

Latitude and longitude

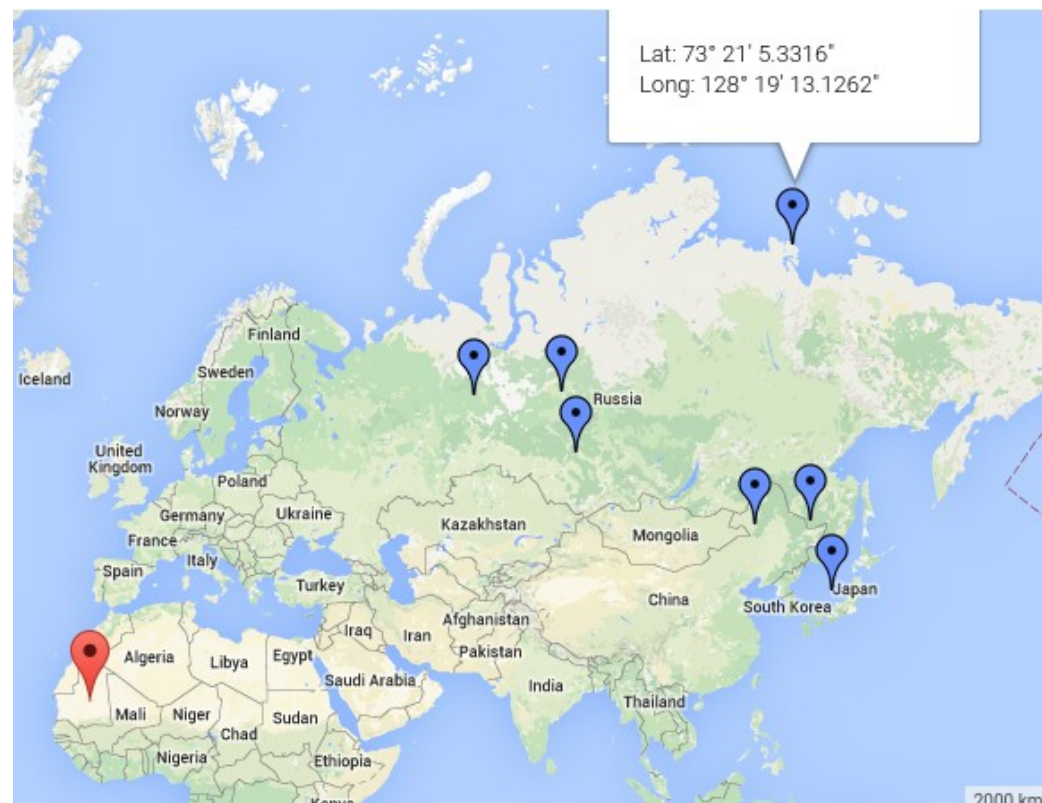
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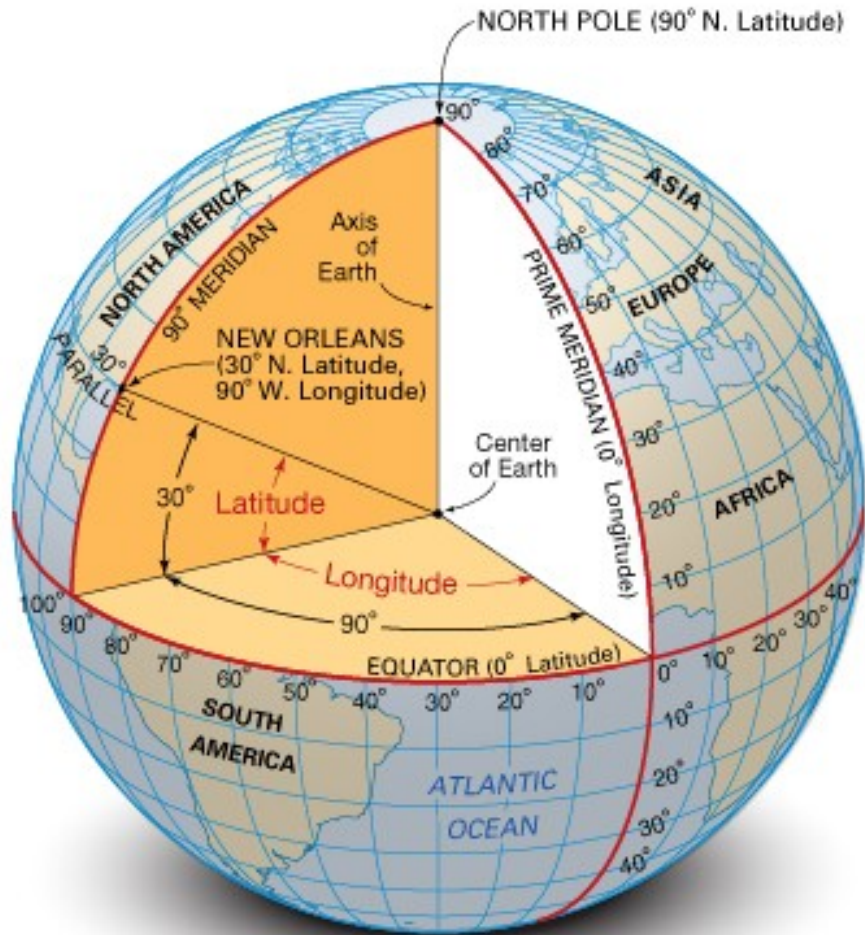
What is latitude and longitude?

