

Betulkah Bumi berbentuk bulat?





**Bagaimanakah
bentuk bumi?**

**Bulat !
Hehe... semua
orang juga tahu**

Apa buktinya?

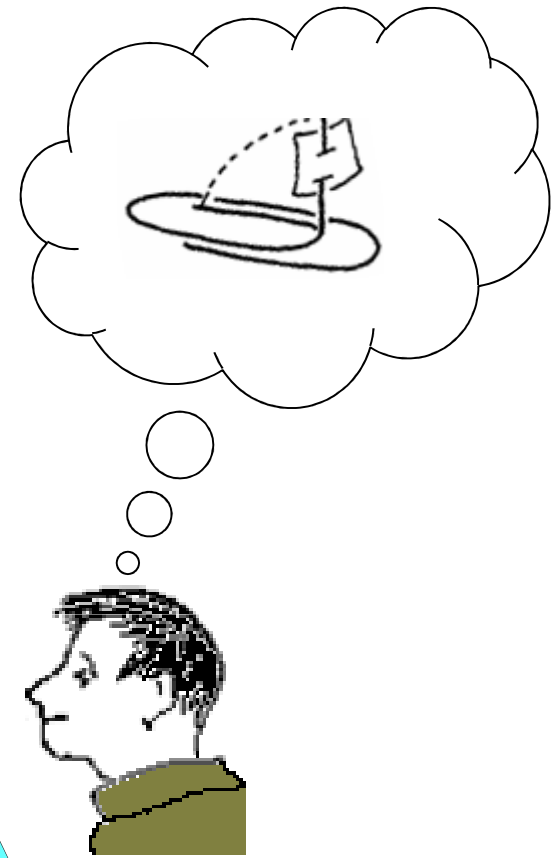
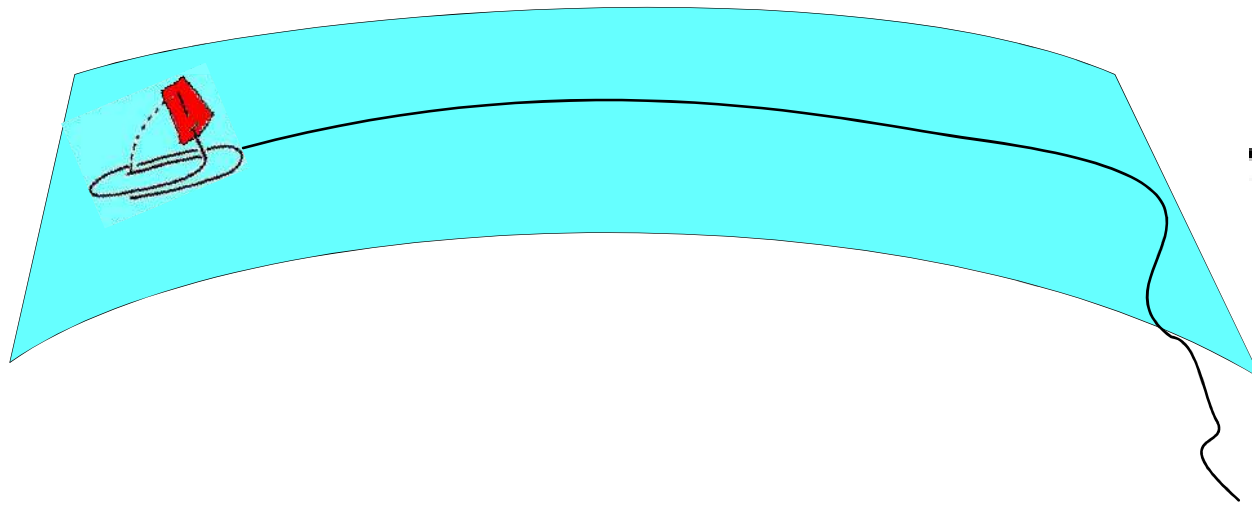
**Ehm.....
apa ya?**



