

Latitudes - Teachers Notes

Projecting the image of the globe and talking it through may be needed

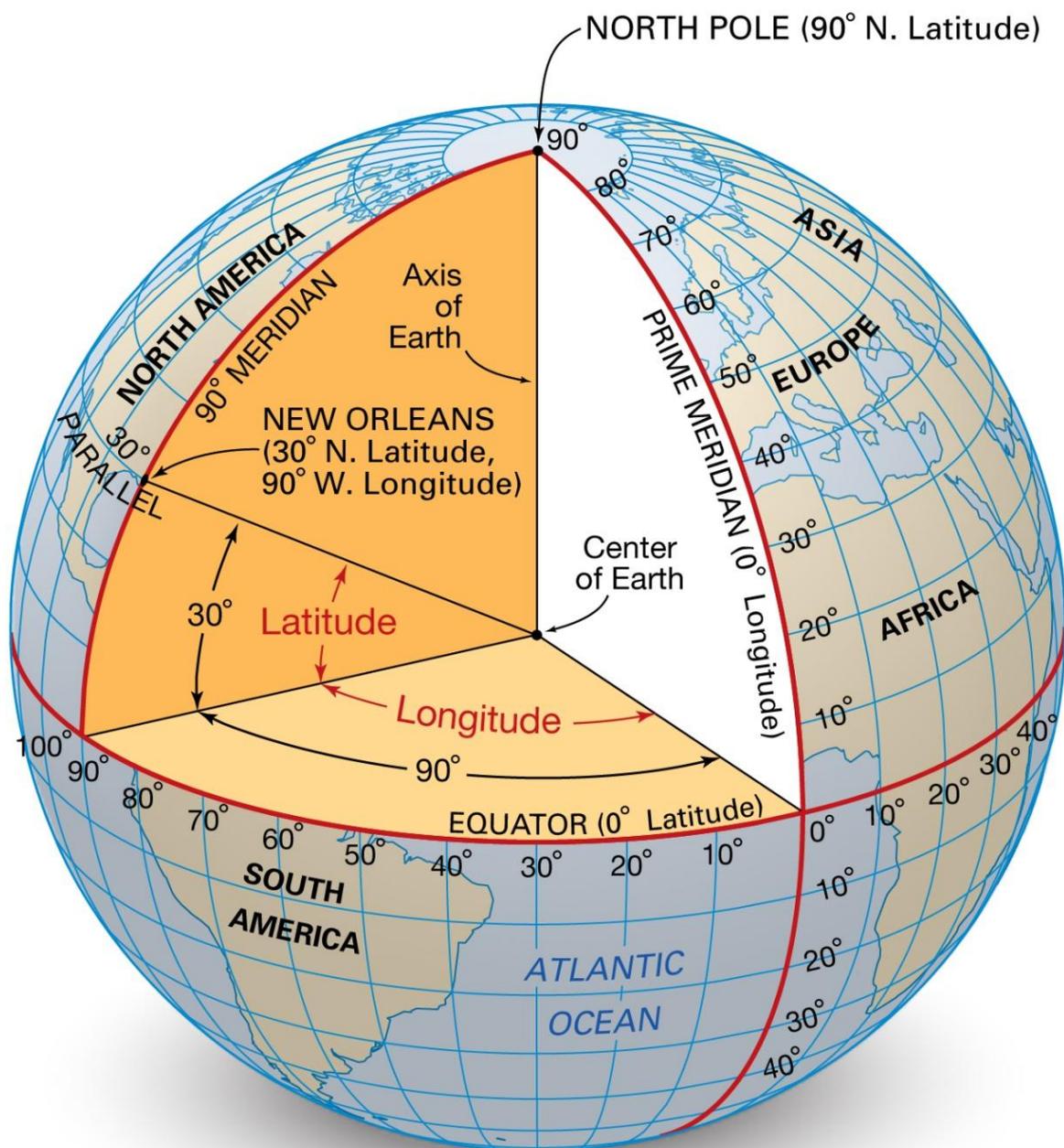
The angles of between the stars and the horizon are the important angles for a navigator. As they show how far away you are from the North or South Pole.

This diagram shows navigation lines around the Earth called lines of latitude.

The lines are parallel to the Equator which runs around the middle of the earth.

Lines of latitude are marked in degrees North or South of the Equator.

Measuring the angles of the stars and sun above the horizon means you can locate how many degrees north or south of the equator you are.



