

UNIT 2

Earth Dimensions

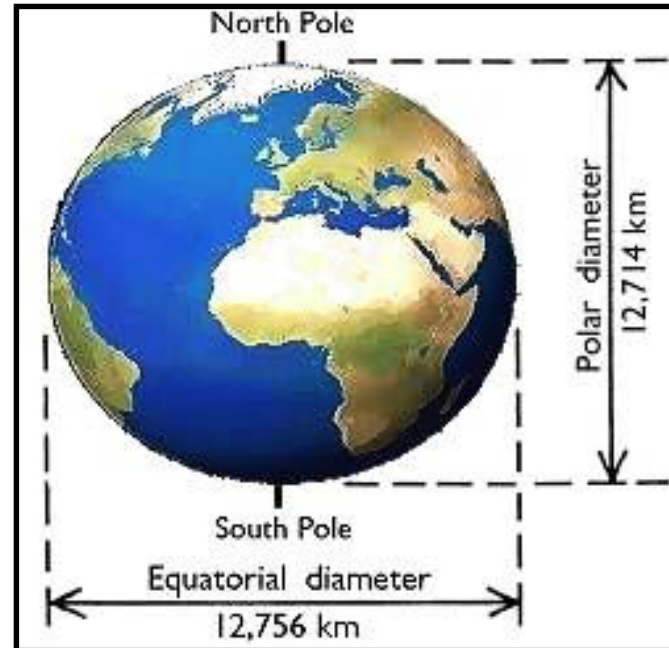


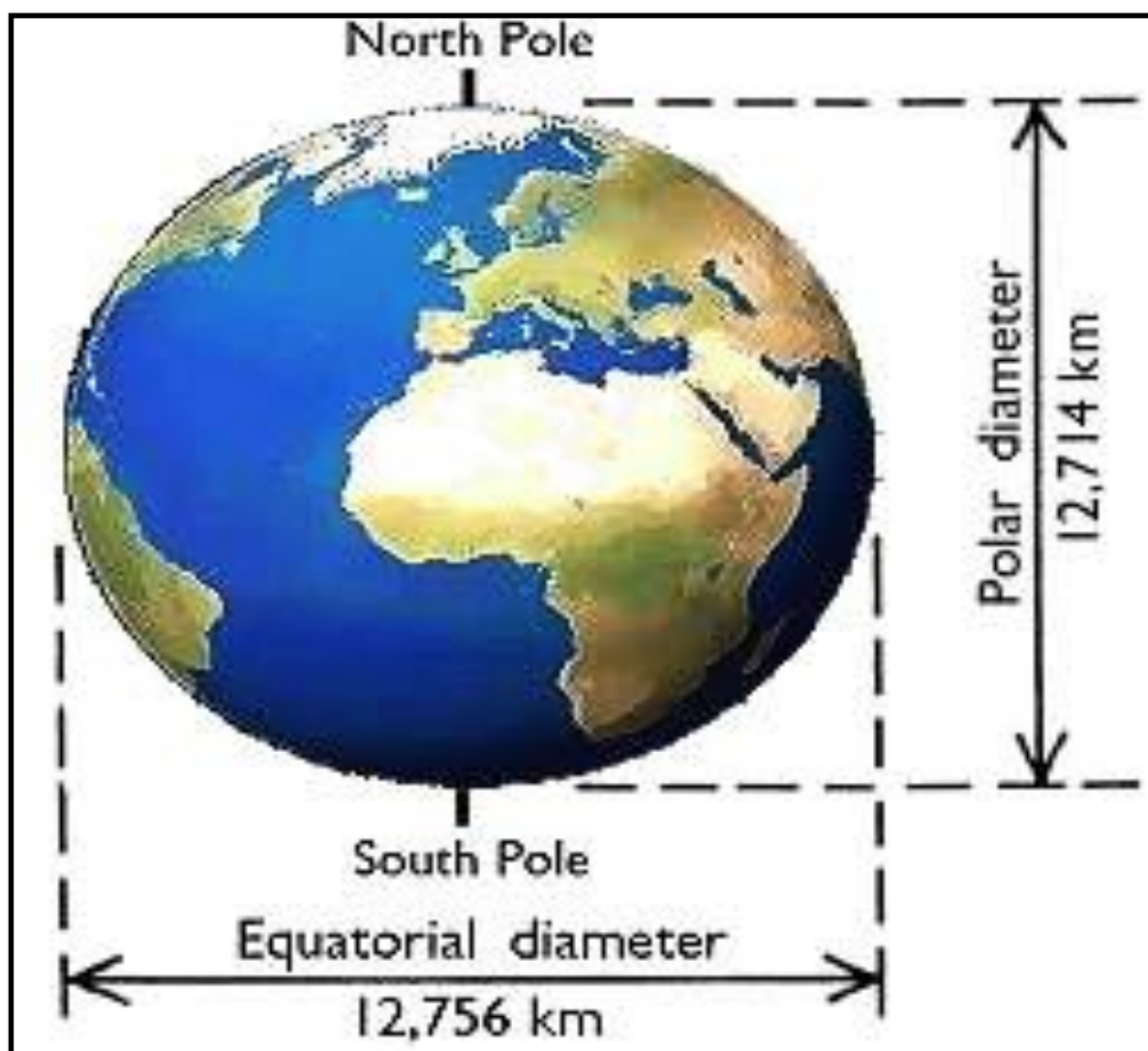
Earth's Shape:

