

ASTRONOMY FACTS

Distances

Diameter of Earth	7,917 mi.	
Circumference of Earth	24,900 mi	light: .13 sec [7.5 times around/sec]
Diameter of Moon	2,159 mi	
Diameter of Sun	864,575 mi	

Earth to Moon	238,900 mi	light: 1.3 sec
Earth to Sun	92.96 million mi	light: 8 min 20 sec
Earth to Mars	35 to 250 million mi	light: 4 to 24 min (depending on positions)
Earth to Jupiter	365 to 600 million mi	light: 35 to 50 min
Earth to Saturn	750 to 1 billion mi	light: 70 to 90 min
Earth to Neptune	2.7 to 2.9 billion mi	light: 240 to 260 min

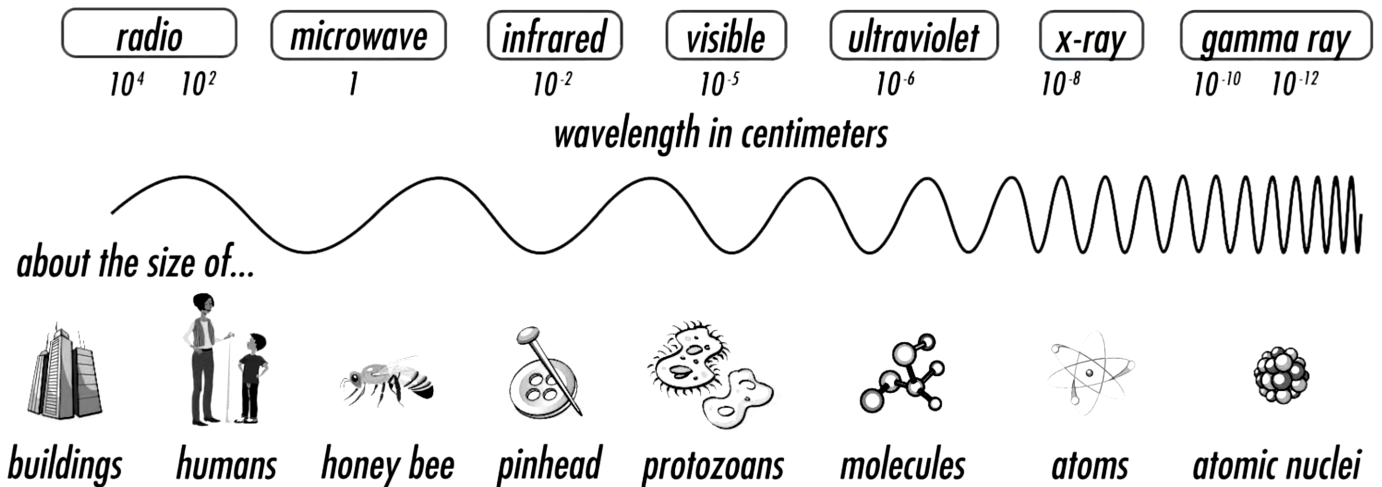
Closest star (α CEN)	4.3 light years	light: 4.3 years
Closest star (N. Hem. visible) - Barnard's star	6 LY	light: 6 years
Closest star (N. Hem. naked eye) - Sirius	8.6 LY	light: 8.6 years
Most distant naked eye star (ρ CAS)	4000 LY	light: 4000 years
Most distant naked eye object (Andromeda Galaxy)	2.5 million light years	
[Triangulum Galaxy at 3 million LY is not reliably visible for most people even under dark skies]		