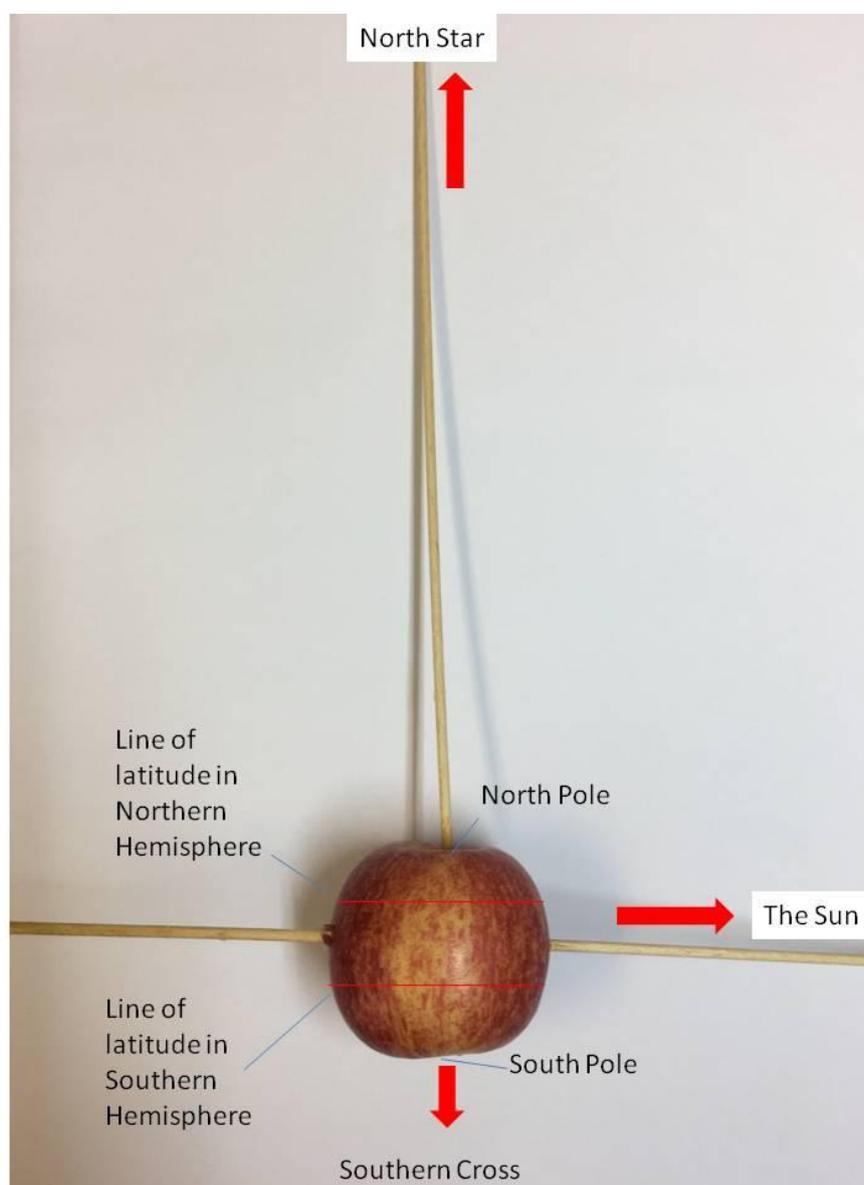
NAVIGATION – Teachers Notes – Latitudes

Set up a model using long skewers and an apple or orange to show the earth in relation to the North Star and the Sun. The North Star is directly above the North Pole and the Sun is directly above the Equator.

This simple model can be demonstrated from the front – or make one per team. Spatial awareness with the 3D form will help them understand. You could make a larger model with a sponge ball and canes.

Mark on the picture above

| | |
|---|---|
| ➤ The North Pole | ➤ The South Pole |
| ➤ The Equator | ➤ An arrow to the Southern Cross |
| ➤ A line of Latitude in the Northern Hemisphere | ➤ A line of latitude in the Southern Hemisphere |



Imagine you were standing on the Equator

| | |
|--|---|
| ➤ What is the angle of the sun above the horizon? Answer <i>90 Degrees</i> | ➤ What is the angle of the North Star above the horizon? Answer <i>Zero Degrees</i> |
|--|---|

Imagine you were standing at the North Pole

| | |
|--|---|
| ➤ What is the angle of the sun above the horizon? Answer <i>Zero Degrees</i> | ➤ What is the angle of the North Star above the horizon? Answer <i>90 Degrees</i> |
|--|---|

Imagine you were standing on the South Pole

| | |
|--|---|
| ➤ What is the angle of the sun above the horizon? Answer <i>Zero Degrees</i> | ➤ What is the angle of the Southern Cross above the horizon? Answer <i>90 Degrees</i> |
|--|---|

Imagine you were standing somewhere in-between the North Pole and the Equator

Explain how measuring the angle of the Sun and the North Star could help you find your latitude?

Answer. *The angle for each of these would change as you moved south from the pole to the equator*

Do you think the Polynesian and Maori navigators knew the earth was round and if so why?

Answer. Yes - *Navigating by the stars requires an understanding of the solar system and an awareness that stars and planets disappear over a horizon.*

Do sailors still use a sextant and why?

Answer. Yes – *Satellite Navigation (SAT Nav) cannot be relied to work far out in an ocean. Better to have a fail-safe method to backup something that may fail.*

What do you use to navigate?

Answer. *They may use their phone - GPS – worth asking if anyone is aware which way the sun rises and sets is and what this means in terms of where is East and West? They could examine trees to see if there is a tree with moss just on one side – this is north because moss prefers the shade. Which side would be in the southern hemisphere?*