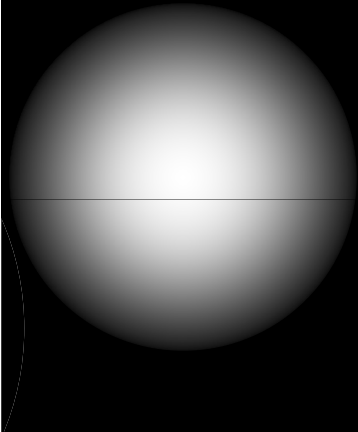
Proofs that the Earth is Round

- **Ships appearing to sink as they go over the horizon.**
- **The Earth's shadow on the moon during an eclipse is always curved. This could only be possible if the Earth was a sphere.**
- **Different time zones.**
- **Different angles to Polaris as you travel N. or S.**
- **Photos from space- the best proof**

Bumi bulat



Bayangan bumi pada bulan saat gerhana bulan



Earth Shadow during Lunar Eclipse



Time zones



Earth from the moon



Encarta Encyclopedia, NASA

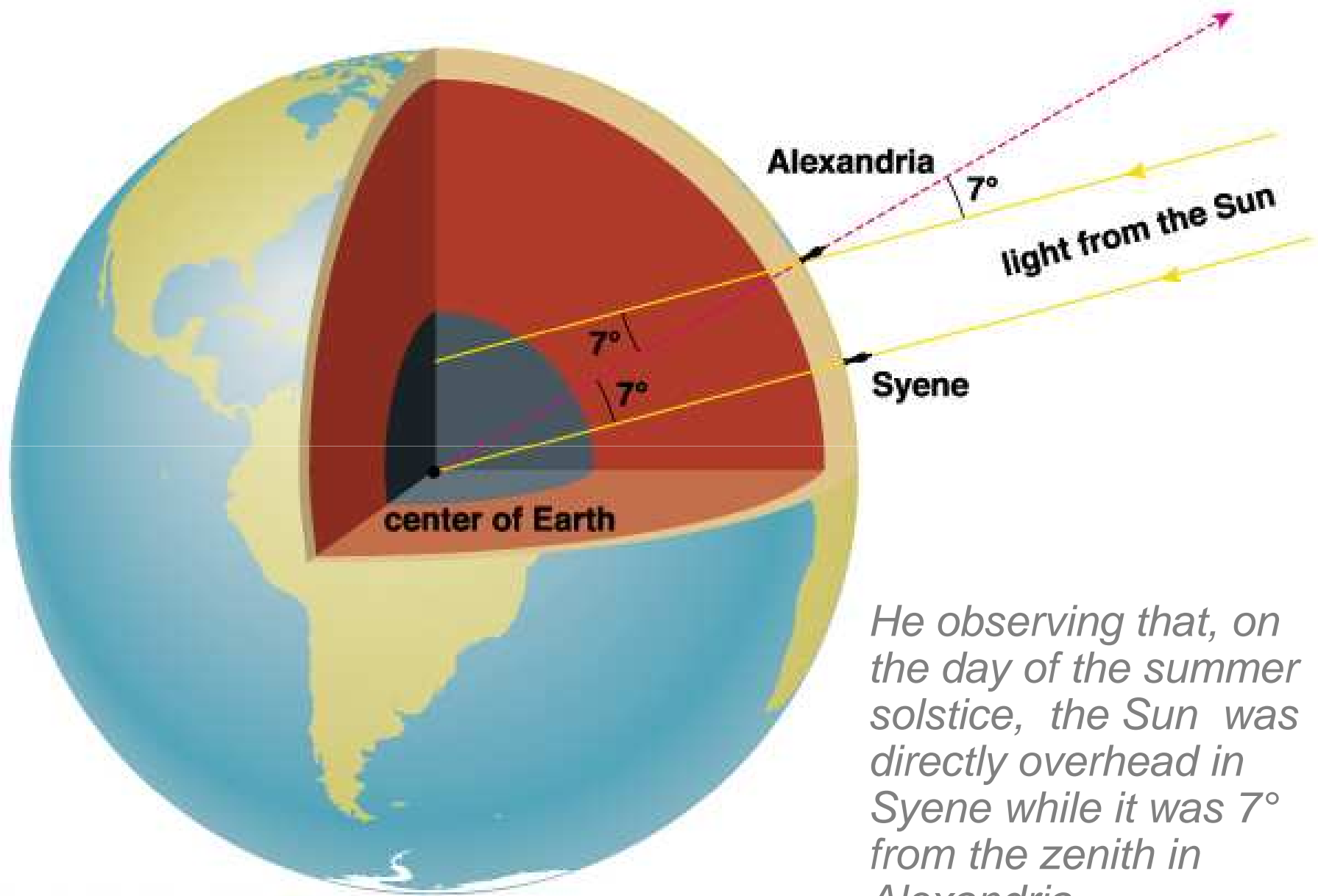
Eratosthenes (240 BC)



