

Mapping the Earth

Using Latitude and Longitude

A **globe** is a scale model of the Earth. It is useful for showing the entire Earth or studying large areas of Earth's surface.

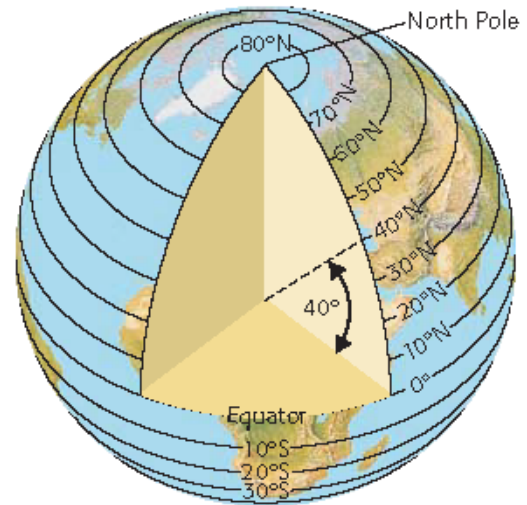
To study the world, geographers use a pattern of imaginary lines that circles the globe in east-west and north-south directions. It is called a **grid**. The intersection of these imaginary lines helps us find places on Earth.

The east-west lines in the grid are lines of **latitude**, which you can see on the diagram. Lines of latitude are called **parallels** because they are always parallel to each other. These imaginary lines measure distance north and south of the **equator**. The equator is an imaginary line that circles the globe halfway between the North and South Poles. Parallels measure distance from the equator in **degrees**. The symbol for degrees is $^{\circ}$. Degrees are further divided into **minutes**. The symbol for minutes is $'$. There are 60 minutes in a degree. Parallels north of the equator are labeled with an N. Those south of the equator are labeled with an S.

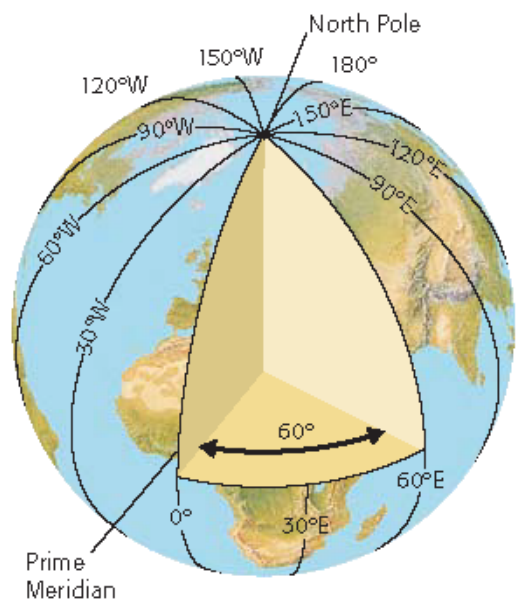
The north-south imaginary lines are lines of **longitude**. Lines of longitude are called **meridians**. These imaginary lines pass through the poles. They measure distance east and west of the **prime meridian**. The prime meridian is an imaginary line that runs through Greenwich, England. It represents 0° longitude.

Lines of latitude range from 0° , for locations on the equator, to 90°N or 90°S , for locations at the poles. Lines of longitude range from 0° on the prime meridian to 180° on a meridian in the mid-Pacific Ocean. Meridians west of the prime meridian to 180° are labeled with a W. Those east of the prime meridian to 180° are labeled with an E. Using latitude and longitude, geographers can identify the exact location of any place on Earth.

Lines of Latitude



Lines of Longitude



Map Essentials

How to Read a Map

Maps are like messages sent out in code. To help us translate the code, mapmakers provide certain features. These features help us understand the message they are presenting about a particular part of the world. Of these features, almost all maps have a title, a compass rose, a scale, and a legend. The map below has these four features, plus a fifth—a locator map.

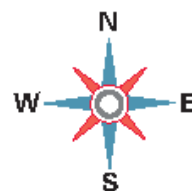
1 Title

A map's **title** shows what the subject of the map is. The map title is usually the first thing you should look at when studying a map, because it tells you what the map is trying to show.



