

Objective:

You will learn how to determine positions on the Earth using the coordinate system of latitude and longitude.

Procedure A: Measuring Latitude

Light rays from stars are parallel to one another as they travel through space. However, when they hit the curved surface of the Earth they don't always hit perpendicular. Depending upon the latitude of an observer the light rays from Polaris can range from 0-90° above the horizon.

The diagram below shows the position of four observers located at different latitudes in the northern hemisphere.

1. Use your protractor to measure the angle between the observers, the center of Earth and the equator. Record your angle in degrees in the Procedure A: Data Table "Angle to Equator".
2. Use your protractor to measure the angle between the Polaris light rays and the horizon of each observer (shown by a line drawn through the observers line of vision). Record your angle in degrees in the Procedure A: Data Table "Angle to Polaris"
3. Based upon your measurements from steps 1 and 2 determine the latitude of each observer. Record your answers in the Procedure A: Data Table "Latitude".