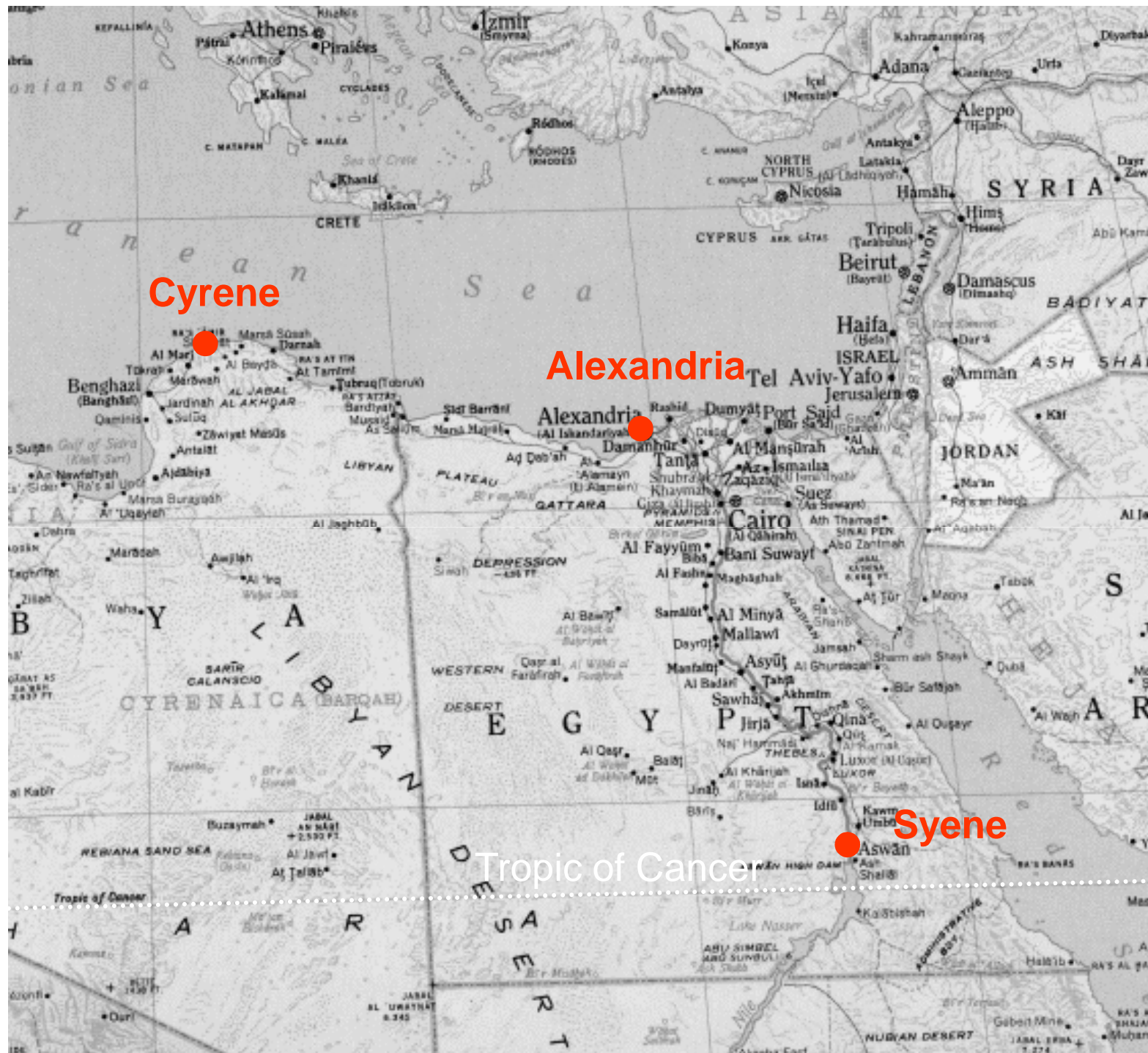
He made an accurate measurement the diameter of the Earth



Library in Alexandria



He observing that, on the day of the summer solstice, the Sun was directly overhead in Syene while it was 7° from the zenith in Alexandria.