2 Compass Rose

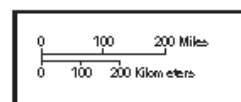
A directional indicator shows which way north, south, east, and west lie on the map. Some mapmakers use a “north arrow,” which points toward the North Pole. Remember, “north” is not always at the top of a map. The way a map is drawn and the location of directions on that map depend on the perspective of the mapmaker. Most maps in this textbook indicate direction by using a compass rose. A **compass rose** has arrows that point to all four principal directions.



3 Scale

Mapmakers use scales to represent the distances between points on a map. Scales may appear on maps in several different forms. The maps in this textbook provide a **bar scale**. Scales give distances in miles and kilometers.

To find the distance between two points on the map, place a piece of paper so that the edge connects the two points. Mark the location of each point on the paper with a line or dot. Then, compare the distance between the two dots with the map’s bar scale. The number on the top of the scale gives the distance in miles. The number on the bottom gives the distance in kilometers. Because the distances are given in large intervals, you may have to approximate the actual distance on the scale.



4 Legend

The **legend**, or key, explains what the symbols on the map represent. Point symbols are used to specify the location of things, such as cities, that do not take up much space on the map. Some legends show colors that represent certain features like empires or other regions. Other maps might have legends with symbols or colors that represent features such as roads. Legends can also show economic resources, land use, population density, and climate.



5 Locator Map

A **locator map** shows where in the world the area on the map is located. The area shown on the main map is shown in red on the locator map. The locator map also shows surrounding areas so the map reader can see how the information on the map relates to neighboring lands.



Working with Maps

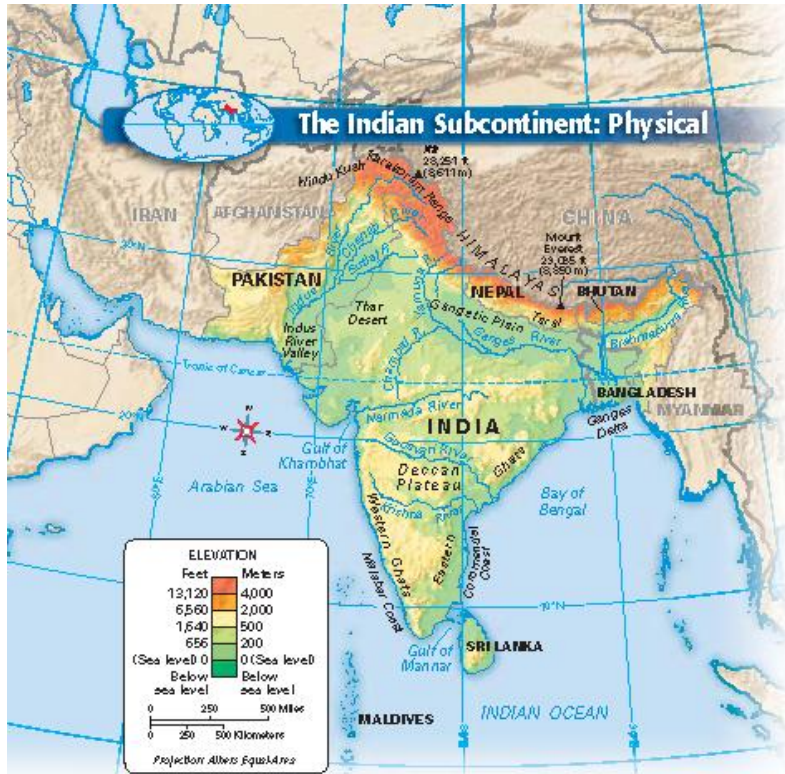
Using Different Kinds of Maps

As you study the world's regions and countries, you will use a variety of maps. Political maps and physical maps are two of the most common types of maps you will study. In addition, you will use special-purpose maps. These maps might show climate, population, resources, ancient empires, or other topics.

Political Maps

Political maps show the major political features of a region. These features include country borders, capital cities, and other places. Political maps use different colors to represent countries, and capital cities are often shown with a special star symbol.



