



## Using a Map

A map is a picture of part or all of Earth. Because maps provide all kinds of information, they are useful tools in helping you learn about the world.



Like this photo taken from an airplane, maps are pictures of Earth as seen from above.

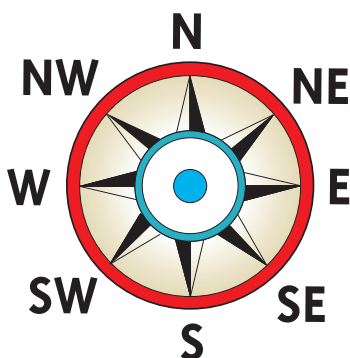
People have been making maps for thousands of years. The first maps were simply scratches in the dirt or sand. The oldest maps still in existence were drawn on wet clay that was then baked in the sun. Today, maps are much more complex. Mapmakers use aerial photographs and satellite images to make accurate pictures of Earth.

A map shows a large area in a small space. So mapmakers use symbols to represent buildings, highways, cities, and many other things. Be sure to check the map legend to find out what each symbol stands for. A map legend is also called a map key.

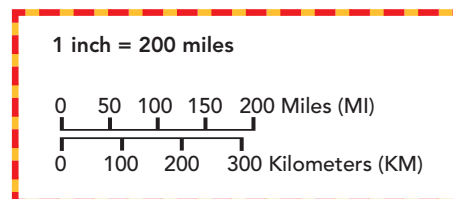
An important symbol on a map is the **compass rose**. The compass rose shows the four cardinal directions—north, south, east, and west—and the four intermediate directions—northeast, southeast, southwest, and northwest. Many maps have a **scale** to help you figure out how far it is between places. Use the map scale to measure distances on a map in miles or kilometers.



The Babylonians made this clay map of the world about 2,500 years ago. The Babylonians lived in Mesopotamia, where Iraq is today.



Compass Rose



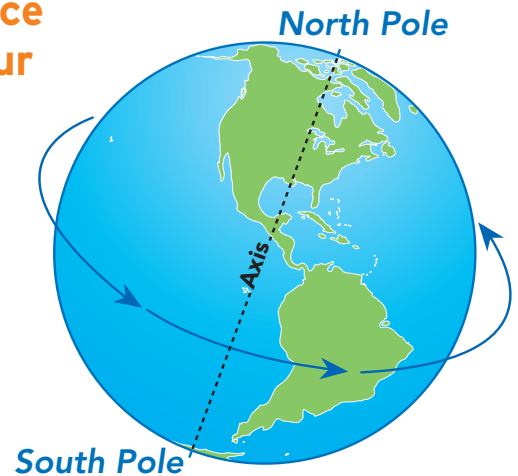
Scale of Miles



# Globes and Hemispheres

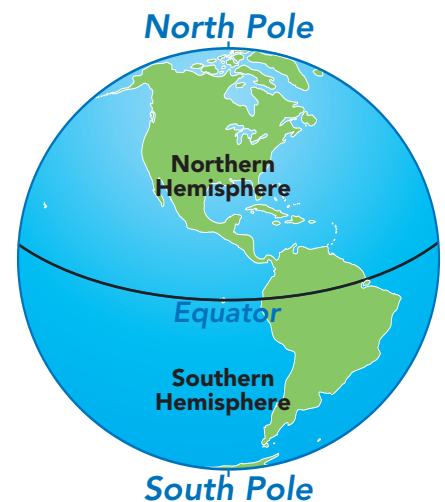
The best model of Earth is a globe. That's because both a globe and Earth are shaped like a sphere. A globe shows that Earth's surface is covered mostly with water. Earth has four large bodies of water called oceans.

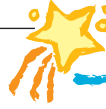
**A** globe shows how Earth rotates, or turns, on an imaginary center line called an **axis**. At the ends of this line are the North and South poles. The direction of north is toward the North Pole, and the direction of south is toward the South Pole.



**L**ook closely at a globe and you'll see lines running between the North Pole and the South Pole. These are called lines of longitude or meridians. The Prime Meridian divides Earth into two halves called **hemispheres**. On one side of the **Prime Meridian** is the Eastern Hemisphere and on the other side is the Western Hemisphere.

**T**he lines that run east and west on a globe are called lines of latitude. These lines run parallel to the **equator**. The equator is a line of latitude that runs around the center of Earth and divides it into the Northern and Southern hemispheres.