1. True shape is an Oblate Spheroid.
2. Slightly flattened at the poles.
3. Slightly bulging at the equator.
4. Due to the rotation of Earth.

- Polar Diameter = 12,714 km

- Equatorial Diameter = 12,756 km

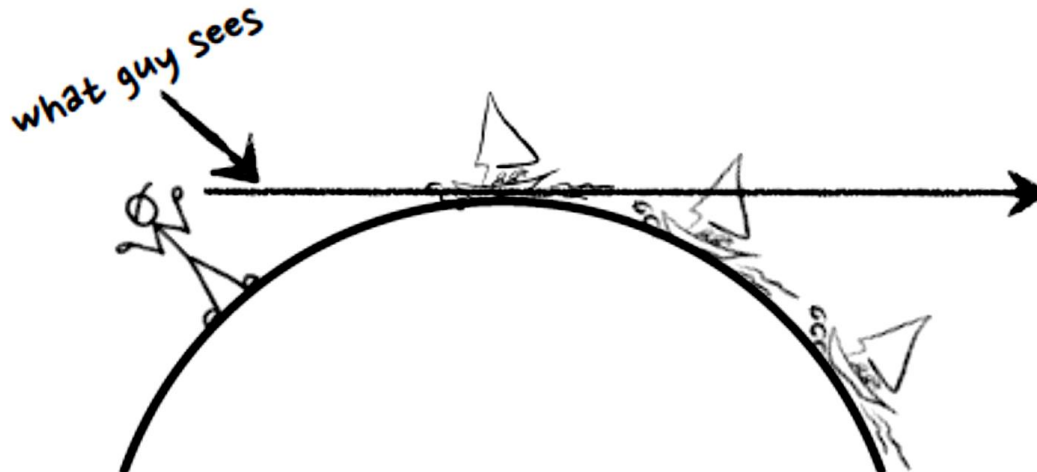


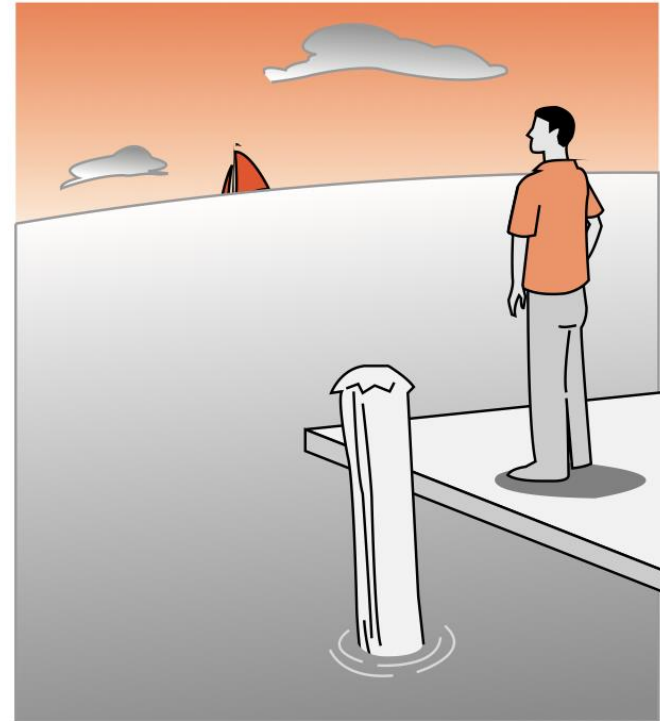
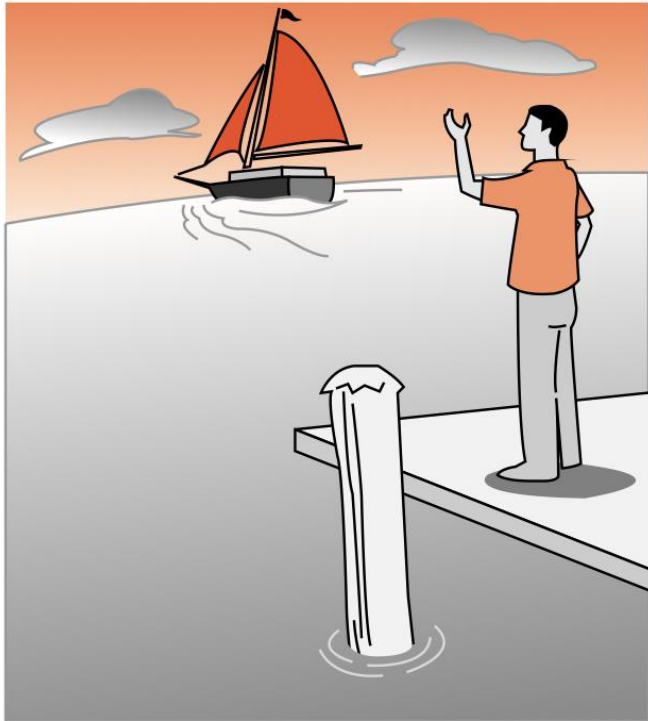


