

# When Celestial Bodies Collide

## From Conjunctions to Eclipses



### Some Definitions of Positional Phenomena

1. The branch of astronomy that is used to determine the location of objects on the celestial sphere, as seen at a particular date, time, and location on the Earth is called **spherical or positional astronomy**.
2. An astronomical term that refers to the very near approach of one celestial object to another, as seen from a third body, is called an **appulse**.
3. The point at which two celestial bodies simultaneously cross a given line is called a **conjunction**.
4. An event that occurs when one object is hidden by another object that passes between it and the observer is called an **occultation**.
5. An astronomical event that occurs when one celestial body appears to move across the face of another celestial body, as seen by an observer at some particular vantage point, is known as a **transit**.
6. What describes the alignment of three or more celestial bodies in the same gravitational system along a plane is known as **syzygy**.
7. The obstruction of a heavenly body by its entering into the shadow of another body causes an **eclipse**.
8. What occurs whenever the moon passes behind the earth such that the earth blocks the sun's rays from striking the moon is a **lunar eclipse**.
9. What occurs when the moon passes between the Sun and the Earth so that the Sun is fully or partially covered is a **solar eclipse**.
10. What can occur only when there is a full moon is a **lunar eclipse**.

**For more information about these kinds of programs please visit the web site at [www.lookuptothestars.com](http://www.lookuptothestars.com)**