Closest Major Galaxy (Andromeda) 2.5 million LY

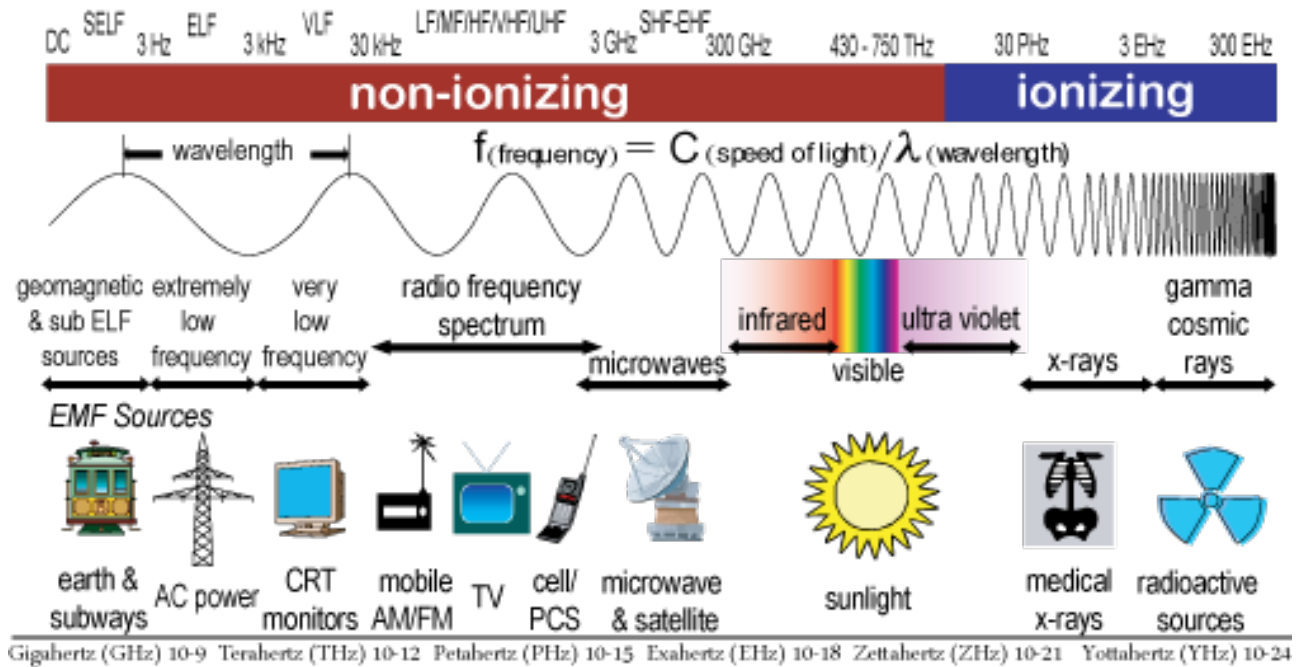
Milky Way stellar disk diameter about 175,000 light years One rotation: 200 million years
 Milky Way halo sphere of globular clusters diameter - over 400,000 light years
 Milky Way has between 100 - 400 billion stars

Speed of light: 186,282 mi/sec

Light



THE ELECTROMAGNETIC SPECTRUM



Brightness

6,000 - 10,000 stars are hypothetically visible with just our eyes (in very dark skies - depending on eyesight)

Since the earth blocks our view of half of those and the horizon has a glow that obscures more, the average person would probably see 2,500 stars under extremely good conditions.

In a typical suburb, the number drops to 250.

In a large city, the number is down to 35.

With 8" telescope, 20 million stars visible (10 million at a time) under perfect conditions.

The brightest star in the sky (Sirius) is 10,000 times brighter than the faintest star you can see.

Dimmest visible naked eye object is typically magnitude 6.5.

Dimmest visible with 10x50 binoculars is magnitude 10.

Dimmest visible with 20x80 binoculars is magnitude 11.

Dimmest visible with 5" telescope is magnitude 12.

Dimmest visible with 8" telescope is magnitude 13.5.

Planets

From Sun:	Millions of Miles	AU
Mercury	36	.39
Venus	67	.72
Earth	93	1
Mars	142	1.5
(Asteroid Belt)		
Jupiter	484	5.2
Saturn	887	9.5
Uranus	1,784	19.2
Neptune	2,794	30
(Kuiper Belt, Pluto)	2,500-4,500	30-55

(Oort Cloud)

2,000-100,000?

By Size:

Jupiter 88,731 mi. diameter
Saturn 74,974 mi.
Uranus 37,763 mi.
Neptune 30,775 mi.
Earth 7,926 mi.
Venus 7,522 mi.
Mars 4,217 mi.
Mercury 3,032 mi.

Planetary Moons:	#	Telescope Visible
Mercury	0	
Venus	0	
Earth	1	
Mars	2	[Deimos, Phobos] <i>VERY large telescope</i>
Jupiter	67	Ganymede, Callisto, Io, Europa
Saturn	62	Titan, Rhea, Iapetus, Dione, Tethys, Enceladus, Mimas, [Hyperion]
Uranus	27	Titania, Oberon, [Umbriel, Ariel]
Neptune	14	Triton, [Proteus, Nereid]

Earth & Moon

Outer Space begins at the Kármán line (62 miles up).

Earth and the Moon are 4.5 billion years old.

Tycho, one of the younger craters on the Moon, is 100 million years old (as well as Kepler & Proclus). Copernicus & Stevinus A are 800 million years old. Aristarchus is 450 million years old and is the brightest spot on the Moon.

The impact speed of the smaller craters with large ejecta rays approaches 50 mi per sec. (Stevinus A - 5 mi dia. & 2 mi. deep). The Space Station goes less than 5 miles per second. The fastest bullet travels at less than one mile per second.

The deepest crater on the moon is the South Pole-Aitken Basin - over 8 mi. deep - it is also the deepest crater on any planet or moon in the solar system. It has a diameter of 1600 mi. (Omaha to L.A.)

With the 8se scope, the smallest detail on the moon that can be seen in a sharp photo (Prime 3x barlow with sharpening) is about 1 mile diameter. Rima Hyginus is 1.5 miles wide. Under perfect conditions, 1 km (.6 mi) craters should be just visible. So under perfect conditions, 1 million craters are hypothetically visible on the near side. The number that are easily visible under typically good conditions drops to under 100,000.