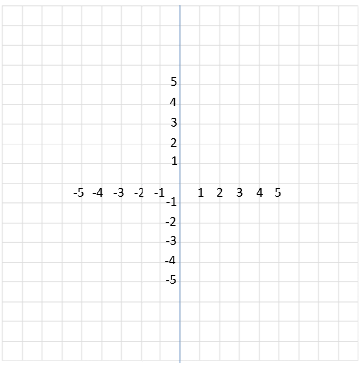
Coordinate Systems

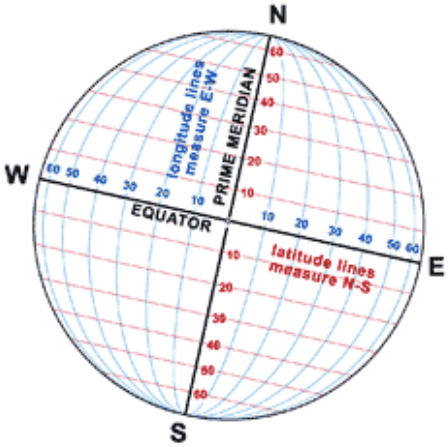


The coordinate plane along with the process of graphing and locating points on the coordinate plane is called a **coordinate system**. There are many different kinds of coordinate systems. All coordinate systems use a grid and axes to locate points. The system shown on the right is a **rectangular coordinate system** because it uses a rectangular grid. It is also called the **Cartesian coordinate system** after **René Descartes**, a French philosopher who developed the idea of using points on a coordinate grid to describe geometric figures. The coordinate system used to locate points on the Earth is called a **geographic coordinate system** and involves a grid and axes based on angles of arc of a great circle.

Geographic Coordinate System

A Global Grid

Have you ever looked closely at a map or globe? Look at the illustration at the right. Do you see the horizontal and vertical axes? The vertical axis is called the **Prime Meridian**. The horizontal axis is called the **Equator**. The horizontal lines are called lines of **latitude**. They are parallel to the Equator. The vertical lines are called lines of **longitude**. They are vertical like the Prime Meridian, but they are *not* parallel to it. They meet at the top and bottom of the sphere, called the poles. The latitude and longitude lines form a global grid.



Where on Earth are you?

Each latitude and longitude line has a number assigned to it. These numbers are determined by the degrees of arc on a great circle. Together, the latitude and longitude lines help us find specific locations on our planet. The Equator measures from East to West using the lines of longitude. The Prime Meridian measures from North to South using the lines of latitude. When you know the numbers of the longitude and latitude lines for a specific location, you know the coordinates of that location.

The geographic axes divide the global grid into four quadrants based on the directions North, South, East, and West. The quadrant that corresponds to quadrant 1 on the Cartesian system, the top right quadrant, is the North East quadrant on the geographic system. When writing the coordinates, the latitude coordinate is more often written first, e.g. 23° N 18° S. However, the direction is also given so the order does not matter; latitude and longitude are not ordered pairs.

Geographic coordinate system image is from http://www.mbmg.mtech.edu/gmr/lewis_clark/lewis_clark-equip.asp