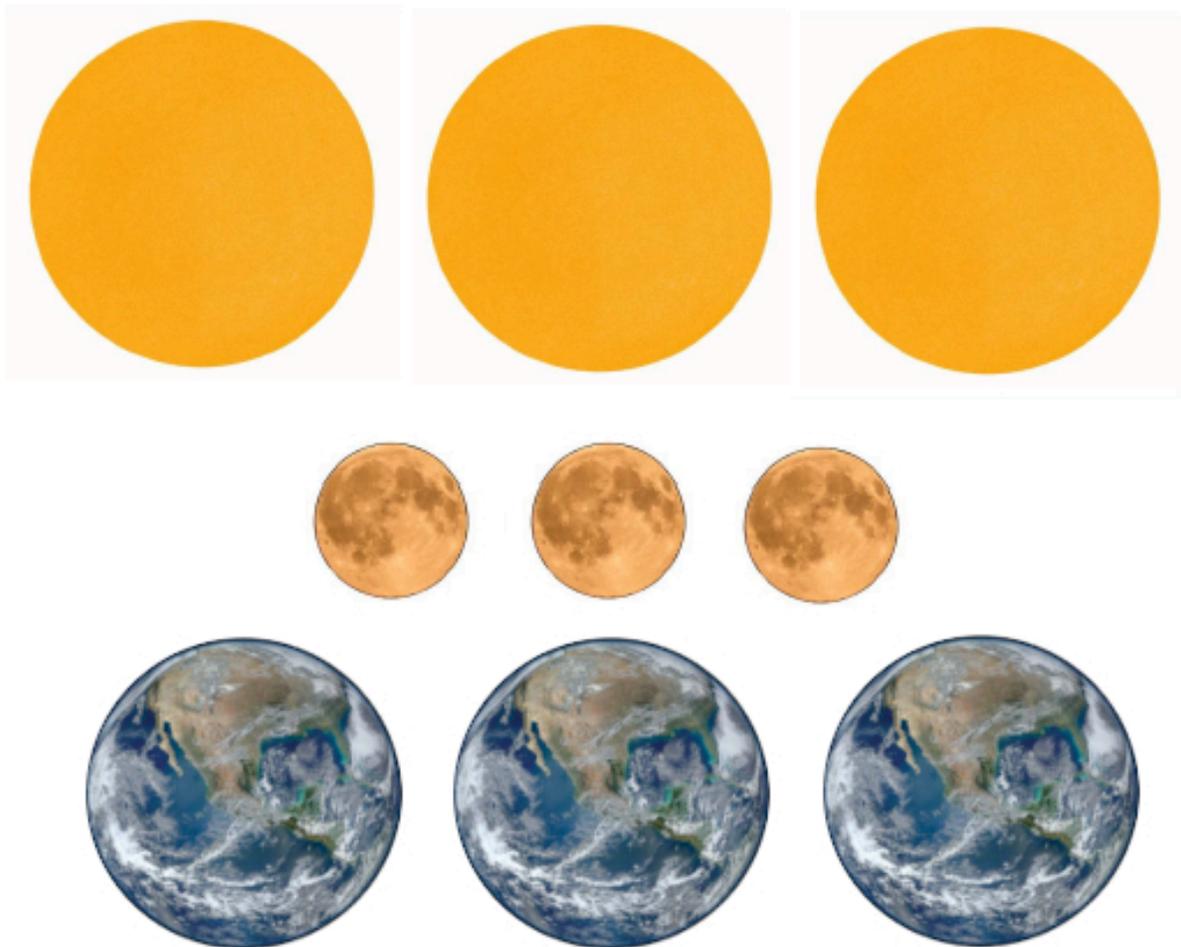
# Total Solar & Lunar Eclipses

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

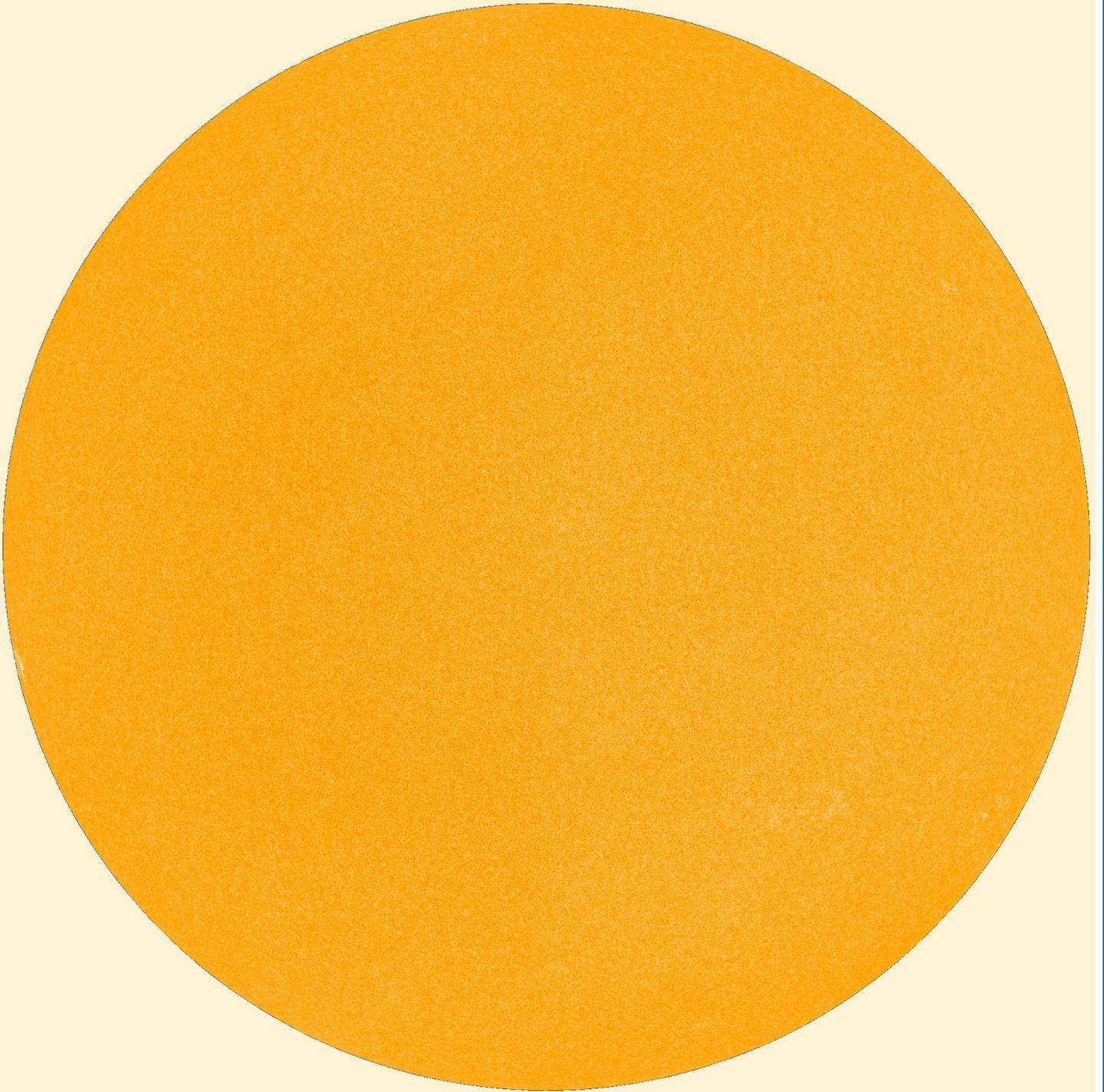
Materials: If you can **print out the templates onto heavy card stock**, you will only need scissors and a flashlight. If not, then you will need 1 large paper plate, 2 small paper plates, sun, moon and earth templates, scissors, glue or tape, and a flashlight

- 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. Cut out earth template and paste or tape to small paper plate
  4. Hold sun upright facing you at arm's length (or tape to a wall), with other hand hold moon upright and move closer or further until the moon just covers the sun (entire plate)
  5. With earth facing up flat on table (or taped to a wall), hold a marble (moon) close to the earth while shining a flashlight on the earth and move marble across earth left to right
  6. With the moon facing up flat on table (or taped to a wall), shine a flashlight directly on the moon and hold the earth between flashlight and the moon moving earth left to right

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 larger in diameter 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



# Earth Template

