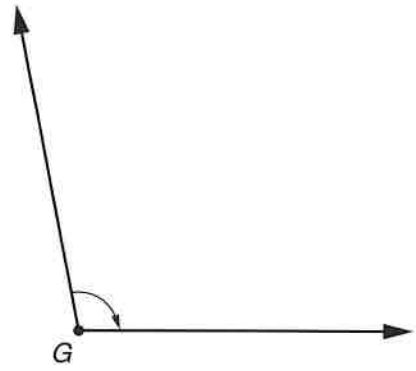
Measuring Angles



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

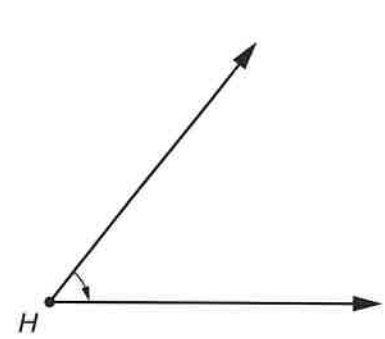
1. This angle is _____ ($>$, $<$) 90° .

$\angle G$: _____



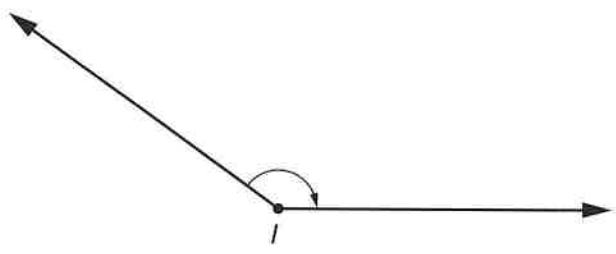
2. This angle is _____ ($>$, $<$) 90° .

$\angle H$: _____



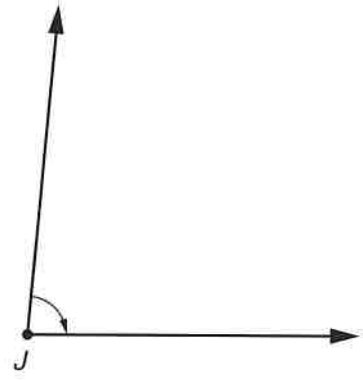
3. This angle is _____ ($>$, $<$) 90° .

