

# Paper Plate Education

*"Serving the Universe on a Paper Plate"*

## Activity: Latitude by Polaris



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In this compound design for the northern hemisphere, the student makes a dial that shows the correlation between the observed altitude of Polaris and the observer's latitude.

Draw the earth centered on a plate, and label. Include labels for the equator, celestial equator, north pole, north celestial pole, and latitude hash marks. Because Polaris is so far away, its light can be considered reaching the earth in parallel lines. Draw and label the lines of sight to distant Polaris. Cut a slit around two thirds of the edge of the earth, but not the lower left third.

Construct the two pointers. Draw the boat and the horizon indicator perpendicular to the line extending from the center hole to the star pointer's pivot point hole. Highlight the labeled "To Horizon" and "To Polaris" arrows. With paper fasteners, affix the star pointer under the horizon pointer, which slides under the slit.

To use the device, move the "Boat" around the earth to an unknown latitude. Align the "North" pointer parallel to the north celestial pole. Determine the latitude by reading the altitude of Polaris, or the Horizon-to-Boat-to-North angle. Note how the common angle changes from the equator, through the mid-latitudes, to the north pole. Expand on the geometry lesson that makes this correlation a useful aid for northern hemisphere navigators.



Contributed by Chuck Bueter.

*GLPA Proceedings*, 1999, p. 35.

[Note: This activity is included in the [Paper Plate Astronomy video/DVD/streaming video.](#)]

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