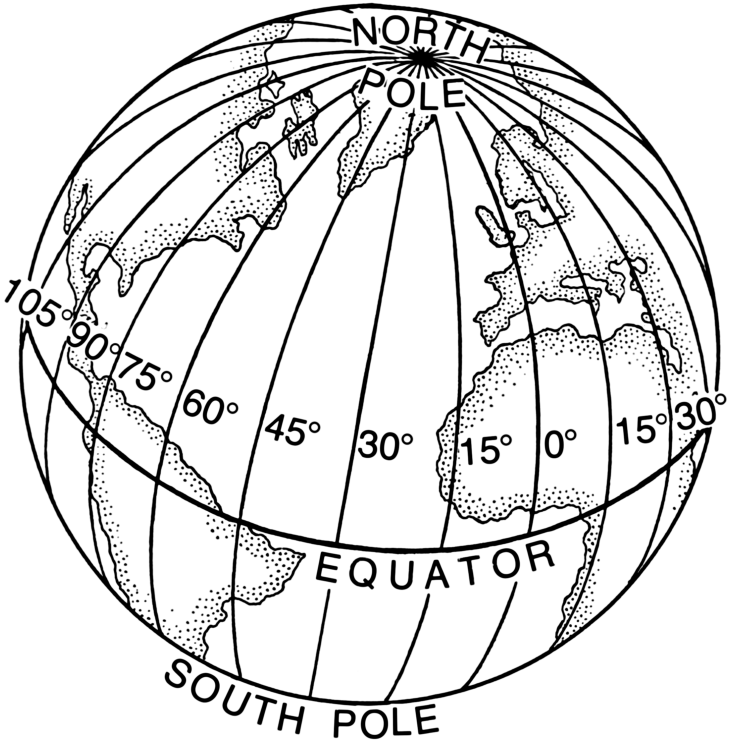
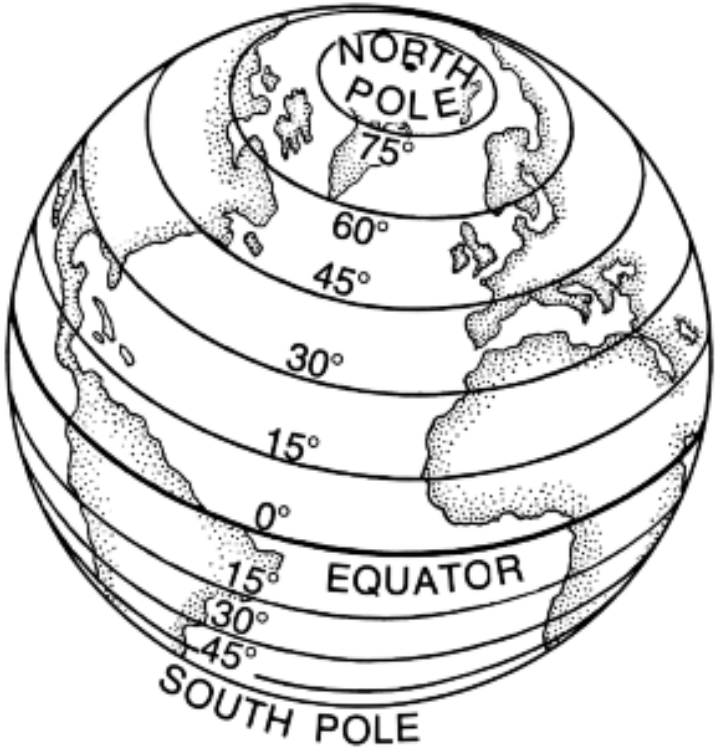
The Longitude Problem

August 26, 2010

Longitude vs. Latitude



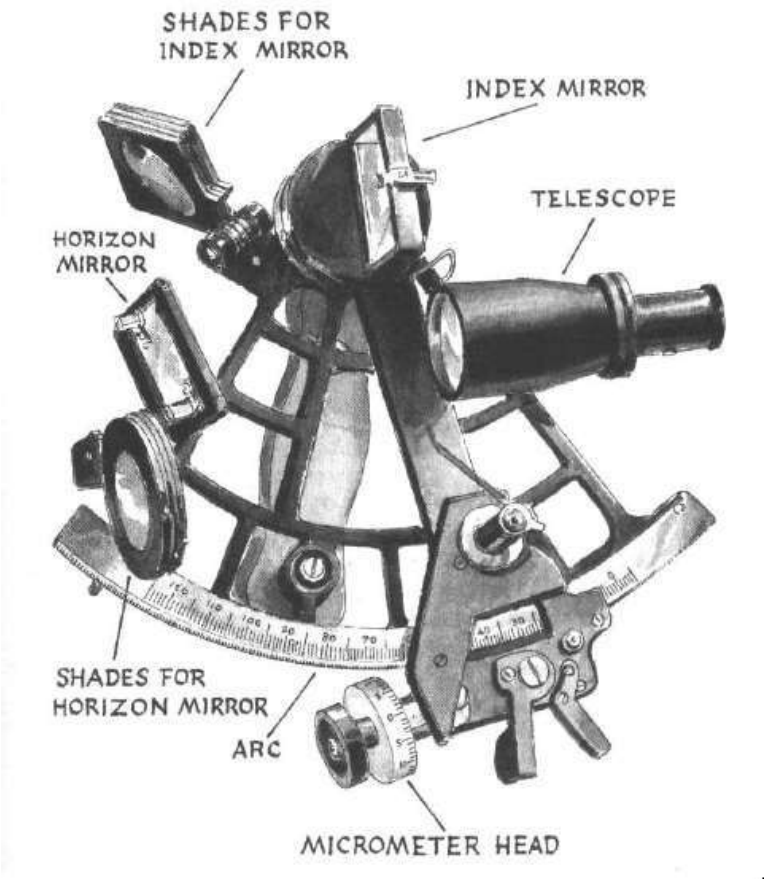
Longitude



Latitude
(Latitudes are **Flat**)

Finding Latitude

Using a sextant and essentially the same ideas as Eratosthenes, navigators could find their latitude at sea by measuring the position of the sun at noon.