Latitude and longitude is a coordinate system that is used for locating any place on the globe. Take a look at this map:



Obviously, that is a map of the earth. You can find the continents and can probably make a good try at pointing to where you live. But, how could you tell someone else where you live so they could find quickly it on their own map? That is where a coordinate system helps.

What is latitude?

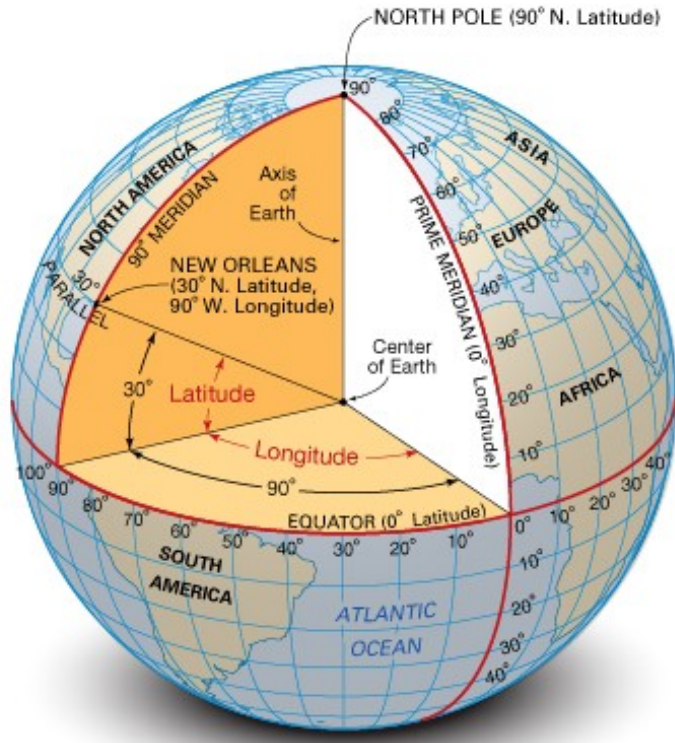


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This cutaway drawing shows that the latitude and longitude of any place are based on the sizes of two angles that originate at the center of the Earth. For New Orleans these angles are 30 degrees (north latitude) and 90 degrees (west longitude).

Latitude is the angular distance from the Equator to a point on the Earth's surface.

What is longitude?



Longitude is seen to be a measure of the angle between the planes of two meridian circles, one of which is the prime meridian. For example, the plane of the 90th line of longitude, on which New Orleans is located, forms a 90° angle with the plane of the prime meridian. All places on the 90th line of longitude west of the prime meridian, therefore, are at 90° west longitude.

The prime meridian is designated zero degrees (0°) longitude. Lines of longitude are numbered east of the prime meridian from 0° to 180° east longitude and west from 0° to 180° west longitude. There is no longitude higher than 180° , and the 180° meridian east and the 180° meridian west are identical.