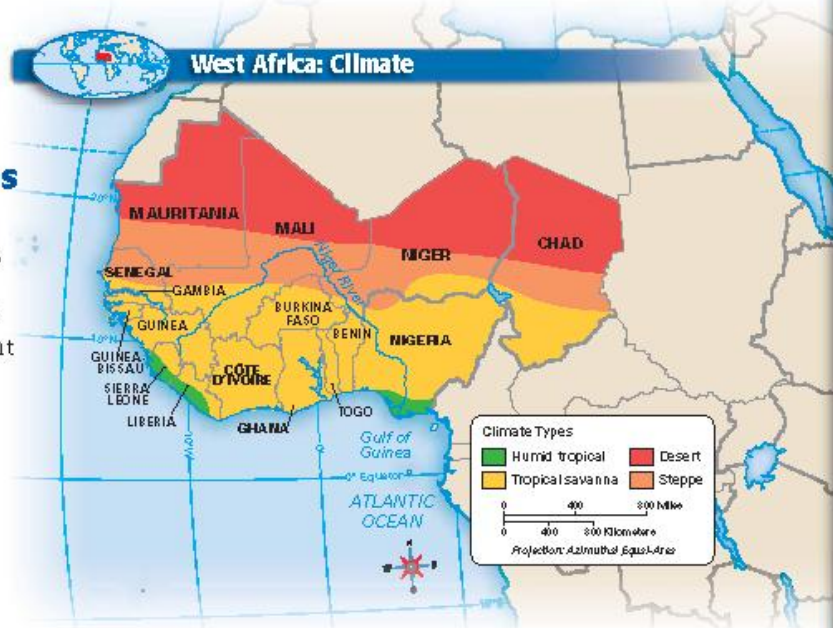


Physical Maps

Physical maps show the major physical features of a region. These features may include mountain ranges, rivers, oceans, islands, deserts, and plains. Often, these maps use different colors to represent different elevations of land. As a result, the map reader can easily see which areas are high elevations, like mountains, and which areas are lower.

Special-Purpose Maps

Special-purpose maps focus on one special topic, such as climate, resources, or population. These maps present information on the topic that is particularly important in the region. Depending on the type of special-purpose map, the information may be shown with different colors, arrows, dots, or other symbols.



Using Maps in Geography The different kinds of maps in this textbook will help you study and understand geography. By working with these maps, you will see what the physical geography of places is like, where people live, and how the world has changed over time.

Lesson

1

Direction and Distance

4

WHAT YOU WILL LEARN

To identify direction and distance information from maps

READING STRATEGY

Create a diagram like the one below to list the cardinal and intermediate directions.



TERMS TO KNOW

compass rose, cardinal directions, intermediate directions, scale, scale bar

Have you ever drawn a map in the dirt to show someone where you live? Such drawings were some of the earliest maps. Other early maps were made of sticks tied together, or pieces of wood sewn to a piece of sealskin. People have used maps for thousands of years to show *where* places are, *how far* it is from one place to another, and the *direction* to travel to get from here to there.

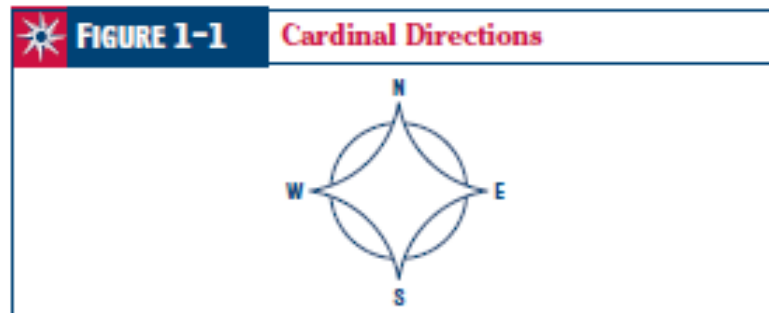
Maps are important tools. Maps tell us where to catch a bus and where that bus will take us. Maps help us find a friend's house in a part of town that is new to us. Maps help us plan vacation trips. They help us learn about the town or state to which we are moving.

