

Encyclopedic Entry

# great circle

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A **great circle** is the largest possible circle that can be drawn around a **sphere**. All spheres have great circles. If you cut a sphere at one of its great circles, you'd cut it exactly in half. A great circle has the same **circumference**, or outer boundary, and the same center point as its sphere. The geometry of spheres is useful for mapping the Earth and other planets. The Earth is not a perfect sphere, but it maintains the general shape. All the **meridians** on Earth are great circles. Meridians, including the **prime meridian**, are the north-south lines we use to help describe exactly where we are on the Earth. All these lines of **longitude** meet at the **poles**, cutting the Earth neatly in half. The **Equator** is another of the Earth's great circles. If you were to cut into the Earth right on its Equator, you'd have two equal halves: the Northern and **Southern Hemispheres**. The Equator is the only east-west line that is a great circle. All other parallels (lines of **latitude**) get smaller as you get near the poles. Great circles can be found on spheres as big as planets and as small as oranges. If you cut an orange exactly in half, the line you cut is the orange's great circle. And until you eat one or both halves, you have two equal **hemispheres** of the same orange. Great circles are also useful in planning **routes**. The shortest path between two points on the surface of a sphere is always a segment of a great circle. Plotting great circles comes in very handy for airplane pilots trying to fly the shortest distance between two points. For example, if you flew from Atlanta, Georgia, to Athens, Greece, you could fly roughly along the path of one of Earth's great circles, which would be the shortest distance between those two points. When planning routes, however, pilots have to take other factors into account, such as **air currents** and **weather**. Great circles are just general paths to follow.

VOCABULARY

Term	Part of Speech	Definition
<b>air current</b>	<i>noun</i>	flowing movement of air within a larger body of air.
<b>circumference</b>	<i>noun</i>	distance around the outside of a circle.
<b>Equator</b>	<i>noun</i>	imaginary line around the Earth, another planet, or star running east-west, 0 degrees latitude.
<b>Great Circle</b>	<i>noun</i>	largest circle that can be drawn around a sphere, such as the Equator.
<b>hemisphere</b>	<i>noun</i>	half of a sphere, or ball-shaped object.
<b>latitude</b>	<i>noun</i>	distance north or south of the Equator, measured in degrees.
<b>longitude</b>	<i>noun</i>	distance east or west of the prime meridian, measured in degrees.
<b>meridian</b>	<i>noun</i>	line of longitude, dividing the Earth by north-south.
<b>parallel</b>	<i>noun</i>	line of latitude, dividing the Earth by east-west.

<b>planet</b>	<i>noun</i>	large, spherical celestial body that regularly rotates around a star.
<b>pole</b>	<i>noun</i>	extreme north or south point of the Earth's axis.
<b>prime meridian</b>	<i>noun</i>	imaginary line around the Earth running north-south, 0 degrees longitude.
<b>route</b>	<i>noun</i>	path or way.
<b>Southern Hemisphere</b>	<i>noun</i>	half of the Earth between the South Pole and the Equator.
<b>sphere</b>	<i>noun</i>	round object.
<b>weather</b>	<i>noun</i>	state of the atmosphere, including temperature, atmospheric pressure, wind, humidity, precipitation, and cloudiness.

## For Further Exploration

### Maps

- Great Circle Mapper



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