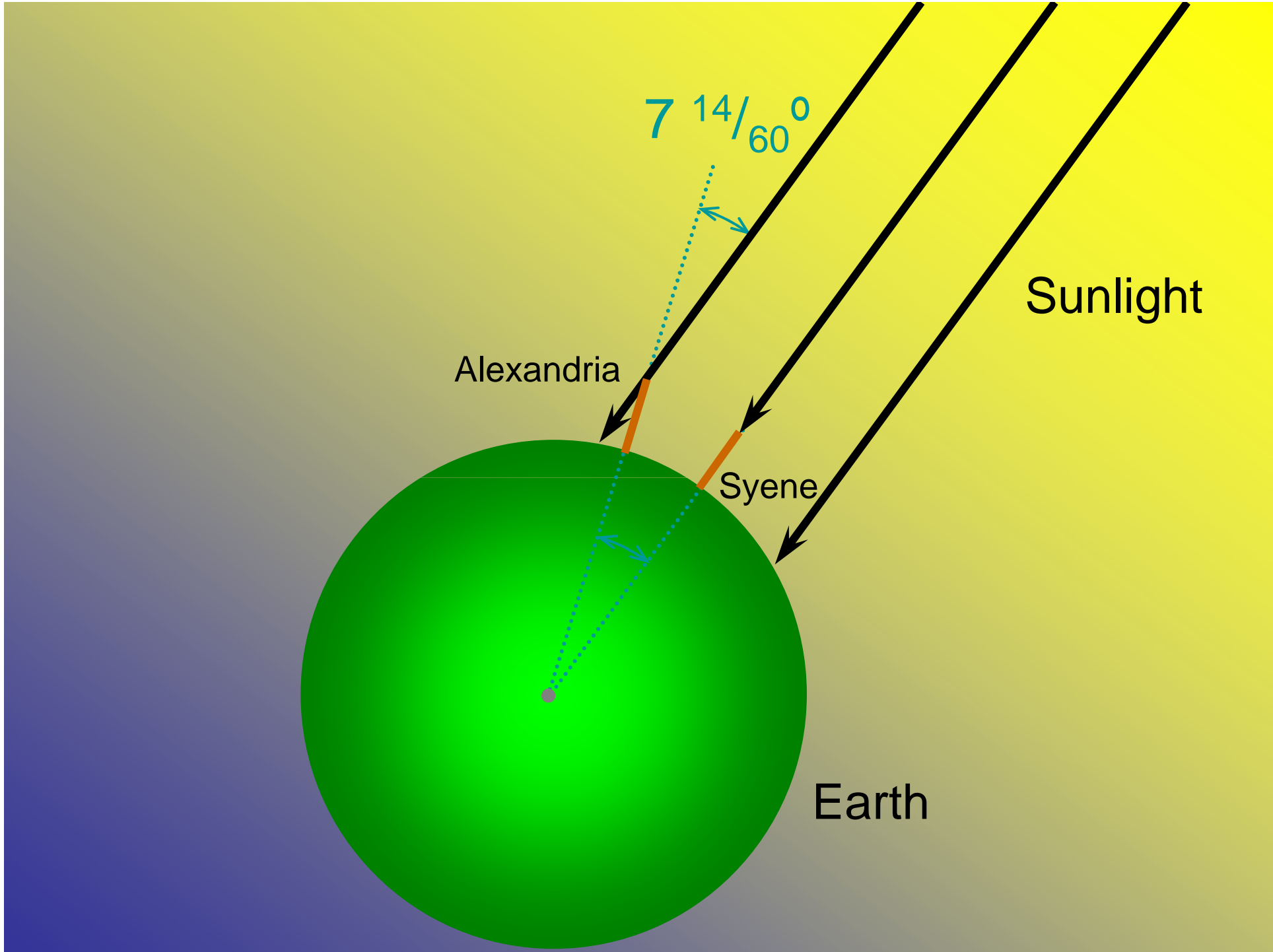


Cyrene

Alexandria

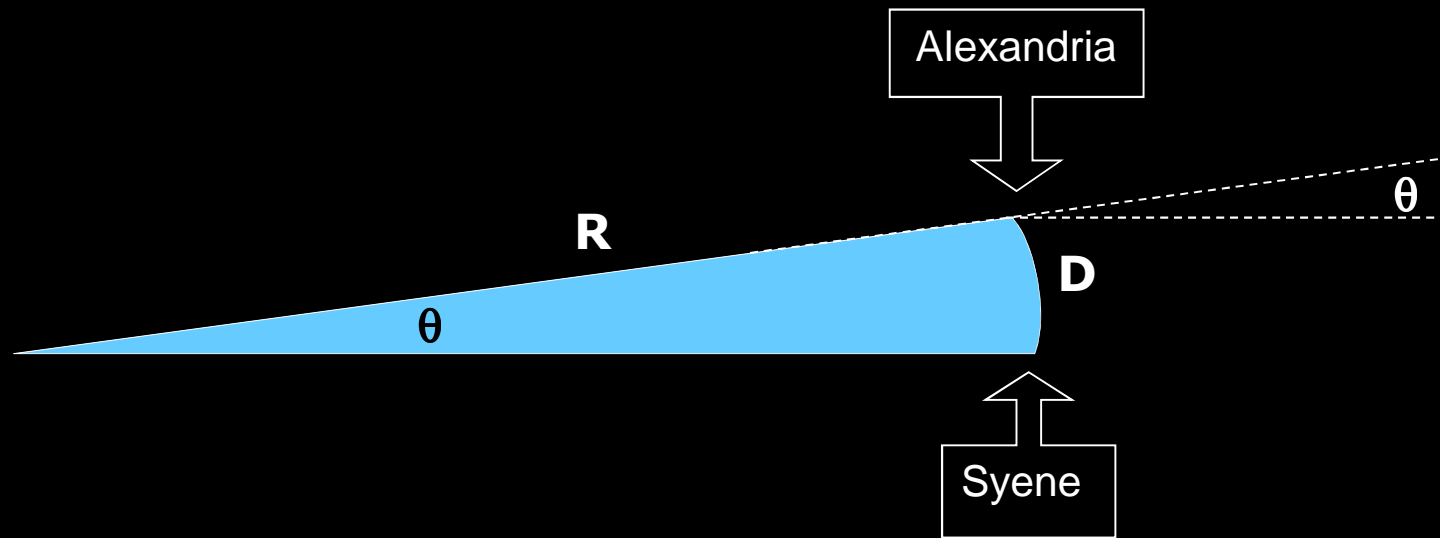
Syene

Tropic of Cancer



Eratosthenes

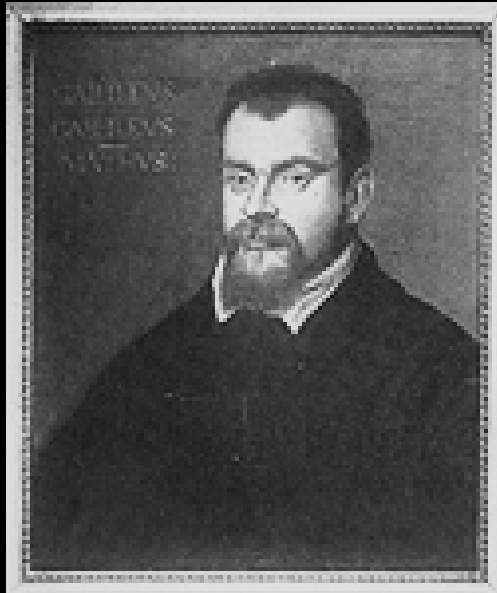
Measured the altitude of the noontime sun at Alexandria at its maximum on Jun 21st. On that date, the Sun is directly overhead at noontime at Syene.