Direction

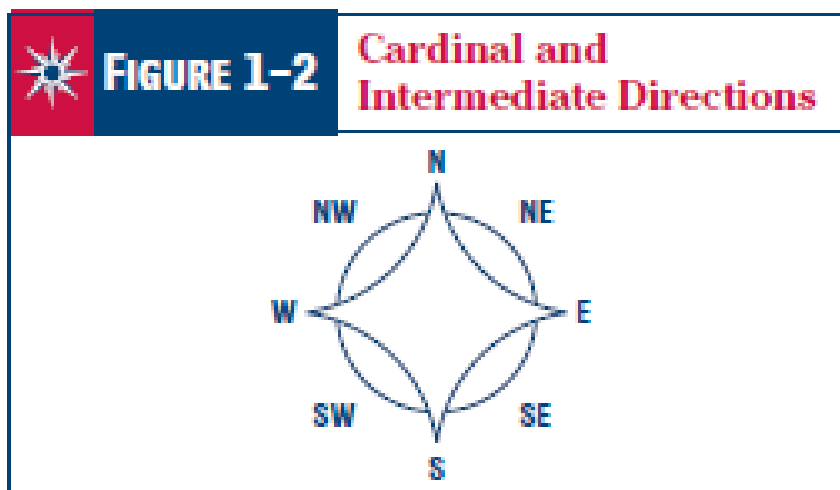
Direction is one of the most important things we can learn from a map. You use direction every day—left, right, forward, back, up, down. But these directions depend on where you are and which way you are facing. Maps use the directions north, south, east, and west. These directions do not change. North is always toward the North Pole of the earth. If you stand facing the North Pole, east will be to your right. West will be to your left. South will be behind you.

Usually, north will be at the top of a map. However, this is not always true. You must check to be sure. Mapmakers use a **compass rose** or a north arrow to show directions. If there is no compass rose, north arrow, or other symbol to indicate direction, you can assume that north is at the top of the map.

Look at the examples below. Find north, south, east, and west on **Figure 1-1**. These are the **cardinal directions**. Turn your book so that north on the compass rose points north (toward the North Pole). Face north yourself. Now east is to your right, west is to your left, and south is behind you.



Look straight north. Hold your right hand straight out to the side. In what direction are you pointing? You are correct if you said *east*. Now turn your head just halfway toward your right arm. You are no longer looking north. But you are not looking east, either. You are looking *northeast*. Look at **Figure 1-2**. Find northeast, southeast, northwest, and southwest. These are known as **intermediate directions**.



Notice that **Figure 1-3** is just an arrow with its point labeled *N*. The *N* stands for north. The arrow points north. When you see a north arrow, remember that east is to the right, west is to the left, and south is in the opposite direction from north.



DISTANCE & SCALE

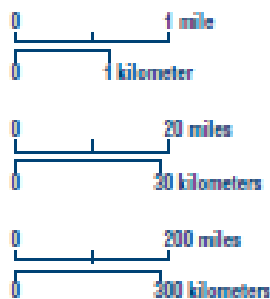
Distance

If you make a drawing of a person, you will probably not make the picture as large as the person. That would take a piece of paper the same size as the person. A map is a drawing of a part of the earth. A map as big as the earth would be too large to put in your pocket and carry with you across Africa! Maps are drawn so that a certain distance on the map represents a much larger distance on the earth. This is called **scale**. Scale makes it possible to show the whole earth on a piece of paper the size of this page.

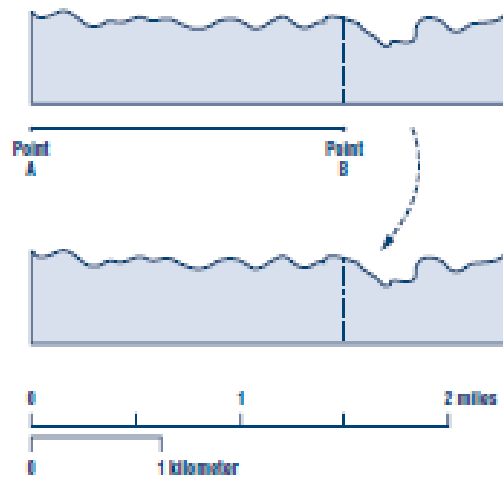
Not all maps are the size of this page, of course. Your classroom may have maps hanging on the wall. These maps are much larger than the ones in your book. But they both show the same earth. Maps have a **scale bar** to tell you what distance on the earth is represented by a certain distance on the map.