Longitude and latitude

Latitude and longitude are angles that uniquely define points on a sphere. Together, the angles comprise a coordinate scheme that can locate or identify geographic positions on the surfaces of planets such as the Earth.

Degrees of latitude and longitude can be divided into sixtieths, or minutes. Any location on the Earth can be described as lying at a certain number of degrees and minutes of latitude either north or south of the equator and at a certain number of degrees and minutes of longitude either east or west of the prime meridian.

Minutes of latitude and longitude can be divided into sixtieths, or seconds (²), when more precise information on the location of a place is needed, for example, by navigators, surveyors, pilots, or map makers.

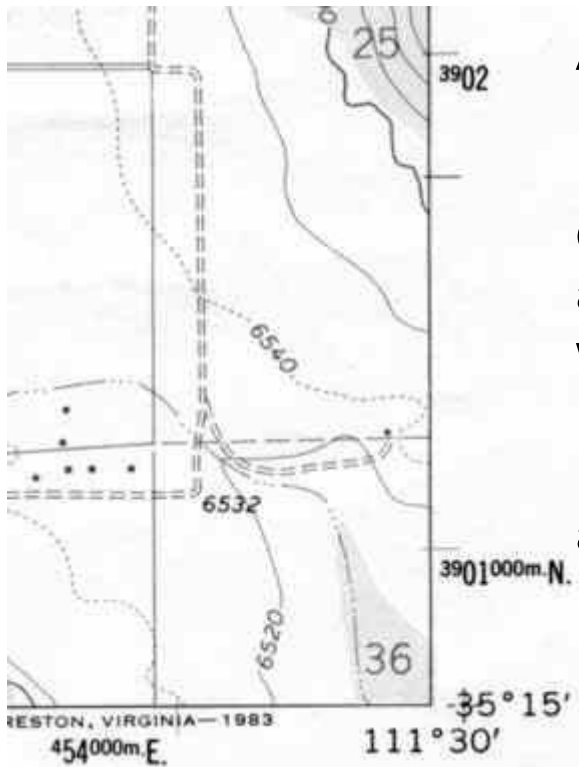
Longitude and latitude

A degree of latitude can easily be changed into miles. Since the circumference of the Earth is roughly 25,000 miles, the length of each degree of latitude is about 69 miles ($1/360$ of 25,000 miles). Degrees of latitude vary a little in length — the variation between the shortest and the longest is less than a mile — because the Earth is not a perfect sphere but is flattened slightly toward the poles and bulges slightly around the equator. The length of a degree of longitude, however, varies from about 69 miles at the equator to zero at the poles, where the meridians come together..

Longitude and latitude on the maps

1

Latitude and longitude are given at each corner of the map and at equally spaced intervals between the corners.



At the equator, one degree of latitude or longitude represents approximately 70 statute miles. At higher latitudes the distance of one degree of longitude decreases. Latitude stays the same because they are always equally spaces apart. If you look on a globe you will see this to be the case. On the other hand, if you look on a globe you will notice that the lines of longitude get closer together as they approach the north and south poles.

Longitude and latitude on the maps

2

Degrees are not accurate enough to find a precise location. At best, one degree of latitude and longitude would define a 70 square mile area. To overcome this problem, 1 degree is divided into 60'(minutes). So if 1 degree equals 70 miles and one degree can be divided into 60' then 1' equals 1.2 miles. Dividing 1 degree into 60' allows one to calculate their position with much better accuracy. In some instances even more accuracy is needed. To do this we can divide 1' into 60"(seconds). If 1' equals 1.2 miles and we can divide it into 60", then 1" equals 0.02 miles. It is worth taking a few seconds to memorize the following numbers. It will help you to use latitude and longitude more effectively:

1 degree = 70 miles

1' = 1.2 miles

1" = .02 miles

If you look at the picture above you will notice the latitude and longitude in the lower right hand corner of the map. You would read it as 35 degrees 15 minutes north latitude and 111 degrees 30 minutes west longitude.

***Thank you for
attention!***