

LONGITUDE AND LATITUDE

Background Information

Lines of longitude or meridians – Longitude is a position on the Earth's surface indicating the distance east or west of Greenwich, England, the *Prime Meridian*. The distance, expressed in degrees, minutes, and seconds – is measured along a latitude line. The imaginary half-circles connecting the points of the same longitude, from the North Pole to the South Pole are called *Meridians*. On the opposite side of the globe from Greenwich is the international date line, 180 degrees West or East. At the equator, one degree of longitude equals 111.32km – at the poles, it is zero.

Lines of latitude or parallels – the latitude of a point on the Earth's surface is its distance north or south of the equator. Lines of latitude extend east or west at precise intervals from the equator, which is the 0 degree parallel. Because the latitude lines are drawn around the Earth sphere, they can be divided as a circle into degrees, minutes, and seconds. The length of a degree of latitude becomes larger as distance from the equator increases.

The *equator* is a line around the center of the earth that is equal distance from both poles.

Objective

Upon completion of this activity, students will be able to:

- locate cities using longitude and latitude.
- plot cities on a map with reference to longitude and latitude.

Instructional Time

45 Minutes

Materials

Student pages

Maps

Pencil

Ruler

Procedure

1. Prepare overhead or drawing to demonstrate longitude and latitude.
2. Copy student lab sheet and map.
3. Review/Introduce to students the use of longitude and latitude.
4. Instruct students to complete worksheet by locating the longitude and latitude of the ten cities listed. Then, use the longitude and latitude they determined to plot the cities on the world map.

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Extensions

- Study different types of maps: projections and topographic. Research cartography.
- Discover how to find your latitude by using the altitude of stars.
- Draw a map to scale.
- Write for additional maps and information:
National Cartographic Information Center
507 National Center
Reston, VA 22092
- Take an old basketball and mark it with lines of longitude and latitude.

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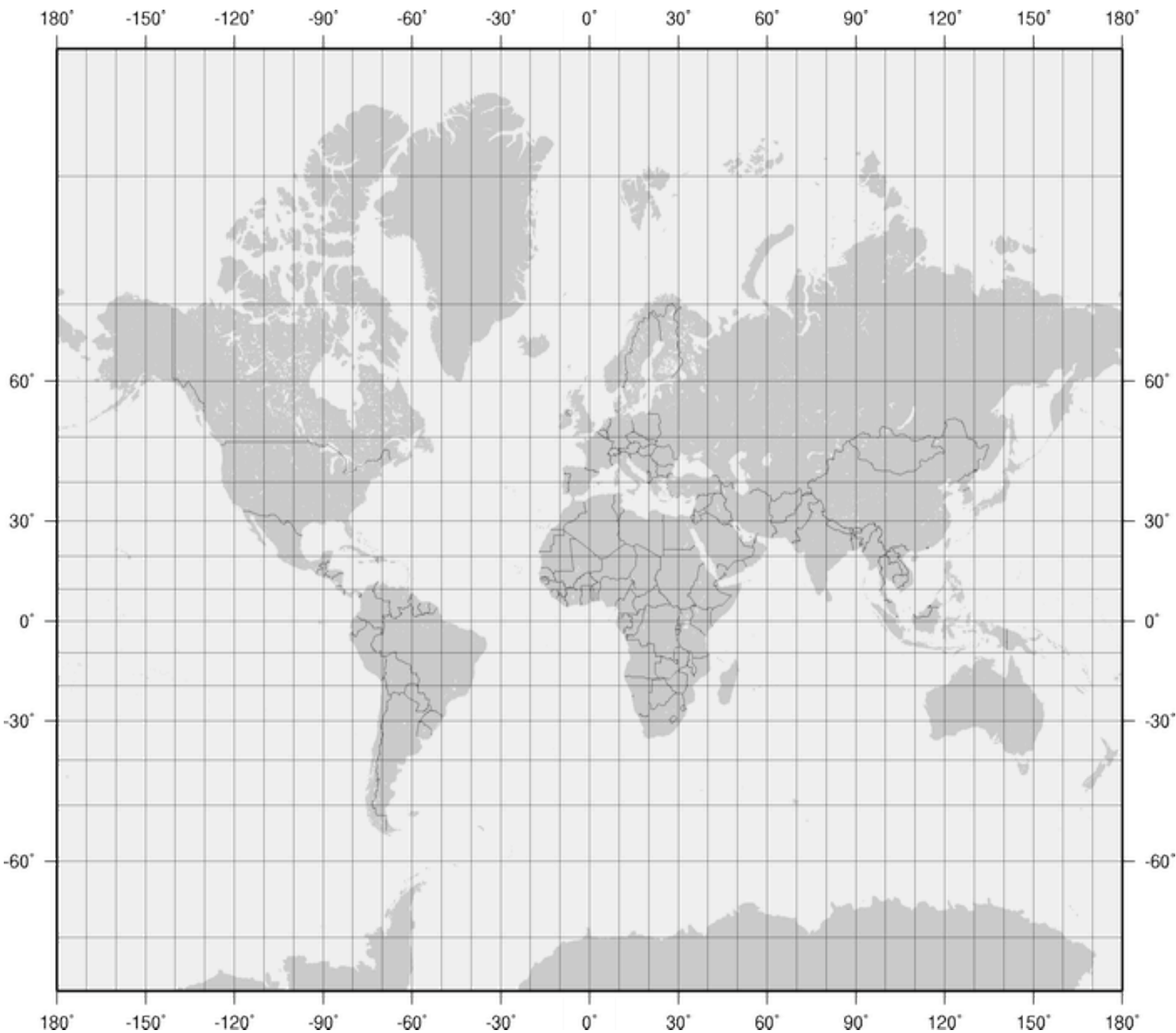
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ANSWER KEY

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As an astronaut on the way to Mars, you have to plot the landing path. It will be important for you to be able to use longitude and latitude lines correctly. The longitude and latitude grid will help you to locate certain points on Mars.

Directions: Practice this skill by locating the longitude and latitude of each of the cities listed below from the maps provided by your teacher. Since the cities are not located exactly on the grid lines, use an estimate of the degrees. When finished determining the longitude and latitude, plot the cities on the world map.

CITY	LONGITUDE	LATITUDE
1. Greenwich, England	<i>0°</i>	<i>53°N</i>
2. Moscow, Russia	<i>38°E</i>	<i>56°N</i>
3. New York, New York	<i>74°W</i>	<i>41°N</i>
4. Sydney, Australia	<i>151°E</i>	<i>34°S</i>
5. Beijing, China	<i>116°E</i>	<i>40°N</i>
6. Buenos Aires, Argentina	<i>58°W</i>	<i>35°S</i>
7. Capetown, South Africa	<i>25°E</i>	<i>12°S</i>
8. Cario, Egypt	<i>31°E</i>	<i>30°N</i>
9. Edmonton, Canada	<i>114°W</i>	<i>53°N</i>
10. Calcutta, India	<i>88°E</i>	<i>22°N</i>