$\angle I$: _____



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

$\angle J$: _____



Try This

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

- $\angle ABC$ 78° $\angle DEF$ 145° $\angle GHI$ 213° $\angle JKL$ 331°

Practice

6. _____ = $96 \div 4$

7. $66 \div 8 =$ _____

8. _____ = $314 \div 2$

9. $928 \div 5 =$ _____

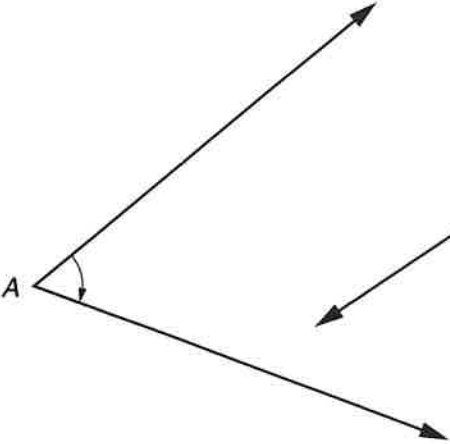
STUDY LINK
6•7

Measuring Angles with a Protractor

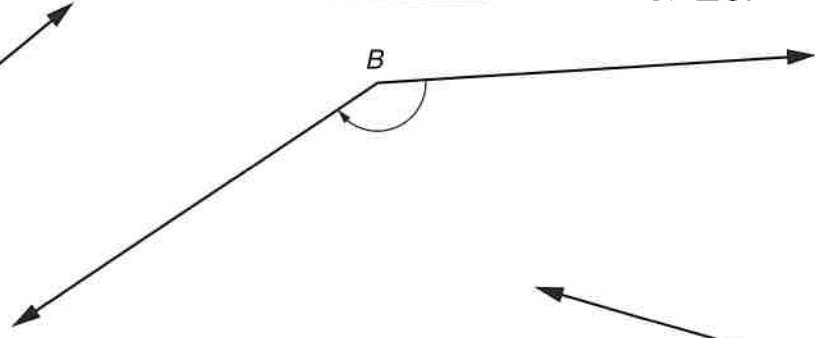


First estimate whether the angles measure more or less than 90° . Then use a half-circle protractor to measure them.