Evidence:

1. Sinking Ships -

Ships sailing away "disappear" over horizon. As the ship sails away the bottom of the ship disappears first.





2. Earth's shadow on the moon is round during lunar eclipse.

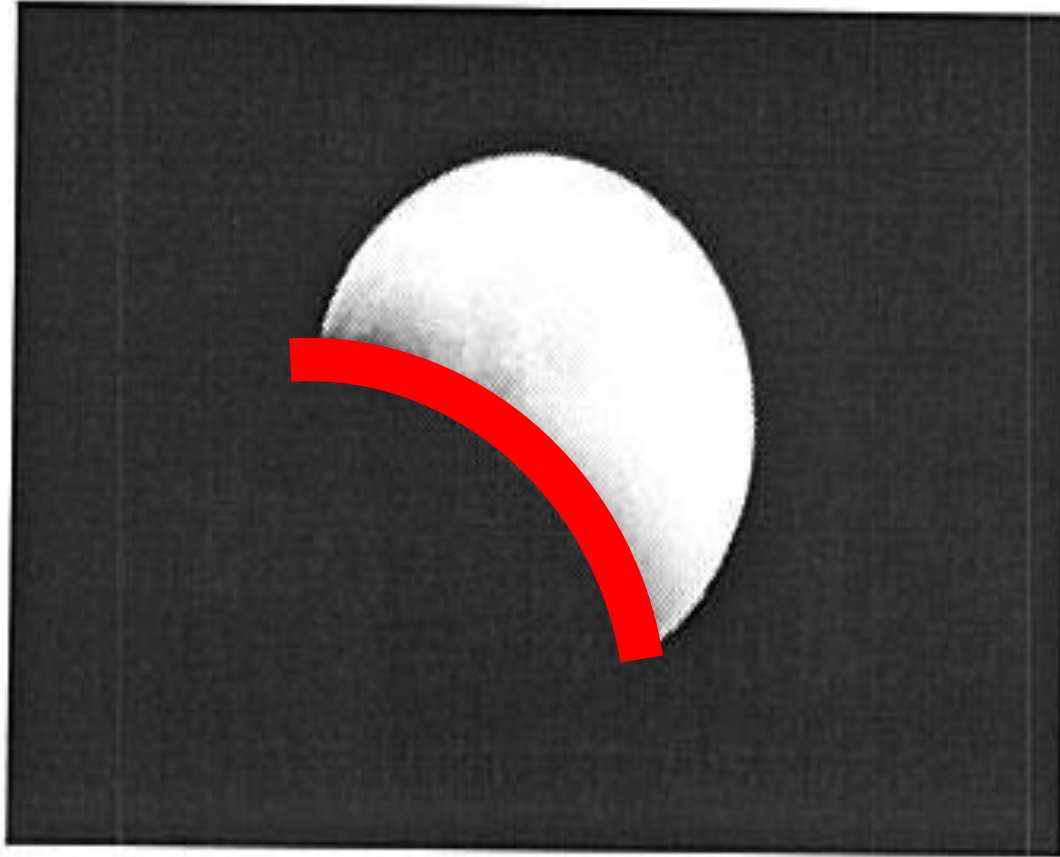
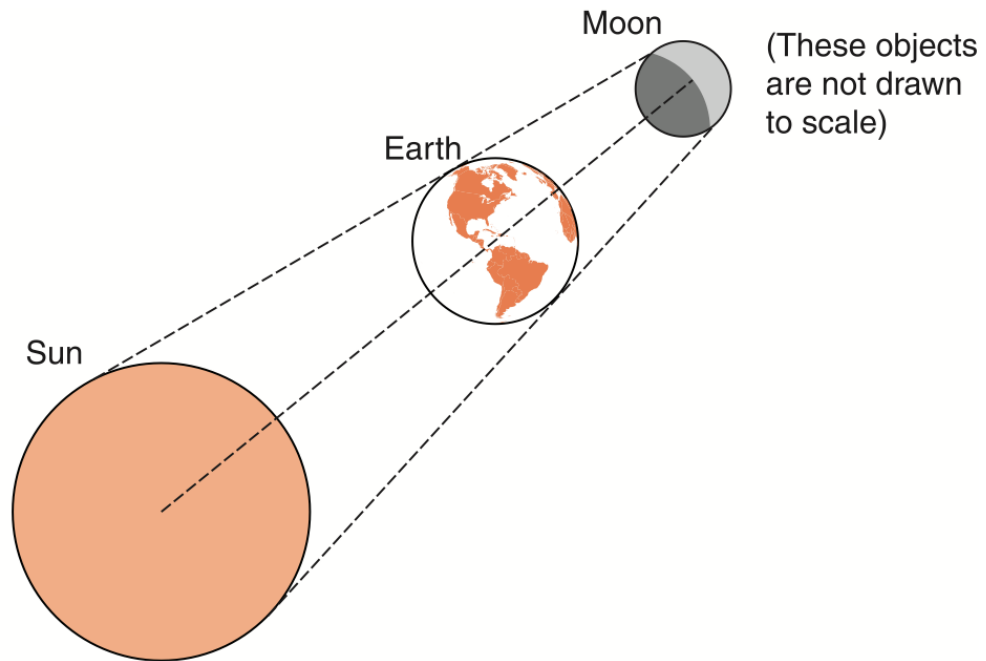


