

# 4-1

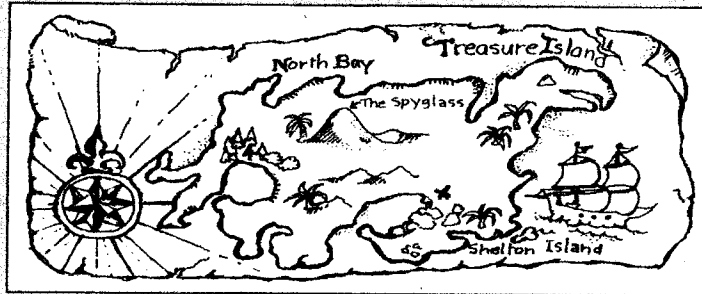
# Coordinates for Locations

## FOCUS

Use coordinate systems to solve problems about locations in different settings.

“The doctor opened the seals with great care, and there fell out the map of an island, with latitude and longitude, soundings, names of hills, and bays, and inlets, and safe anchorage upon its shores. It was about nine miles long and five across, shaped, you might say, like a fat dragon standing up, and had two land-locked harbors, and a hill in the center part marked ‘The Spyglass.’”

from *Treasure Island* by Robert Louis Stevenson



## KEY TERMS

### Coordinate plane (p. 184)

a plane determined by a horizontal and a vertical number line (or axis), where ordered pairs indicate points on the plane

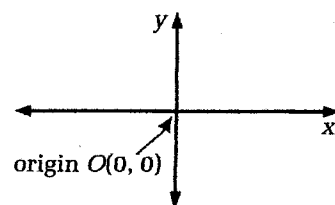
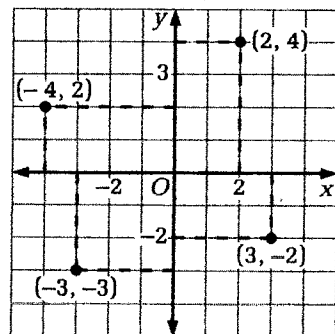
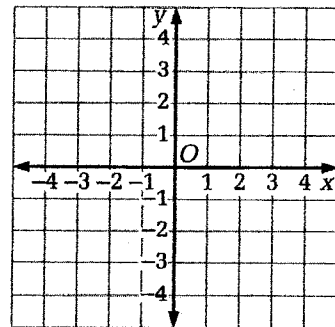
### Ordered pair (p. 184)

a pair of numbers used to describe the location of a point on a coordinate plane, where the first number corresponds to the horizontal axis and the second number corresponds to the vertical axis

### Origin (p. 184)

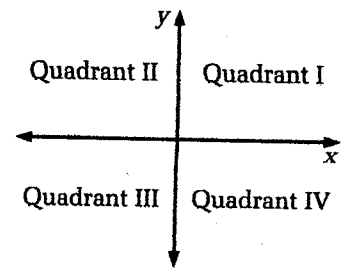
the point on a coordinate plane where the horizontal and vertical axes intersect (The ordered pair for this point is  $(0, 0)$ .)

## EXAMPLE / ILLUSTRATION

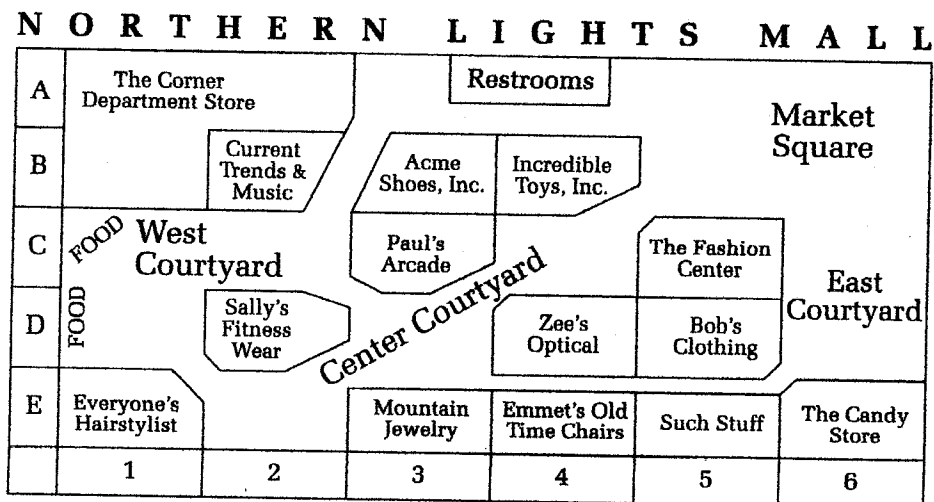


**Quadrant** (p. 184)

one of the four regions that are created by the axes of a coordinate plane (The quadrants are numbered beginning in the upper right-hand corner and moving in a counterclockwise direction.)

**UNDERSTANDING THE MAIN IDEAS****Maps as coordinate systems**

Maps often have coordinate systems. Their coordinates describe a square region, not a point. Usually map coordinates are a letter and a number.

**Sample 1**

Use the map of the Northern Lights Mall.

- What store is located in square C3?
- What are the coordinates of Sally's Fitness Wear?

