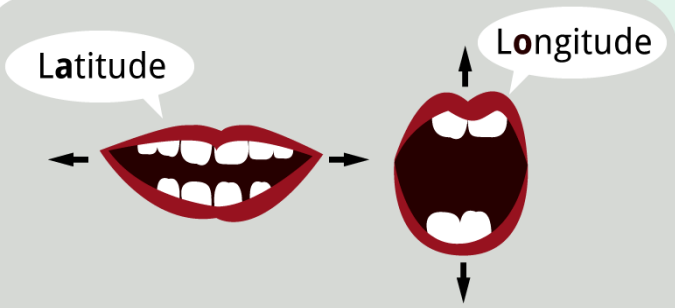
Location and Direction



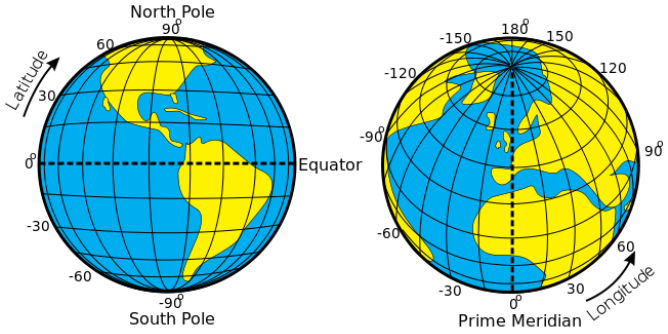
Say the words "Latitude" and "Longitude", and notice the shapes your mouth makes.

Study Tip

When you say longitude, your mouth makes a long vertical shape. When you say latitude, it forms a more horizontal smile. Therefore, longitude lines are from north to south and latitude lines are from east to west.

How do we use latitude and longitude?

One way to pinpoint a **location** is by using latitude and longitude coordinates. These coordinates are expressed as degrees that are divided into 60 minutes, with each minute divided into 60 seconds. **Latitude** tells the distance north or south of the Equator, which is the line that falls equally between the North and South Poles. **Longitude** lines tell the east-west position of a point and are perpendicular to the Equator and parallel to the Prime Meridian.



What is elevation?

Accurate locations take into account the third dimension, or height. The height above or below sea level is called **elevation**. **Sea level** is the average height of the ocean's surface, and is the same all around Earth.

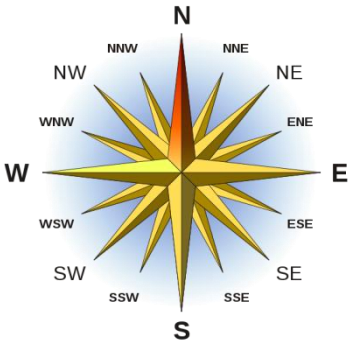
Elevation measures height

How does a GPS work?

Another way to indicate location is through GPS satellites that constantly orbit Earth. **Global positioning systems** (GPSs) detect radio signals from nearby satellites. They use these signals to calculate the distance from at least four satellites to a spot on Earth, thus pinpointing its location.

How are directions expressed?

Directions, which you need to move from one place to another**,** are expressed using north (N), east (E), south (S), and west (W. used to describe direction in relation to the Earth's surface. **Compasses** have a needle which is really a magnet that aligns with the magnetic north pole on Earth.



Concept Check

- What is the difference between longitude and latitude?
- How does a GPS work?
- Why would knowing the elevation be important for determining a location accurately?