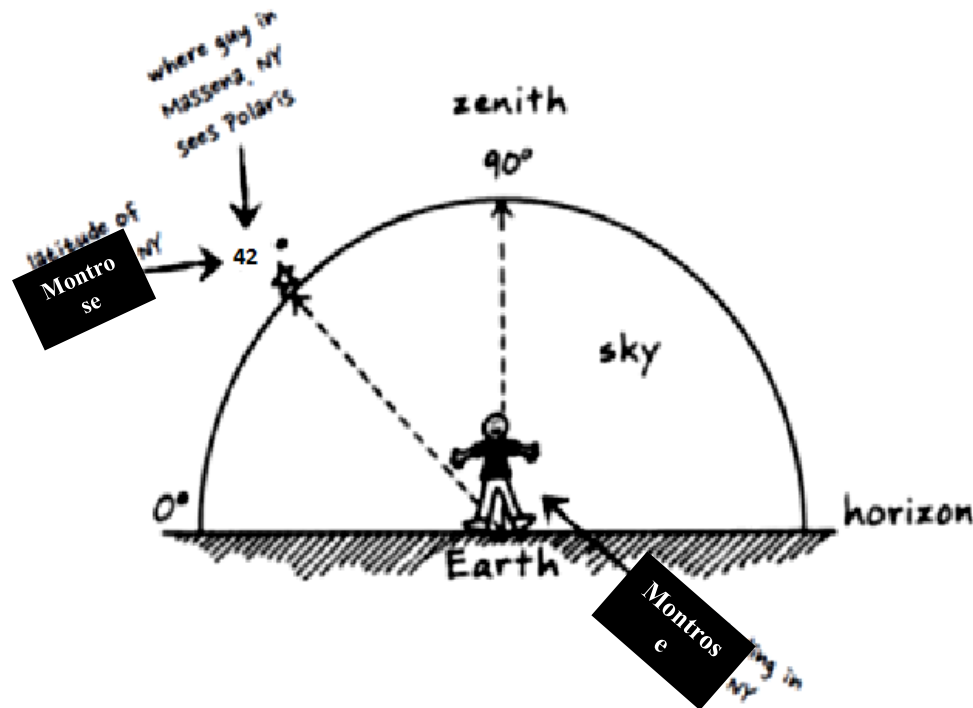
Figure 2-3 During an eclipse of the moon, the moon moves into Earth's shadow. Because the edge of Earth's shadow always shows a uniform curvature, scientists infer that Earth is a sphere.



