

God's Incredible Universe



The Bible tells us that God created the heavens and the earth. This account in Genesis is continued throughout scripture. There is absolutely no disparity between what the Bible says and what is known in science. This wonderful portrayal of the beauty, symmetry and harmony of the universe will surely keep you at the edge of your seat the entire time.

For more information about these kinds of programs please visit the web site at www.lookuptothestars.com

Daily Observation Log

Observer: _____ **Date:** _____

Time: _____ am
_____ pm **Duration:** _____ min

Sky: 0 1 2 3 4 5 (circle one) **Seeing:** 0 1 2 3 4 5 (circle one)

Constellation(s): _____

Star(s): _____

Planet(s): _____

Object(s): _____

Phenomena: _____

Observational Method: unaided eye paper tube binoculars telescope (circle one)

Drawing:



Instructions for Completing Daily Observation Log

Observer: Please print your full name

Date: Record current month/day/year (i.e. 01/08/2009)

Time: Record the time you began the observation and circle AM or PM

Duration: Record the total number of minutes you actually made your observation

Sky: Circle one number that best represents the sky from clear to completely overcast. 0 = clear; 1 = a few small clouds; 2 = partly cloudy; 3 = sky 50% cloud-covered; 4 = few breaks in clouds; 5 = completely overcast

Seeing: Circle one number that best represents the seeing conditions from excellent to poor. "Seeing" is a term used by astronomers to describe the steadiness of the atmosphere. One method of determining how steady or unsteady the atmosphere is, due to air currents and temperature changes, is by studying the brighter stars. Bright stars that appear to "twinkle" indicate turbulence in the layers of air in the atmosphere. Rate the seeing conditions on a scale of 0 for perfectly steady to 5 for stars that appear to "dance" in the sky.

Constellation(s): List any constellation you are able to identify in the night sky.

Star(s): Write the name of each brightest star you are able to identify by consulting a star chart or atlas.

Planet(s): Write the name of any planet you identify by referring to current data available giving its location.

Object(s): Record the number and types of objects seen in the sky. Examples include meteors ("falling or shooting stars"), satellites, comets, asteroids, etc.

Phenomena: Any form of sky glow, such as aurora or the Milky Way, may be recorded

Observational Method: Circle the method of observation used. More than one per observation period can be utilized.

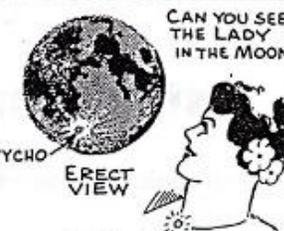
Drawing: Draw the moon phase (amount of sunlit portion) if visible. Also draw in anything recorded for that day's observation. You should draw in boundary lines separating different parts of the sky and include the direction abbreviated (i.e. SW) for each segment.

The Sky Show



THE SUN
... INTERESTING TELESCOPE OBJECT AT 40x TO 70x BUT YOU MUST USE A SUN FILTER TO AVOID SERIOUS INJURY TO YOUR EYE. THE SUN SPOTS ARE EASY TO SEE

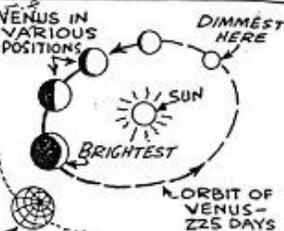
MAG. -27



THE MOON
MAGNITUDE -12 WHEN FULL IS 190,000 TIMES BRIGHTER THAN FIRST MAGNITUDE STAR. CRATER TYCHO (TIE-0) IS ON SOUTH SIDE - MOST PHOTOS ARE SHOWN INVERTED

TYCHO
ERECT VIEW

CAN YOU SEE THE LADY IN THE MOON?