Using Map Scale Bars

Here are some examples of map scale bars. Notice that all lines are the same length, but that each line represents a different distance on the earth. Also notice that the same scale bar can represent distance in miles and kilometers on the map.



Using the scale bar to measure distances between places on a map is easy. Use a piece of paper. Put the edge of the paper between the two points you wish to measure. Make a mark on the paper at each point. Then put the piece of paper on the scale bar with one mark at zero. Note where the other point falls on the scale. This gives you the distance.



If the scale bar is not long enough, mark where it ends on the paper. Then slide the paper to the left to line up the new mark with zero. Do this as many times as necessary. Then multiply the number of spaces between marks by the distance each length of the scale bar represents. For example, if the scale bar represents 100 miles, and you marked off three spaces, then multiply 3 by 100. The distance between the two points on the map is 300 miles.

Getting to Know the NC Road Map

6

Using the Legend (lower right hand side of map): **Identify the following symbols.**

1. The symbol for “NC Bike Route” _____
2. The symbol for “Points of Interest” _____
3. The symbol for “State Capital” _____
4. One inch on the “Scale of Miles” equals approximately _____ miles.

Using Quadrants & Directions (columns on the left hand side of the map):

What are the quadrants of each location?

- | | |
|----------------------|------------------|
| 5. Lizard Lick _____ | 7. Welcome _____ |
| 6. Horse Shoe _____ | 8. Toast _____ |

Latitude/Longitude: **What are the degrees of latitude or longitude for the following locations?**

- | | |
|------------------------|----------------|
| 9. Riverdale _____ | North latitude |
| 10. Kure Beach _____ | North latitude |
| 11. Wallace _____ | West longitude |
| 12. Mount Gilead _____ | West longitude |

Directions: After viewing "Latitude and Longitude", complete the following questions. Write the response on your answer sheet.

1. Where can you see latitude and longitude lines?
 - A. From the air
 - B. On a map or globe
 - C. Around fault lines
 - D. On the bottom of the ocean
2. What is the weather like at 0 degrees latitude?
 - A. Hot and tropical
 - B. Temperate
 - C. Frigid
 - D. Hot in summer, cold in winter
3. The lines of latitude and longitude form an imaginary _____ over the planet.
 - A. Box
 - B. Diagonal
 - C. Pattern
 - D. Grid
4. What is the 0-degree latitude line called?
 - A. Latitude – zero
 - B. 180 degrees longitude
 - C. The Equator
 - D. The Prime Meridian
5. What is the significance of Greenwich, England?
 - A. It's where 0 latitude and 0 longitude cross
 - B. The Prime Meridian runs through it
 - C. It's where the Tropic of Cancer meets the Tropic of Capricorn
 - D. The equator runs through it

Directions: After viewing "Map Skills", complete the following questions. Write the response on your answer sheet.

1. Which type of map is this?

- A. A physical map
- B. A political map
- C. A road map
- D. A topographical map



2. What might you find on a historical map?

- A. Up-to-date information on political boundaries
- B. Mountains, lakes, and rivers
- C. Information about topography
- D. Information about a battle between armies

3. If you're having trouble figuring out what the symbols on a map represent, where would you look?

- A. The back of the map
- B. The title of the map
- C. The map legend
- D. The compass rose

4. What can you find on almost every map?

- A. Lines of elevation
- B. Symbols indicating natural resources
- C. Borders between countries
- D. Topographical lines

5. On the map at the right, what do the grey triangles represent?

- A. Sources of fuel
- B. Gold mines
- C. Areas where precious metals can be found
- D. Areas where nonmetals can be found



6. On the map above, the circles, triangles, and squares are all examples of:

- A. Legends
- B. Keys
- C. Roses
- D. Symbols

7. A map's scale indicates that 1 cm equals 10 km. Two cities are 8 cm apart on the map. How far apart are they in real life?

- A. 10 km
- B. 8 km
- C. 80 km
- D. 800 km