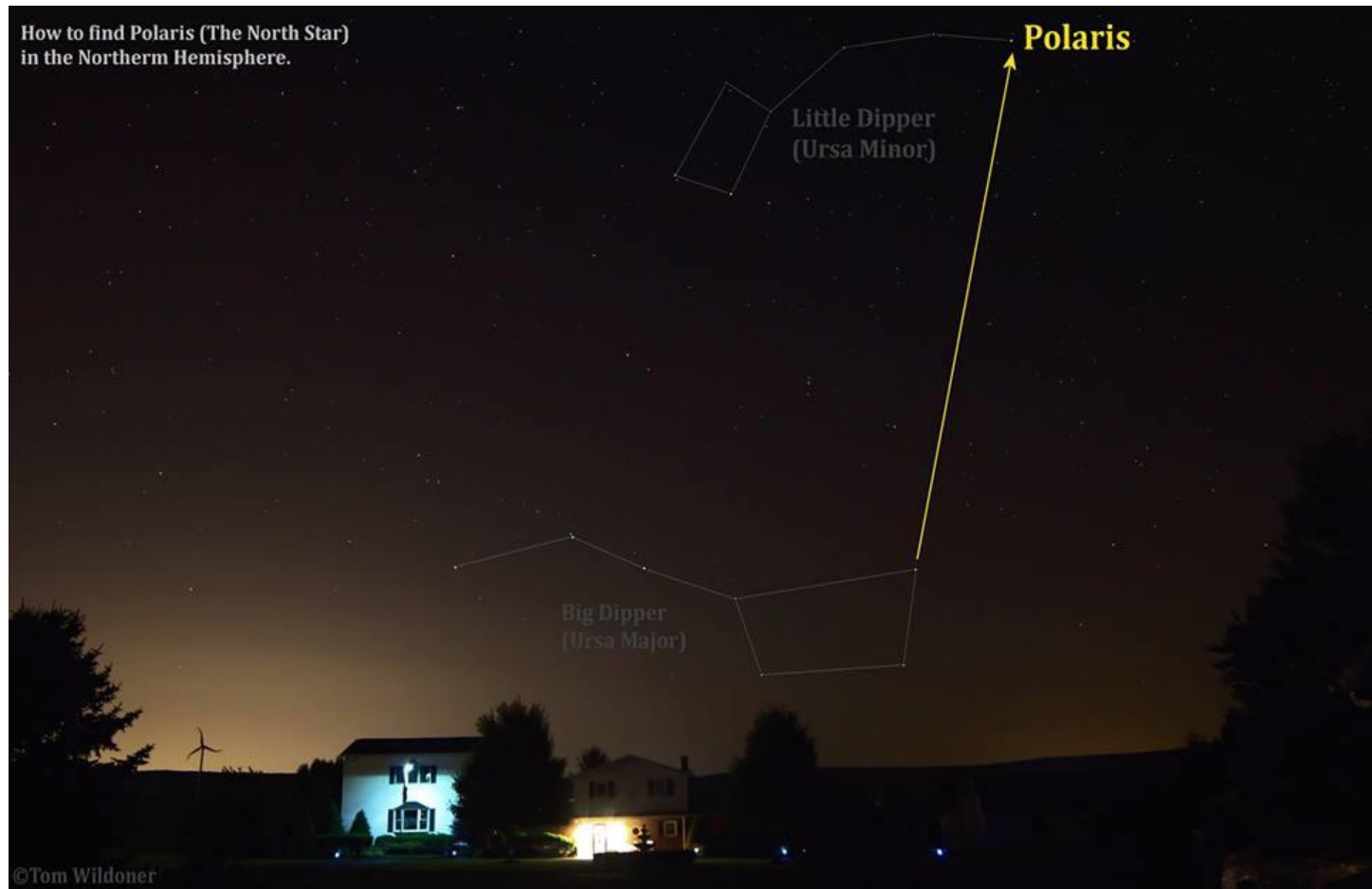
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