VENUS
LIKE ALL OF THE PLANETS, VENUS ORBITS AROUND THE SUN AND IS LIGHTED BY THE SUN. ON HER NEAR APPROACHES TO THE EARTH SHE IS BRILLIANT AT -4 MAGNITUDE

VENUS IN VARIOUS POSITIONS
DIMMEST HERE
BRIGHTEST
ORBIT OF VENUS - 225 DAYS
EARTH



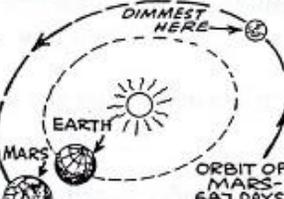
JUPITER
BIG JUPE IS THE EASIEST PLANET TO SEE -- ALWAYS BRIGHTER THAN -1 1/2 MAG. HIS FOUR BRIGHTEST MOONS OF MAG. 6 SHUTTLE BACK AND FORTH, CHANGING NIGHTLY

MARKINGS ARE CLOUD BANDS - CHANGEABLE
MAG. -2.5 (MAX.)



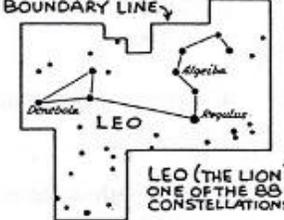
SATURN
SATURN IS THE PRETTIEST PLANET. THE RINGS ARE SEEN PLAINLY AT 40x ALTHOUGH INVISIBLE WITH 7x BINOCULAR. WITH HIGHER POWER YOU MAY BE ABLE TO SEE CASSINI'S DIVISION

TITAN IS BRIGHTEST SATELLITE - MAG. 8
CASSINI'S DIVISION
MAG. -0.4 (MAX.)



MARS
RED MARS MAKES A NEAR APPROACH TO THE EARTH EVERY OTHER YEAR, AND AT SUCH TIMES SOME SURFACE DETAIL CAN BE SEEN WITH TELESCOPES AT 200-300x

ORBIT OF MARS - 687 DAYS
MAG. -2.5 (MAX.)



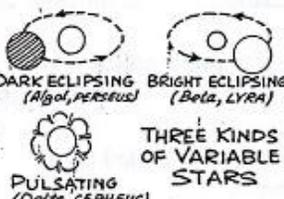
CONSTELLATIONS
A CONSTELLATION IS A GROUP OF STARS, USUALLY FORMING SOME KIND OF PATTERN OR "PICTURE." PROPERLY, A CONSTELLATION IS A SPECIFIC AREA OF THE SKY

BOUNDARY LINE
Alpheia
Denebola
Rosharun
M
Leo
Antares
LEO (THE LION) ONE OF THE 88 CONSTELLATIONS



DOUBLE STARS
ONE OUT OF 15 STARS IS A DOUBLE OR MULTIPLE STAR AND ABOUT 500 OF THESE FROM 2 SECONDS TO 1 MINUTE OF ARC SEPARATION CAN BE "SPLIT" WITH SMALL TELESCOPES

NAKED EYE CAN'T RESOLVE 8" OF ARC
I CAN'T SEE 'EM!
TELESCOPE VIEW THE TRAPEZIUM IN ORION



VARIABLE STARS
A VARIABLE STAR VARIES IN BRIGHTNESS. THE CHANGE TAKES 2 DAYS (AVERAGE), MAKING THE V.S. A POOR "SHOW" OBJECT ALTHOUGH IDEAL FOR SYSTEMATIC STUDY

DARK ECLIPSING (Algol, PERSEUS)
BRIGHT ECLIPSING (Beta, LYRA)
PULSATING (Delta, CEPHEUS)
THREE KINDS OF VARIABLE STARS



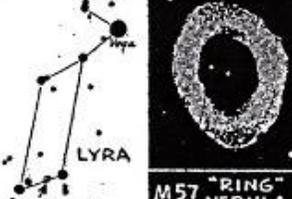
OPEN CLUSTERS
OPEN CLUSTERS OF STARS ARE A FAVORITE TARGET FOR THE TELESCOPE. 40 TO 60x IS ENOUGH FOR MOST GROUPS. POPULAR PLEIADES CLUSTER IS A FINE BINOCULAR OBJECT