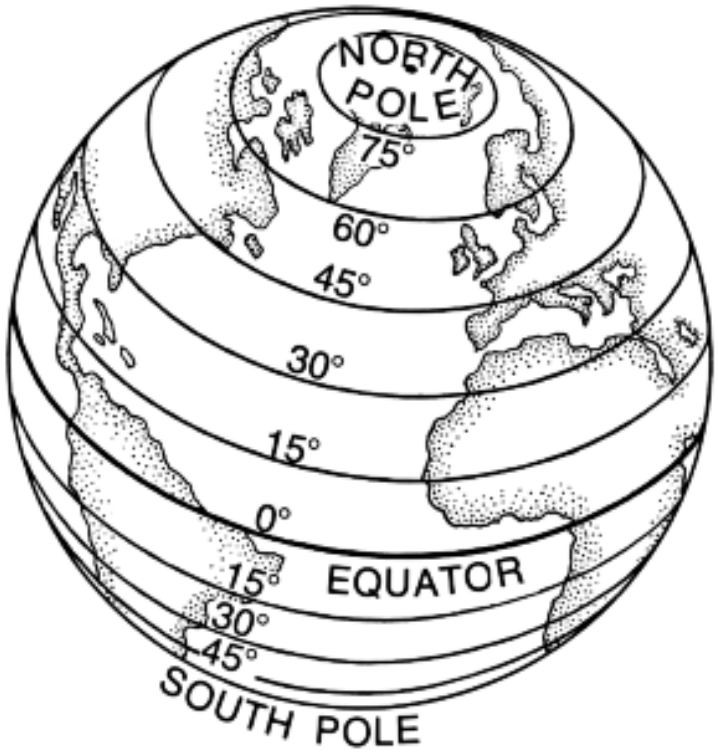


Finding Latitude

Before sextants were perfected in the 1700s, sailors used a cross staff to find the angle of the sun. This caused many sailors to eventually go blind.

Finding Latitude

By sailing on the same latitude, you can sail East or West, follow the trade winds, and know where you will eventually hit land.



Longitude is Harder

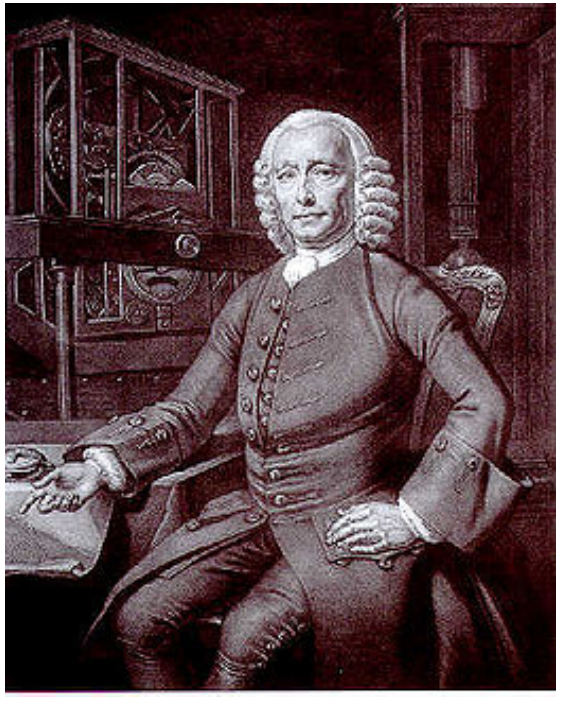
Finding Longitude is harder than latitude. To find longitude, you need to have an accurate way to measure time.

The Longitude Prize

The Longitude prize was established in 1714 by the British parliament.

- £10,000 for a method that could determine longitude within 60 nautical miles (111 km)
- £15,000 for a method that could determine longitude within 40 nautical miles (74 km)
- £20,000 for a method that could determine longitude within 30 nautical miles (56 km).

The Man Who Solved the Problem



John Harrison (1693-1776)

The Marine Chronometer

Harrison's H4, 1760

The Longitude Prize Winners

- John Harrison £14,315 Received in several payments. £4,315 was awarded during his work on his chronometers from 1737 to 1764 with the remaining £10,000 provided in 1765.
- Tobias Mayer £3,000 Contributions to the lunar distance method. His widow received the money due to Mayer's untimely death.
- Thomas Mudge £3,000 Construction of chronometers with improvements to Harrison's designs.
- John Arnold £3,000 Design and improvements to chronometers.
- Thomas Earnshaw £3,000 Design and improvements to chronometers.
- Charles Mason £1,317 Various contributions and improvements on Mayers lunar tables.
- Jesse Ramsden £615 Design and construction of a superior dividing engine (£300) and publishing the design (£315).
- Larcum Kendall £500 Construction of a copy of Harrison's H-4.
- Leonhard Euler £300 Contributions to the lunar distance method in aid of Mayer.
- Nathaniel Davies £300 Design of a Lunars telescope for Mayer

Harrison also received £8,750 from Parliament in thanks for his work, bringing his total lifetime award to £23,065.