Distances in Space

Name: _____ Date: _____

Conversions:

$$1\ Astronomical\ Unit\ (A.U.)\ =\ 150{,}000{,}000\ km$$

$$1\ light\ year\ (ly)\ =\ 9{,}500{,}000{,}000{,}000\ km$$

Distances to Planets

Determine the **average** distance of each planet in our solar system from the Sun.

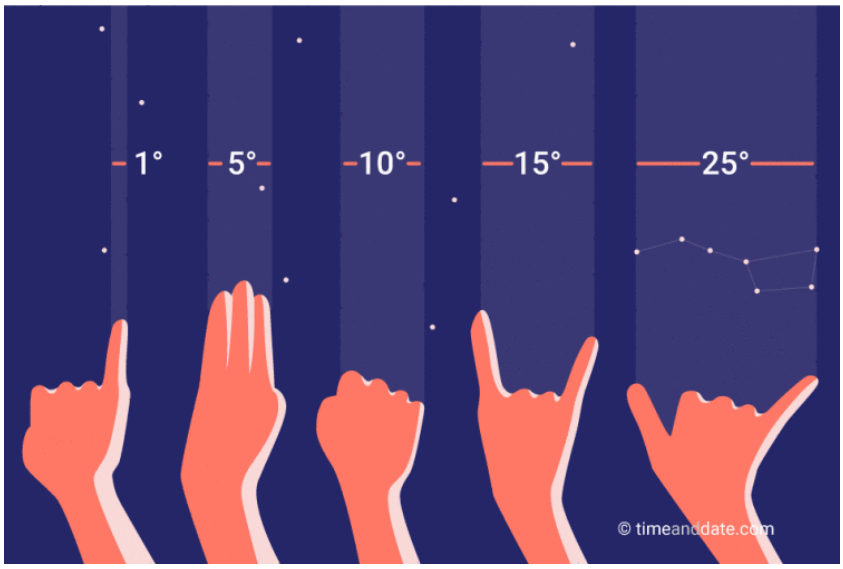
Planet	Distance to Sun in km	Distance to Sun in A.U.
Mercury	57,000,000 km	
Venus	108,000,000 km	
Earth	150,000,000 km	
Mars	228,000,000 km	
Jupiter	779,000,000 km	
Saturn	1,430,000,000 km	
Uranus		19.2 A.U.
Neptune	4,500,000,000 km	
Pluto		39.5 A.U.

Distances to Other Stars

Calculate the **average** distance of the following stars to planet Earth.

Planet	Distance in km	Distance in Light Years (ly)
Proxima Centauri	40,113,000,000,000 km	
Antares	5,862,810,000,000,000 km	
Arcturus		36.7 ly
Polaris		433 ly

Measuring Angles in the Night Sky



Because of this, astronomers measure the distance between celestial objects based on the angle they make with an observational point on Earth. Known as angular distances or angular separation, distances are expressed in terms of degrees (°), arc minutes ('), and arc seconds (").

While angular separation primarily describes the apparent distance between celestial objects, as seen from Earth, it can also be used to suggest their actual distance from one another.