

# Explorers and Their Tools

**Astrolabe:** This compact metal instrument was developed between A.D. 400–800 and was used to calculate the position of stars in navigation. The oldest existing astrolabes are Arabic from the eleventh and twelfth centuries. They remained popular tools until about 1650.

**Sextant:** This instrument was developed in about 1731 by two men working separately in England and America. The sextant measures angular distances between the horizon and stars. These angles help sailors know how to navigate their ships.

**Magnetic Compass:** The first magnetic compasses were developed between 400–206 B.C. in China. At first made of stone, then later of two parts like a plate and a spoon, today these instruments have magnetic needles encased in metal or plastic. The needles point to the earth's magnetic north and sometimes float in liquid.

**GPS:** The Global Positioning System was developed in the United States during the early 1990s. It is a group of satellites orbiting 10,600 miles above Earth. These satellites send radio signals to land, sea, and air travelers who pick up the signals on a receiver that is often called a "GPS." GPS signals tell travelers their position, speed, and time of day. Receivers often have a screen that shows positions on a map.

## Check for Understanding: Tools and Timeline

In the timeline below, make a mark at the time that each explorers' tool was developed, then draw a line to connect your timeline marks to each tool's name.

magnetic compass

GPS

astrolabe

sextant