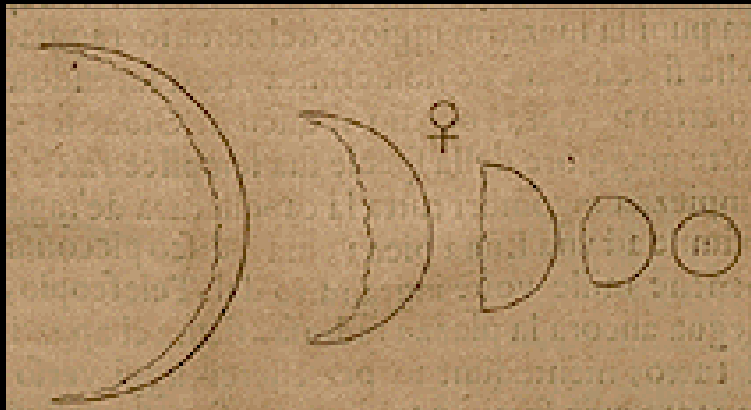
$$\frac{\theta}{360^\circ} = \frac{D}{2\pi R}$$

Tugas (seperti yang dilakukan Eratosthenes)

- Anda tentukan dua kota A dan B yang berbeda.
- Cari data jarak antara kedua kota tersebut.
- Cari data koordinat (lintang dan bujur) kedua kota tersebut.
- Dari data-data kedua kota tersebut, tentukan jari-jari bumi !