120" FIELD
THE PLEIADES



GLOBULAR CLUSTERS
A GLOBULAR CLUSTER IS A BALL OF STARS. INDIVIDUAL STARS ARE FAINT AND NEED 6" OR MORE APERTURE FOR RESOLUTION. M13 AND M22 ARE TWO BRIGHTEST

12th MAGNITUDE OR FAINTER STARS
3" OR SMALLER TELESCOPE SHOWS ONLY A HAZY DISK OF LIGHT



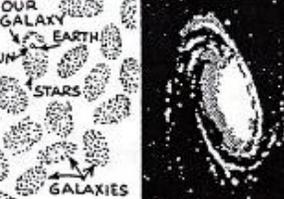
PLANETARY NEBULAE
PLANETARY NEBULAE ARE SO NAMED ONLY BECAUSE THEY ARE ROUND LIKE PLANETS. THEY ARE LUMINOUS GAS CLOUDS AND ARE A PART OF OUR GALAXY

LYRA
M57 "RING" NEBULA



DIFFUSE NEBULAE
A LARGE DIFFUSE GAS CLOUD LIGHTED BY THE STARS IN ITS VICINITY IS KNOWN AS A BRIGHT DIFFUSE NEBULA. M42 IN ORION IS IMPRESSIVE, EASILY SEEN WITH ANY TELESCOPE

TRAPEZIUM
ABOUT 10'
M42 ERRECT VIEW



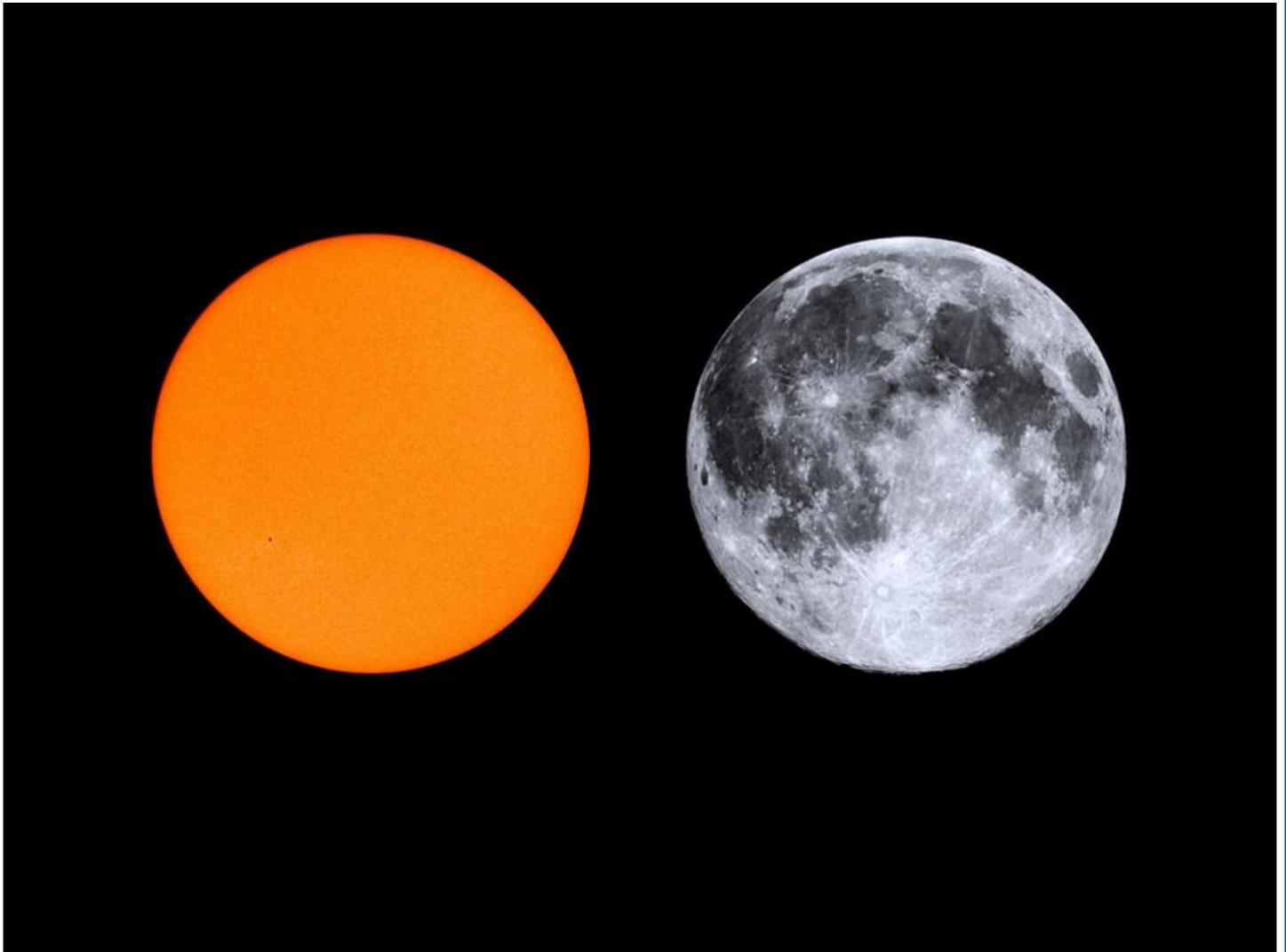
EXTERNAL GALAXIES
GALAXIES ARE COMPLETE STAR SYSTEMS LIKE OUR OWN GALAXY. ALL ARE VERY DISTANT. M81 SHOWN IS ABOUT AS BRIGHT AS A STAR OF 9th MAGNITUDE

