

## 1.1 Geographic Coordinate System

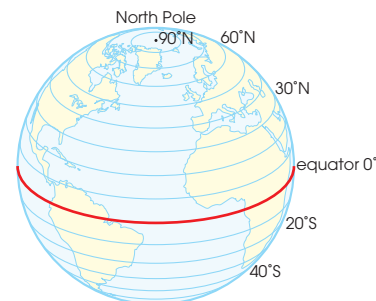
A geographic coordinate system (GCS) is used to indicate positions on Earth's surface. In this system, Earth is divided in a grid-like way. The imaginary lines that run horizontally around Earth are lines of latitude and those that run vertically are lines of longitude.

Latitude is measured in degrees by horizontal imaginary lines, also known as parallels. It is the measurement of how far north or south a location is from the equator, which runs halfway between the North and South Poles. Lines of latitude are all parallel to the equator, which has a latitude of  $0^\circ$ . Each line of latitude measures one degree north or south of the equator, ranging from 90 degrees north of the equator to 90 degrees south of it, with the North Pole having a latitude of  $90^\circ\text{N}$  and the South Pole being at  $90^\circ\text{S}$ .

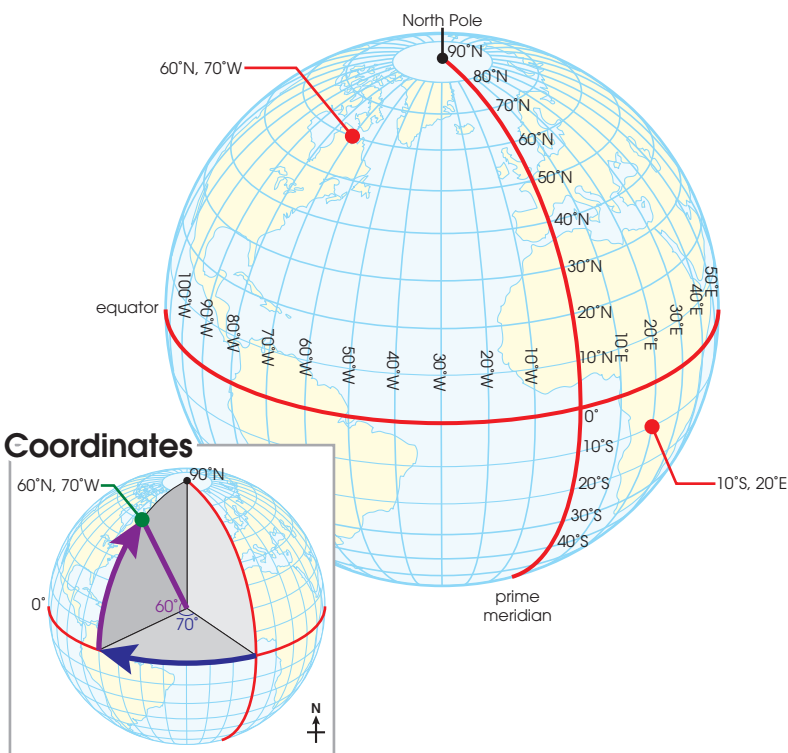
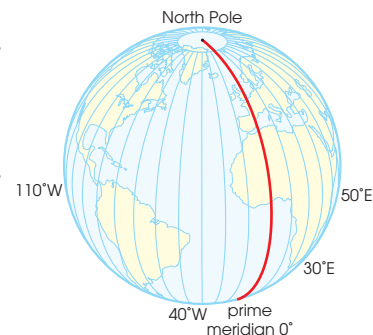
Longitude is measured in degrees by vertical imaginary lines, called meridians, that run around Earth. It is the measurement of how east or west a location is from the prime meridian, which passes through the Royal Observatory in Greenwich, England and is the line that divides the Eastern and Western Hemispheres. Each line of longitude measures one degree of longitude with the prime meridian being  $0^\circ$  longitude. The Eastern Hemisphere is measured in degrees east of the prime meridian and the Western Hemisphere is measured in degrees west of the prime meridian.

The point where the lines of latitude and longitude meet can be represented by coordinates. To find the coordinates, identify the degrees of the lines of latitude and longitude that a location lies on.

### Latitude



### Longitude



### Coordinates of Famous Landmarks

Landmark	Coordinates
CN Tower (in Canada)	$43.6426^\circ\text{N}, 79.3871^\circ\text{W}$
Sydney Opera House (in Australia)	$33.8568^\circ\text{S}, 151.2153^\circ\text{E}$
Eiffel Tower (in France)	$48.8584^\circ\text{N}, 2.2945^\circ\text{E}$
Taj Mahal (in India)	$27.1751^\circ\text{N}, 78.0421^\circ\text{E}$
Teatro Colón (in Argentina)	$34.601^\circ\text{S}, 58.3831^\circ\text{W}$