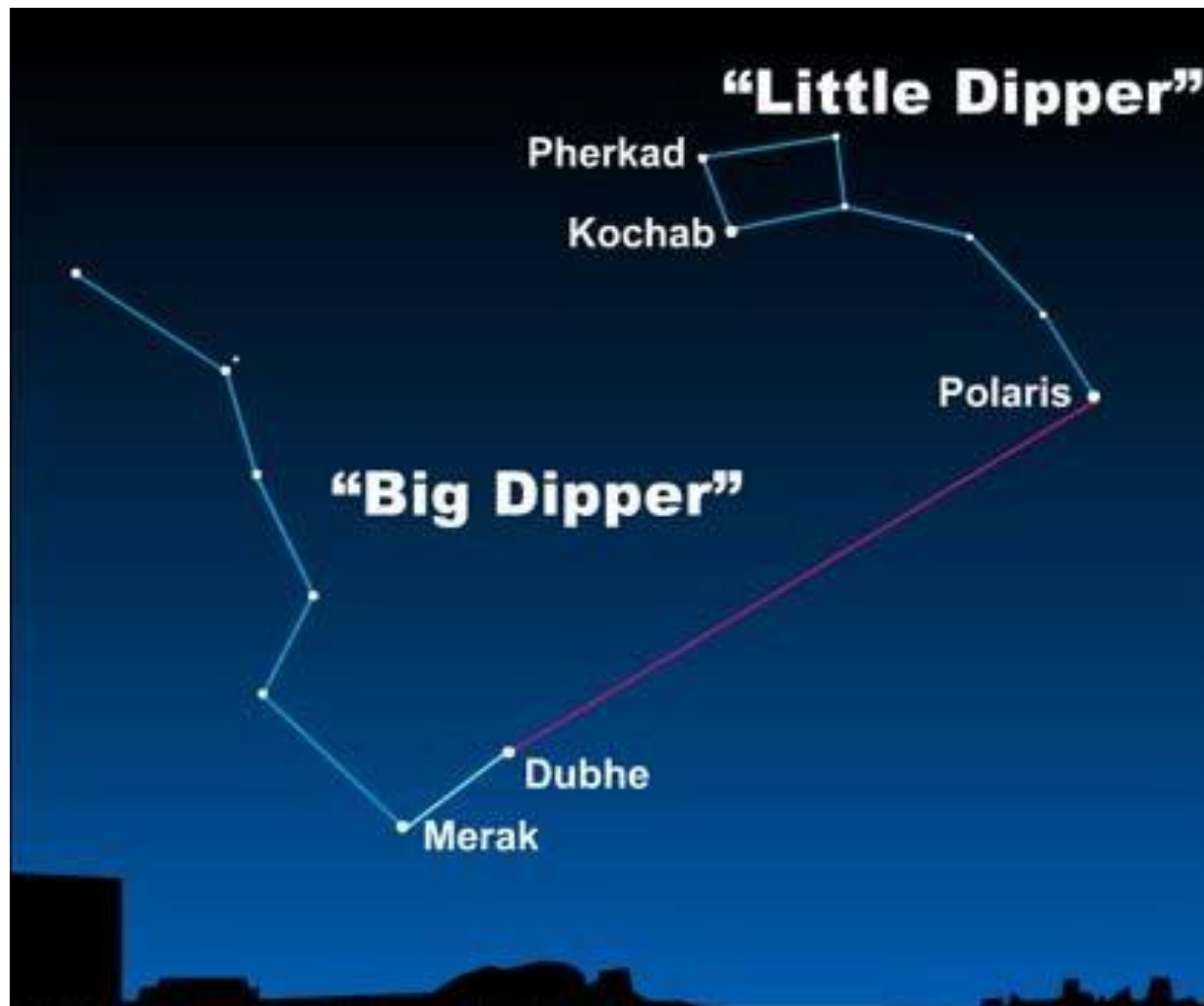