**Sample Response**

- Move across row C to column 3 to find Paul's Arcade.
- Locate Sally's Fitness Wear on the map. Look to the left to find the letter D and to the bottom of the map to find the number 2. The coordinates are D2.

Use the map of the Northern Lights Mall above for Exercises 1–8.

What store is located in each square?

- C5
- D4
- B2
- E6

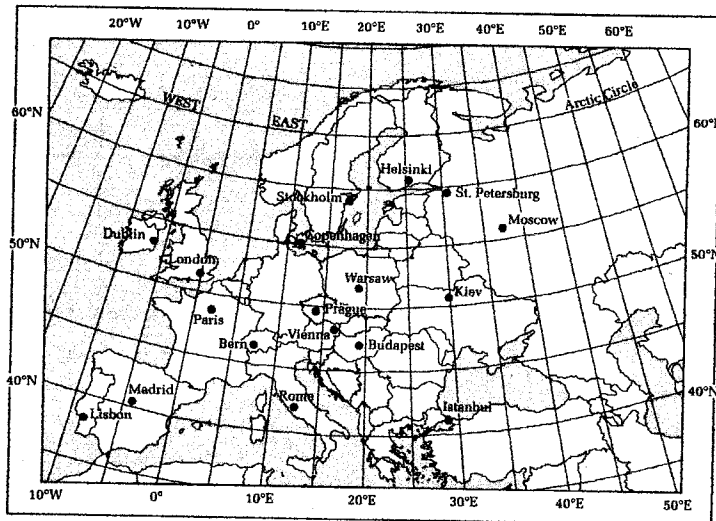
Find the coordinates of each store. If there is more than one pair of coordinates, list all pairs.

5. Acme Shoes, Inc.
6. Bob's Clothing
7. Everyone's Hairstylist
8. Market Square

### The globe as a coordinate system

Coordinates are used to locate places on Earth. The grid lines on a globe are lines of latitude and longitude. Places are identified by latitude first, then longitude. The vertical axis of the system is a line from the North Pole to the South Pole which passes through Greenwich, England. This line is called the **prime meridian** and is labeled  $0^\circ$  of longitude; longitude is measured in degrees east or west from the prime meridian. The **equator** is the horizontal axis and is labeled  $0^\circ$  of latitude; latitude is measured in degrees north or south from the equator.

#### Sample 2



Use the map of Europe.

- a. Estimate the latitude and longitude of London, England.
- b. What city is located near  $60^\circ$  N,  $25^\circ$  E?

#### Sample Response

- a. Locate London on the map. London has an approximate latitude of  $52^\circ$  north and an approximate longitude of  $2^\circ$  west. These numbers can be found by following the nearest latitude line to the left and the nearest longitude line up. You can write these coordinates as  $52^\circ$  N,  $2^\circ$  W. Notice that the equator is not on this map. The latitudes of any locations below the equator would have been labeled with an "S" for south.
- b. Look to the left and find the latitude of  $60^\circ$  north. Follow that line until it intersects with the longitude of  $25^\circ$  east. Notice it is to the right of the prime meridian. The city at this location is Helsinki, Finland.

Use the map of Europe in Sample 2 for Exercises 9–16.

Estimate the latitude and longitude of each city.

9. Rome, Italy                      10. Madrid, Spain                      11. Kiev, Ukraine

In Exercises 12–14, what city is near each location?

12. 59 N, 18 E                      13. 38 N, 8 W                      14. 47 N, 20 E

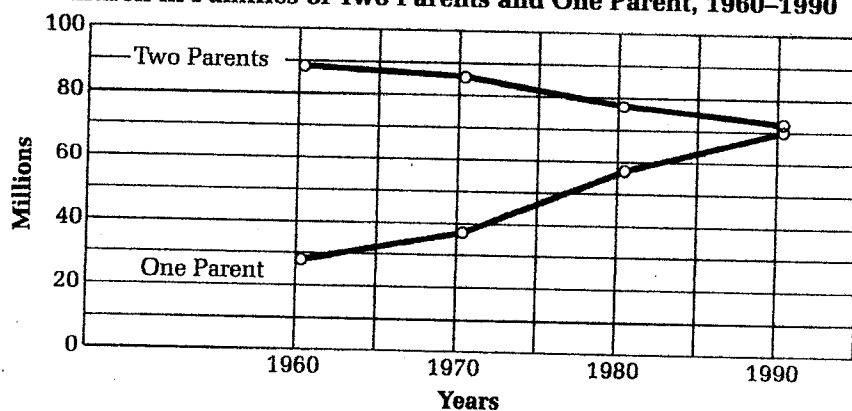
15. About how many degrees east of Dublin, Ireland is Warsaw, Poland?

16. About how many degrees south of Moscow, Russia is Istanbul, Turkey?

### Review PREVIEW

The display below shows the number of children in families of two parents and one parent in the United States for the years 1960–1990.

Children in Families of Two Parents and One Parent, 1960–1990



17. a. Interpret the information shown in the display. (Section 3-6)  
b. Do you think this is the best way to display the information? Explain why or why not.
18. Quadrilateral  $ABCD$  has two pairs of parallel sides and at least one right angle. (Section 1-7)  
a. Make an accurate sketch of quadrilateral  $ABCD$ .  
b. Write the special name for quadrilateral  $ABCD$ .