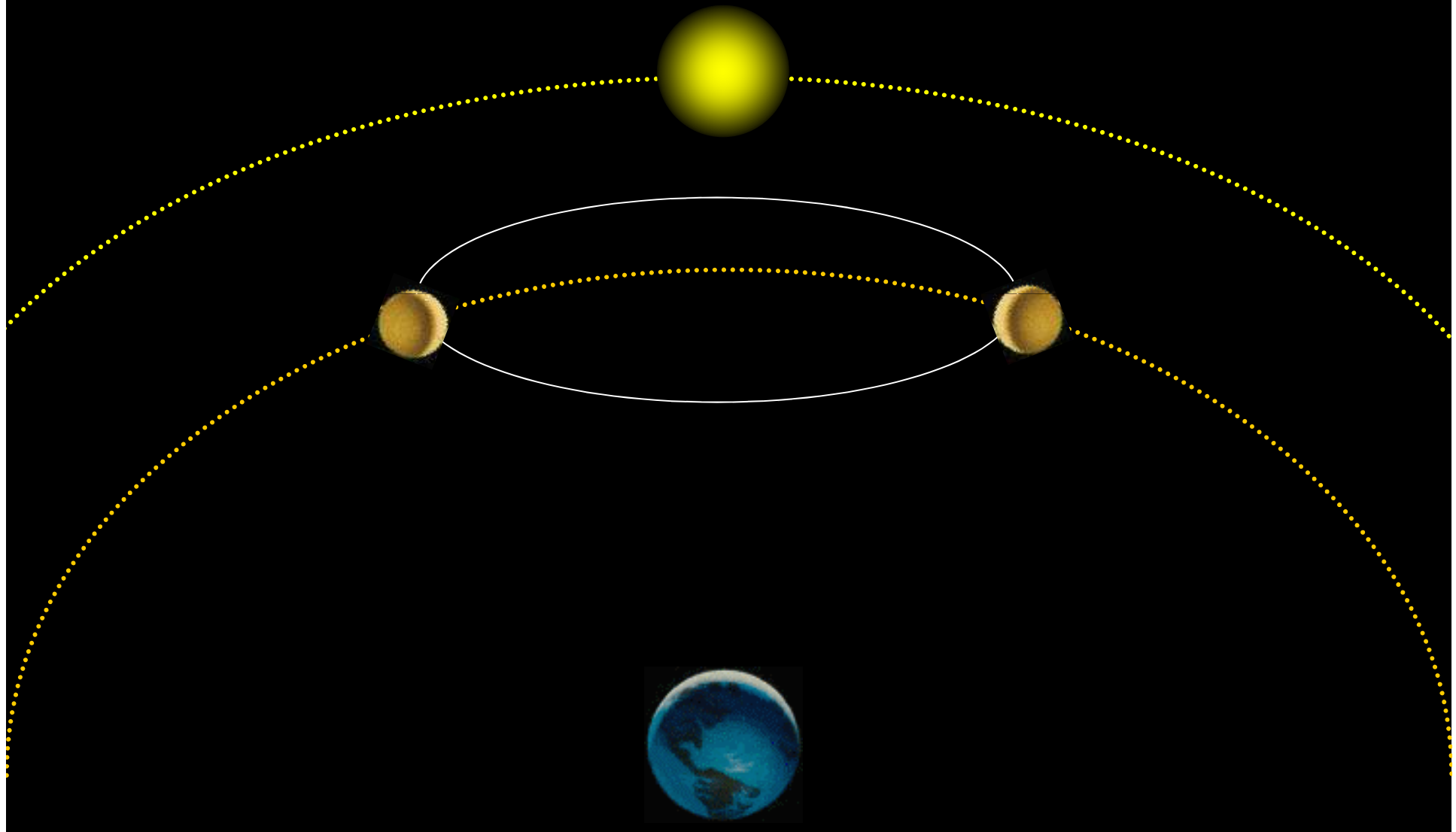
Galileo's Telescope Discoveries



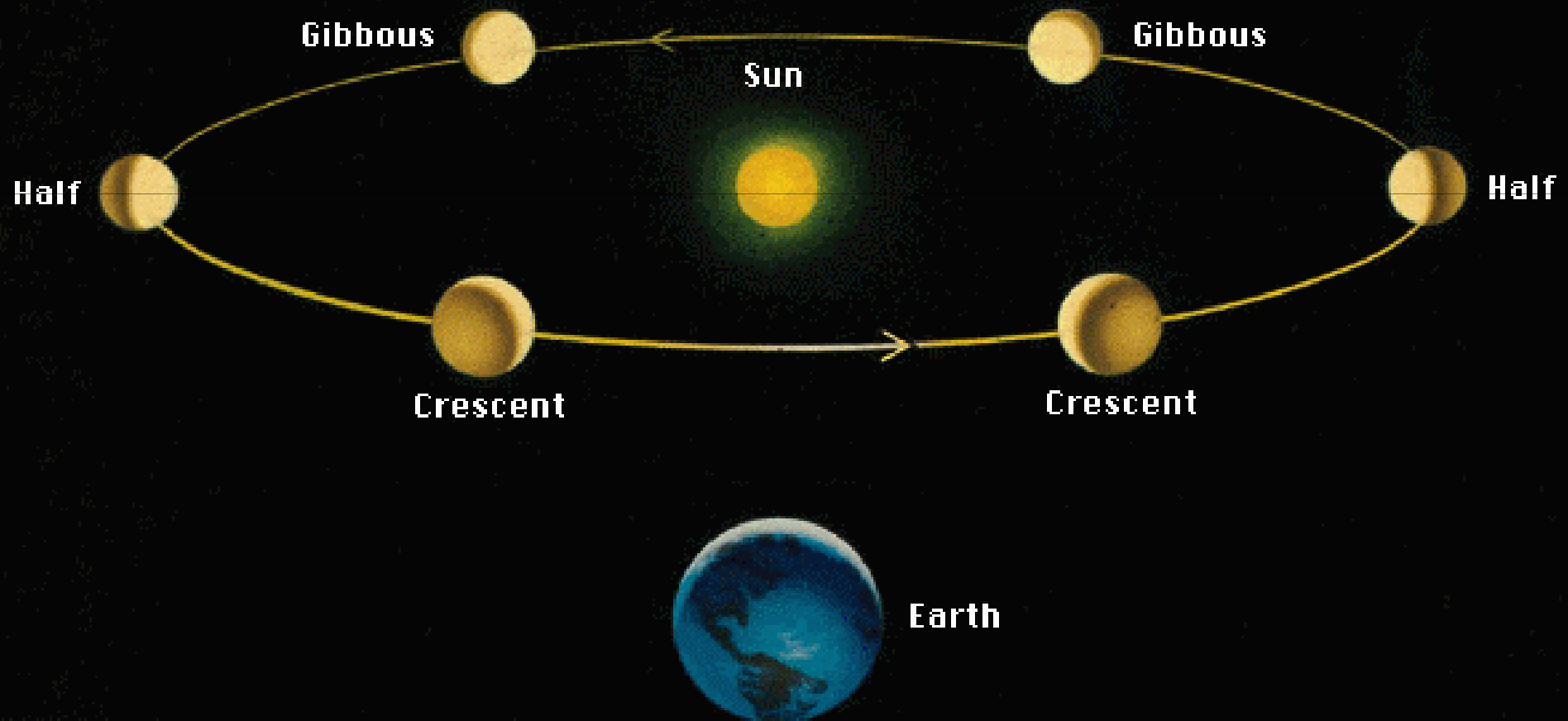
Phases of Venus

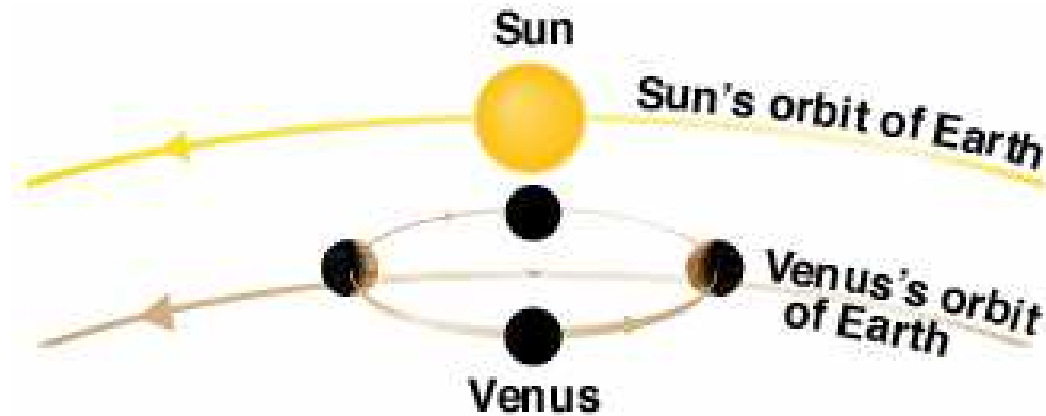
- The full range of phases cannot happen in the Geocentric Model.
- [Link](#)

The Phases of Venus in the Geocentric Model

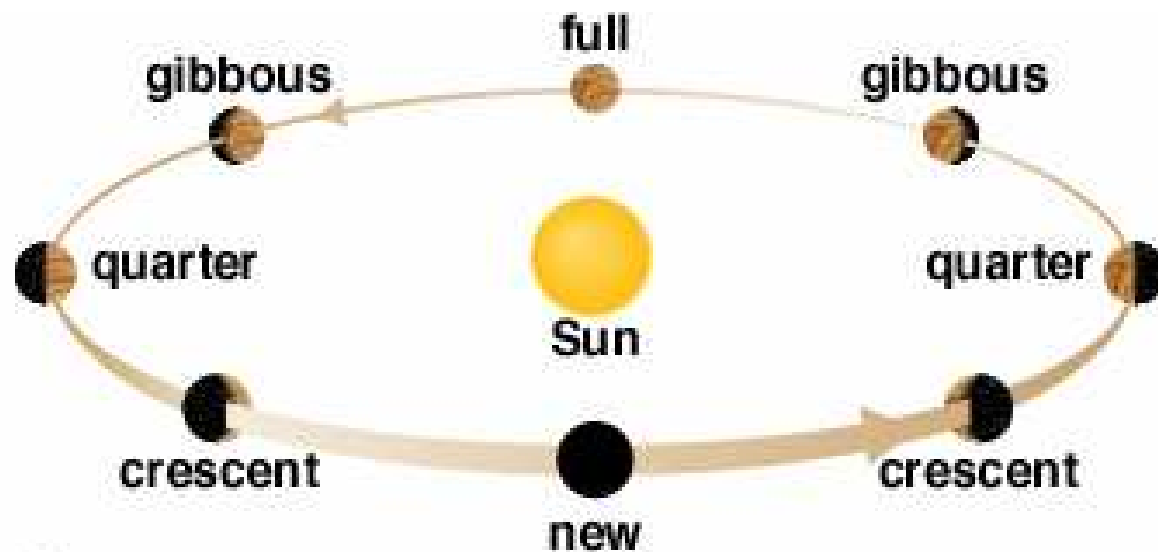


The Phases of Venus in the Heliocentric Model





Fase Venus pada Geosentris



Fase Venus pada Heliosentris

Retrograde Motion

- Ptolemy tried to explain this motion with epicycles.
- Copernicus showed that retrograde motion was actually a consequence of one planet on a smaller orbit overtaking and passing another on a larger orbit. This is parallax.
- Parallax - the apparent shift in an objects position caused by the observer's motion

Bagaimana gerak Retrograde terjadi?