3. Altitude of Polaris = Latitude in Northern Hemisphere

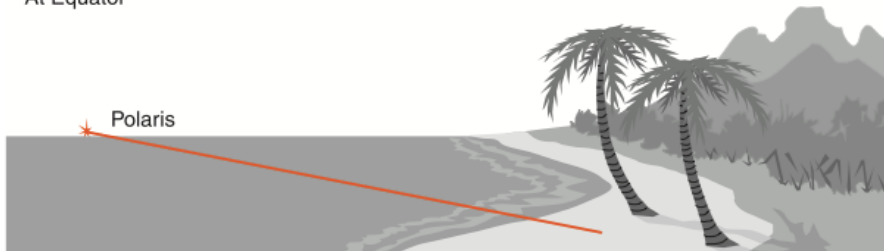


How to find Polaris (The North Star)
in the Northern Hemisphere.



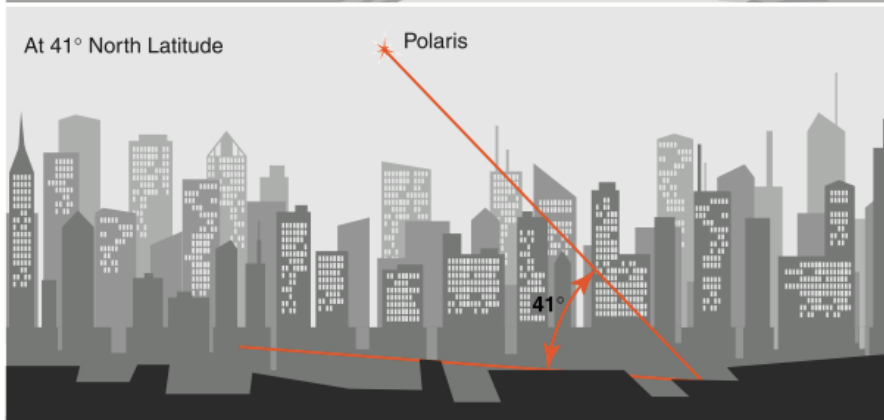


At Equator



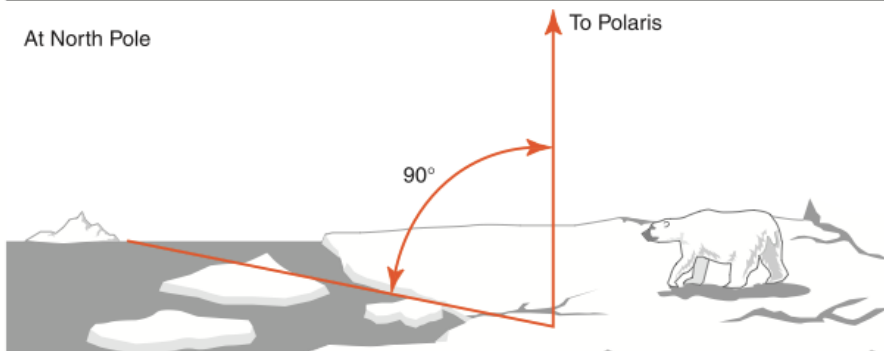
0 degrees

At 41° North Latitude



41 degrees

At North Pole

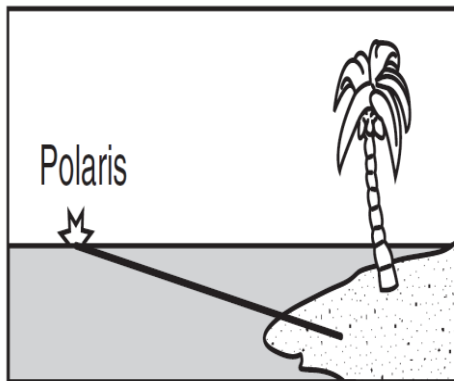


90 degrees

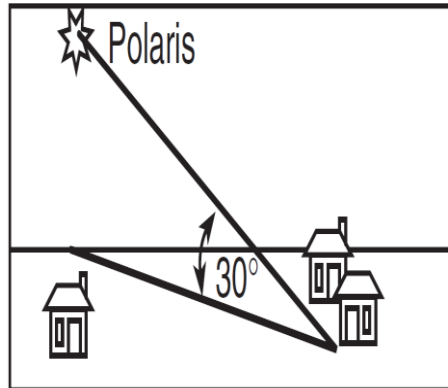
Polaris Is:

- ✓ Always due North (look North to see Polaris)
- ✓ Cannot be seen from the Southern Hemisphere
- ✓ Altitude of Polaris = Latitude of the observer in the Northern Hemisphere

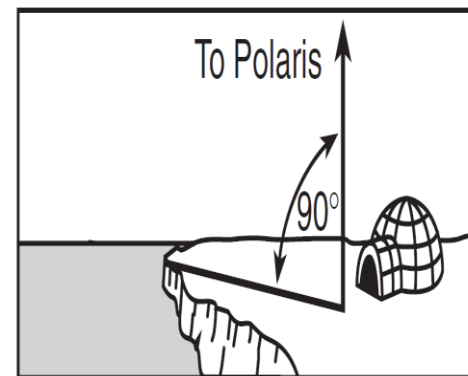
At Equator



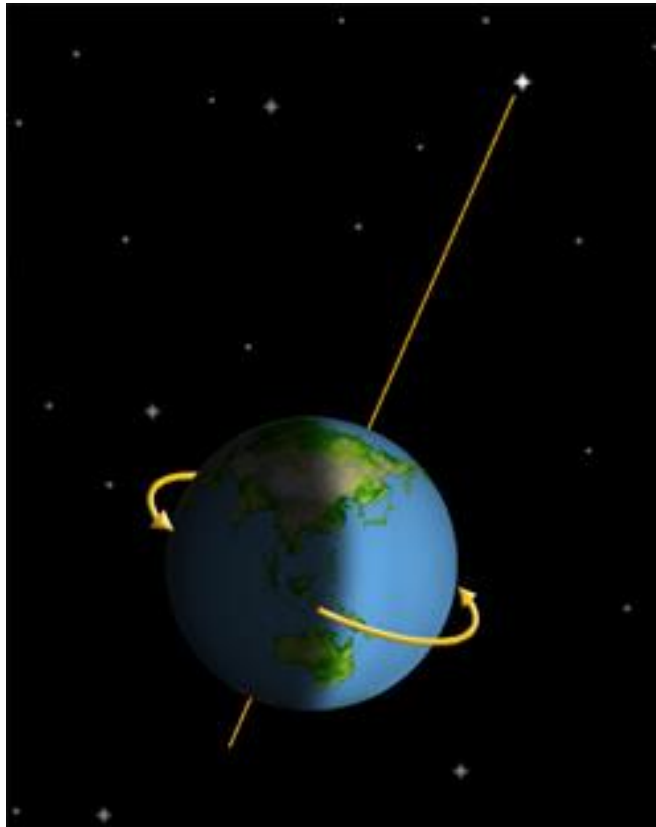
At New Orleans, Louisiana



At North Pole



Polaris is the only star that doesn't appear to move because it is right above the Earth's Axis of Rotation.