OUR GALAXY
SUN
EARTH
STARS
GALAXIES

No.	TYPE	CONS.	M.
M44	OPEN CL.	CANCER	3.7
M41	OPEN CL.	CANIS MAJ.	4.6
M24	OPEN CL.	SAGR.	4.6
M31	GALAXY	ANDR.	4.8
M35	OPEN CL.	GEMINI	5.3
M13	GLOBULAR	HERCULES	5.7
M22	GLOBULAR	SAGR.	5.9
M8	DIFFUSE NEB.	SAGR.	-
M42	DIFFUSE NEB.	ORION	-
M57	PLANETARY	LYRA	9.3

MESSIER OBJECTS
FRENCH ASTRONOMER, CHARLES MESSIER, MADE UP THE FIRST LIST OF SKY OBJECTS OTHER THAN STARS (1784). ALL OF THE 103 M-OBJECTS CAN BE SEEN WITH SMALL TELESCOPES

How Can the Sun and the Moon Appear the Same Size in the Sky?

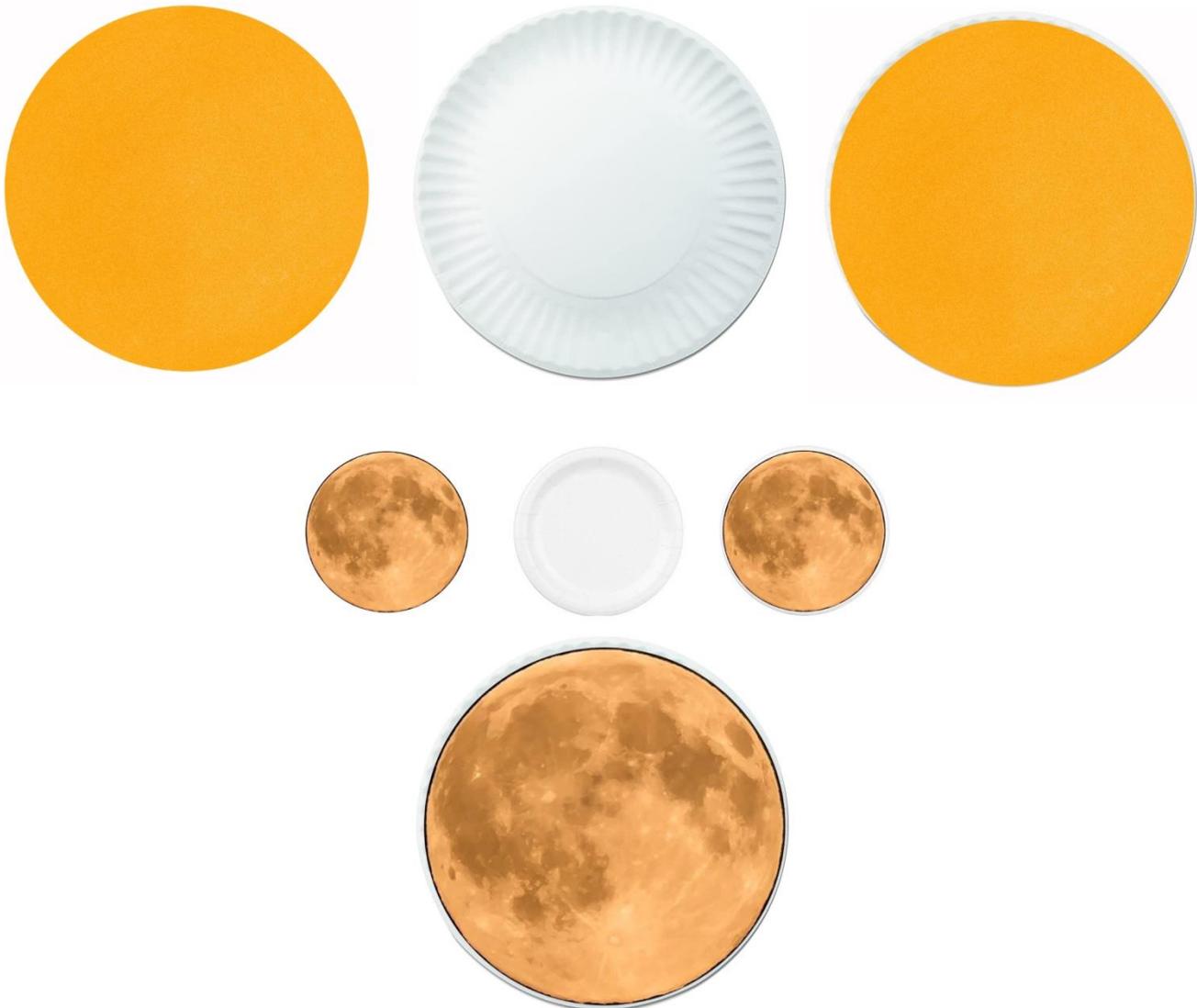


How the Sun & Moon Appear the Same Size in the Sky

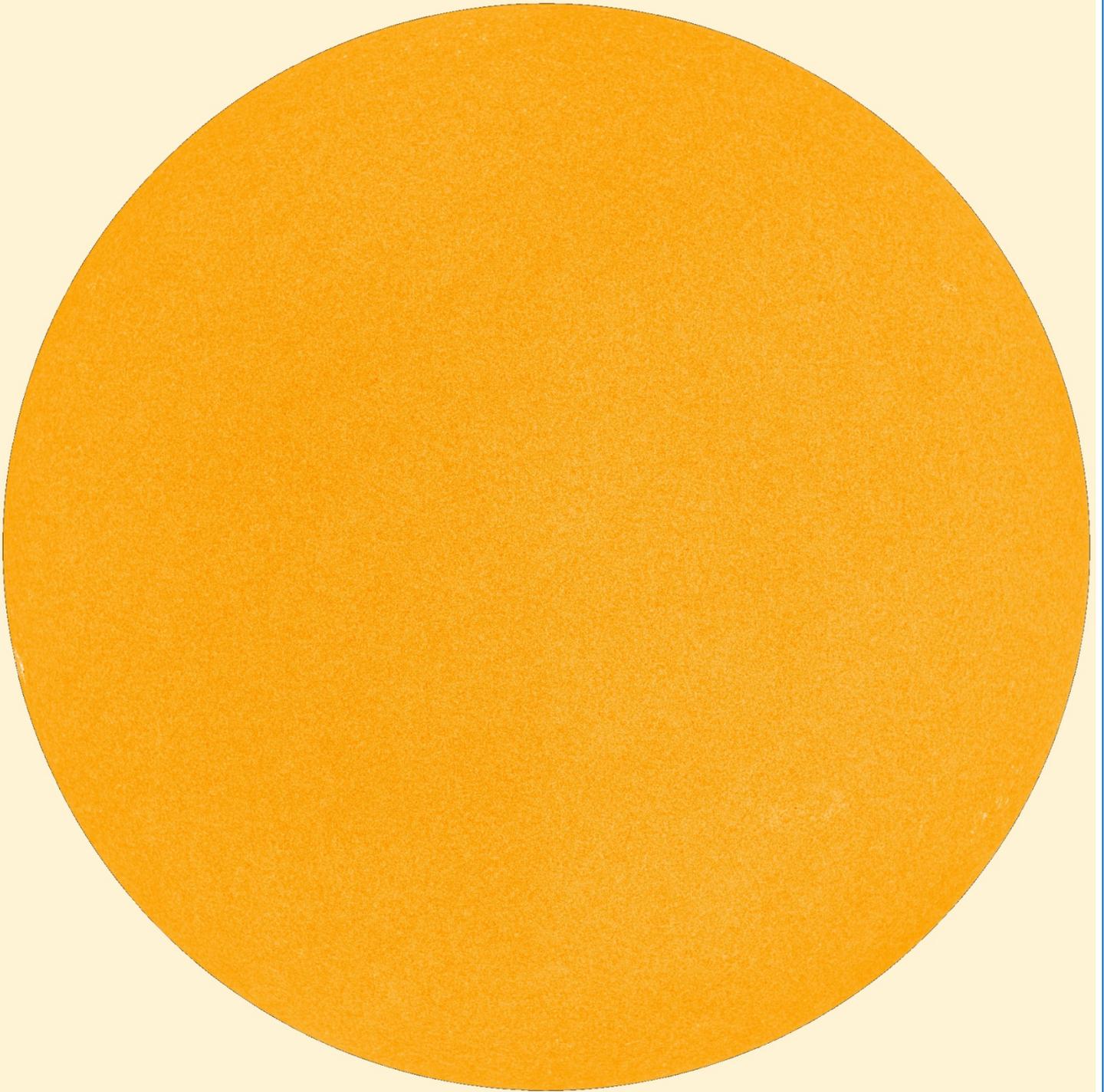
Materials: 1 large paper plate, 1 small paper plate, sun & moon templates, scissors, glue or tape

- Directions:
1. Cut out sun template and paste or tape to large paper plate
 2. Cut out moon template and paste or tape to small paper plate
 3. Hold sun upright facing you at arm's length, with other hand hold moon upright and move closer or further until the moon just covers the sun (entire plate).

The diameter of the sun is about 865,000 miles, and the diameter of the moon is about 2,150 miles. The distance to the sun is about 93 million miles, and the distance to the moon is about 240,000 miles. So even though the sun is about 400 times bigger than the moon, it's also 400 times further away, and the sun and moon "appear" the same size in the sky. That's why we can witness a total solar eclipse at times.



Sun Template



Moon Template