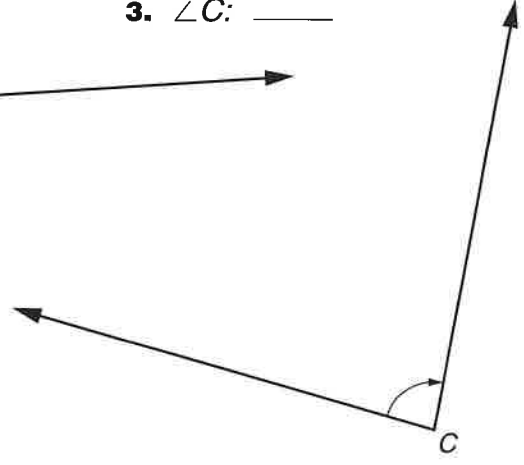
1. $\angle A$: _____^o



2. $\angle B$: _____^o

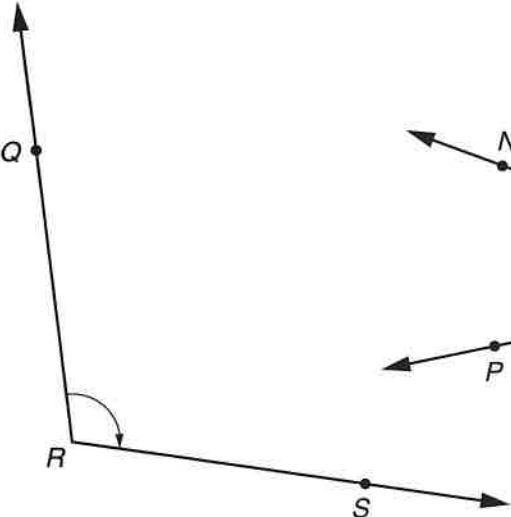


3. $\angle C$: _____^o

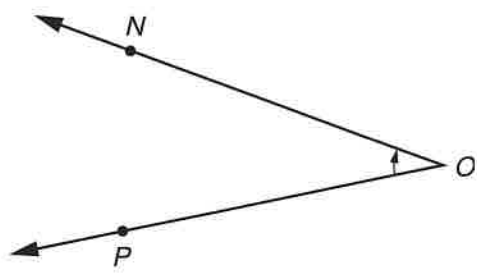


Try This

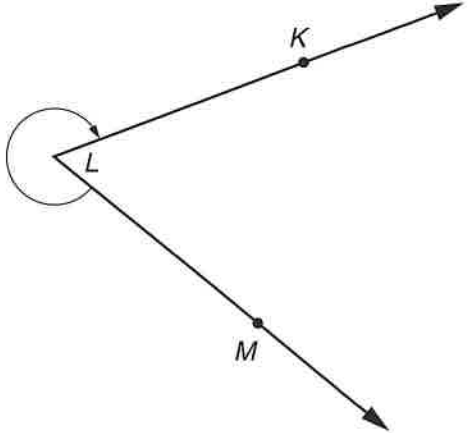
4. $\angle QRS$: _____^o



5. $\angle NOP$: _____^o



6. $\angle KLM$: _____^o



Practice

7. $93 * 6 =$ _____

8. _____ = $547 * 7$

9. _____ = $48 * 39$

10. $51 * 64 =$ _____

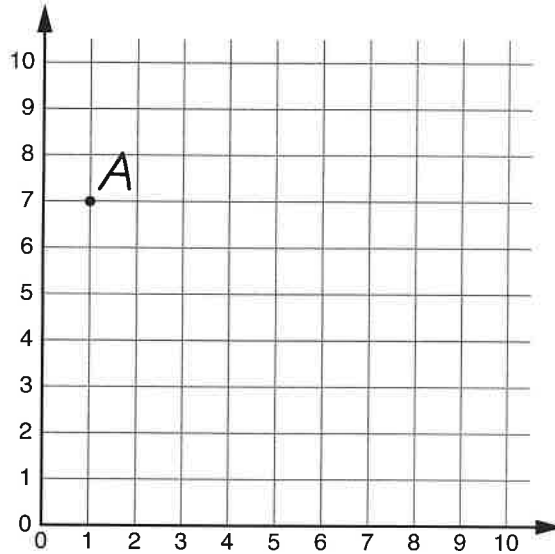
STUDY LINK
6•8

Coordinate Grids



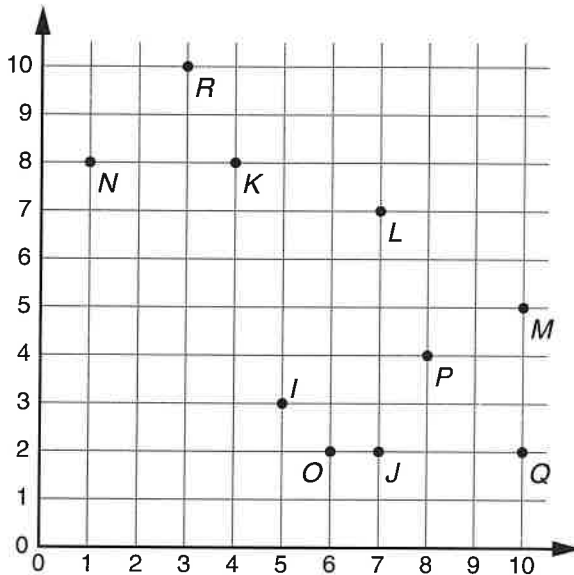
1. Plot and label each point on the coordinate grid.

- 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. _____ $= 43 * 36$

STUDY LINK
6•9

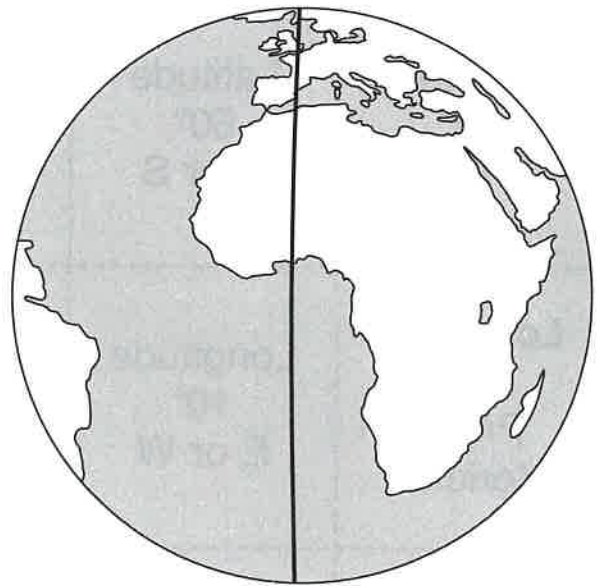
Latitude and Longitude



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

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. _____ = $47 \div 3$

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

6. $217 \div 5 =$ _____

7. _____ = $804 \div 6$

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?

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. $726 \div 16 =$ _____

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

Practice

5. $45 * 4 =$ _____

6. _____ $= 319 * 7$

7. _____ $= 29 * 63$

8. $89 * 183 =$ _____