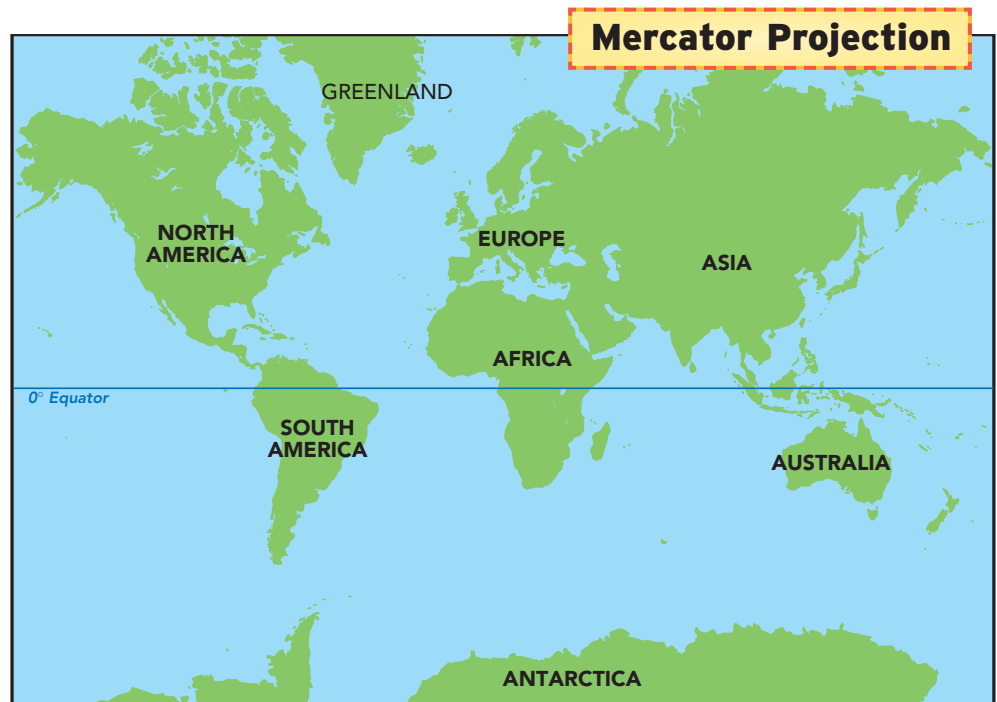




## Projections of the World

Here's a challenge for you. Take an orange and try to peel its skin off in one large piece. Then try to place the orange skin on a sheet of paper so that it lies flat without any spaces.

**T**his is the same kind of challenge that mapmakers face when they try to draw a picture of Earth on a flat sheet of paper. The shapes and sizes of land and water areas become distorted. It is also hard to represent distances between places accurately. So mapmakers have created different ways of drawing Earth on paper. These views are called **projections**.



You can see three map projections on these pages. One of the most common is a **Mercator projection**. It was developed in 1569 by a German geographer named Gerardus Mercator. His map shows the true shapes of Earth's land, but it distorts sizes—especially near the poles. On a Mercator projection, Greenland looks as large as South America. In fact, South America is eight times larger than Greenland!

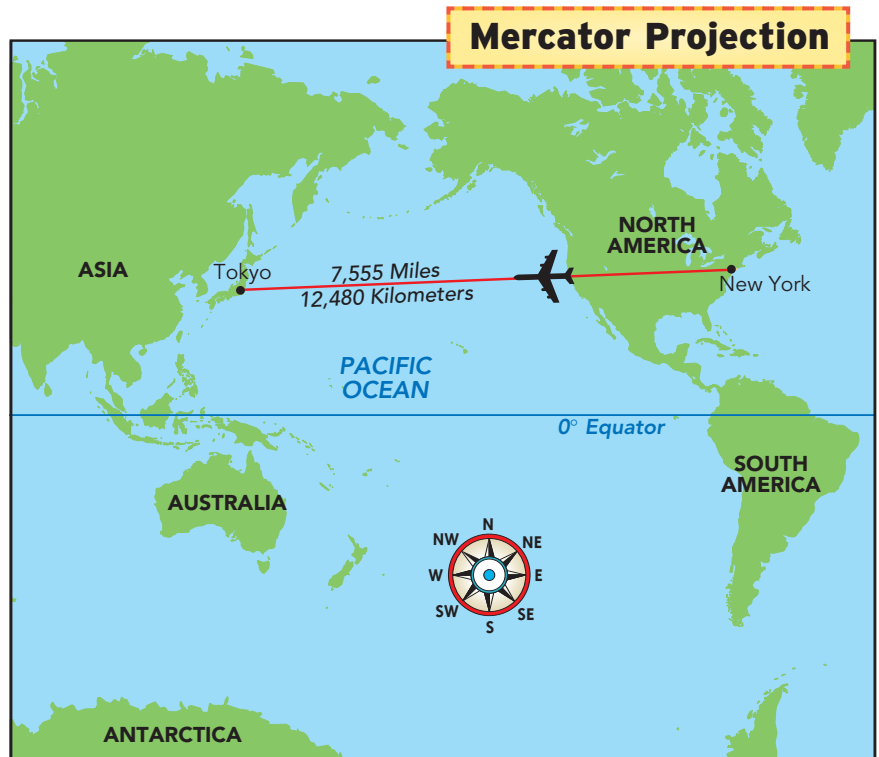
Another projection looks a little like the peel of an orange. This is called an **interrupted projection**. While the size and shape of land and water areas are fairly accurate, the oceans and Antarctica are split up.

On a **polar projection**, the North or South Pole is at the center of the map. These maps are accurate in the center, but shapes and distances are distorted at the edges.



## Great Circle Routes

On a flat map, it looks like the shortest way from New York to Tokyo is to fly right over the Pacific Ocean. But if you look at a globe, you can see the shortest route goes way up north over Alaska.



**O**n a map, the shortest distance between two points is a straight line. But on a globe, the shortest distance between two points is a segment or arc along a great circle. These arcs are called **great circle routes**. Navigators use them to plot the shortest air routes between two places. Airplanes save time and fuel by following great circle routes.