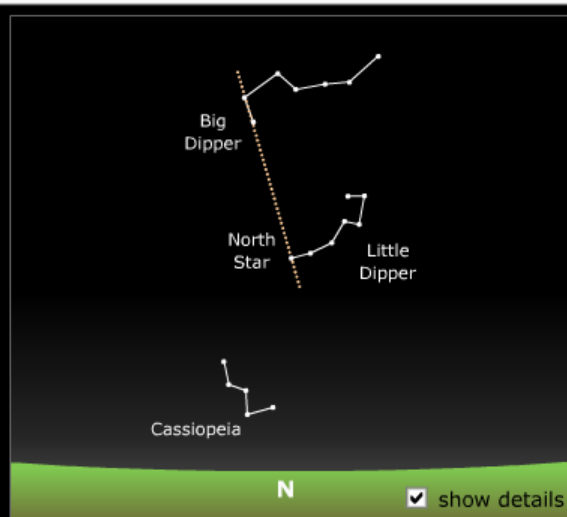




© AFP/Getty Images

Big Dipper Clock

reset



Time and Date Controls



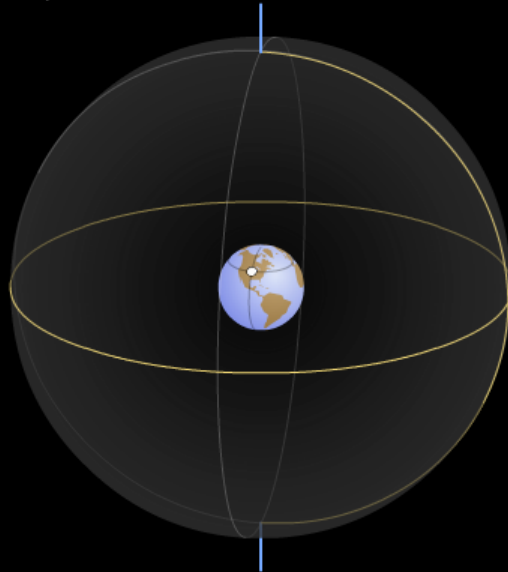
the time of day:

*daylight saving
time in effect*

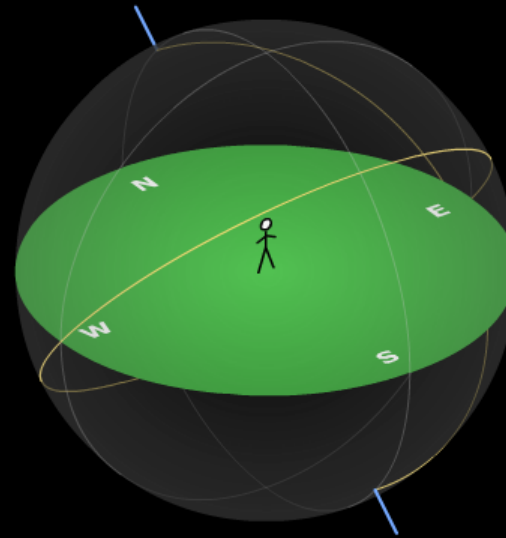
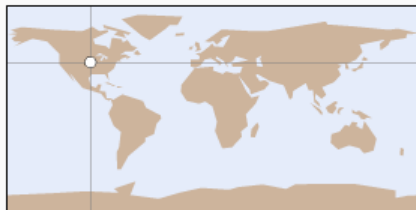
the day of year:

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |

celestial sphere view



horizon diagram view

Observer's
Locationlatitude: 40.8 ° N
longitude: 96.7 ° W

Animation Controls

start animation

animate continuously

animation rate:



slower

faster

Appearance Settings

- ☐ show labels
- ☒ show 0h circle
- ☒ show celestial equator
- ☒ show underside of horizon diagram
- ☐ show never rise region
- ☐ show rise and set region
- ☐ show circumpolar region
- ☐ show the angle between the celestial equator and horizon

Star Controls

star patterns...

add star randomly

remove all stars

- ☒ no star trails
- ☐ short star trails
- ☐ long star trails

reset star trails

Start animation



4. Photos from space (Best Evidence)



5. Gravity Measurements:

Objects weigh more at the poles and less at the equator. WHY?

The poles are physically closer to the center of the Earth. (The force of Gravity originates from the center of the Earth).

Weigh more at the **POLES**

Weigh less at the **EQUATOR**

