The Moon

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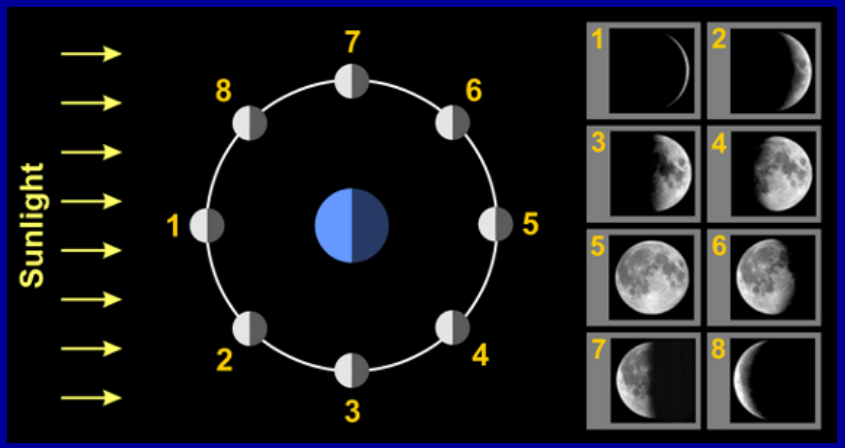
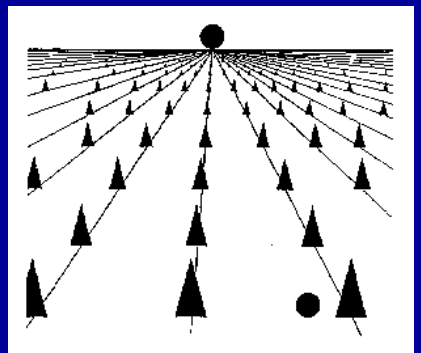
- The Dark Side of the Moon
- The Phases of the Moon
- The Tides
- The Moon Illusion





What if we didn't have The Moon?

Within a group, answer the following questions

1) What does the Moon do for us?

2) Why is it important?

3) What would happen if we didn't have a Moon?

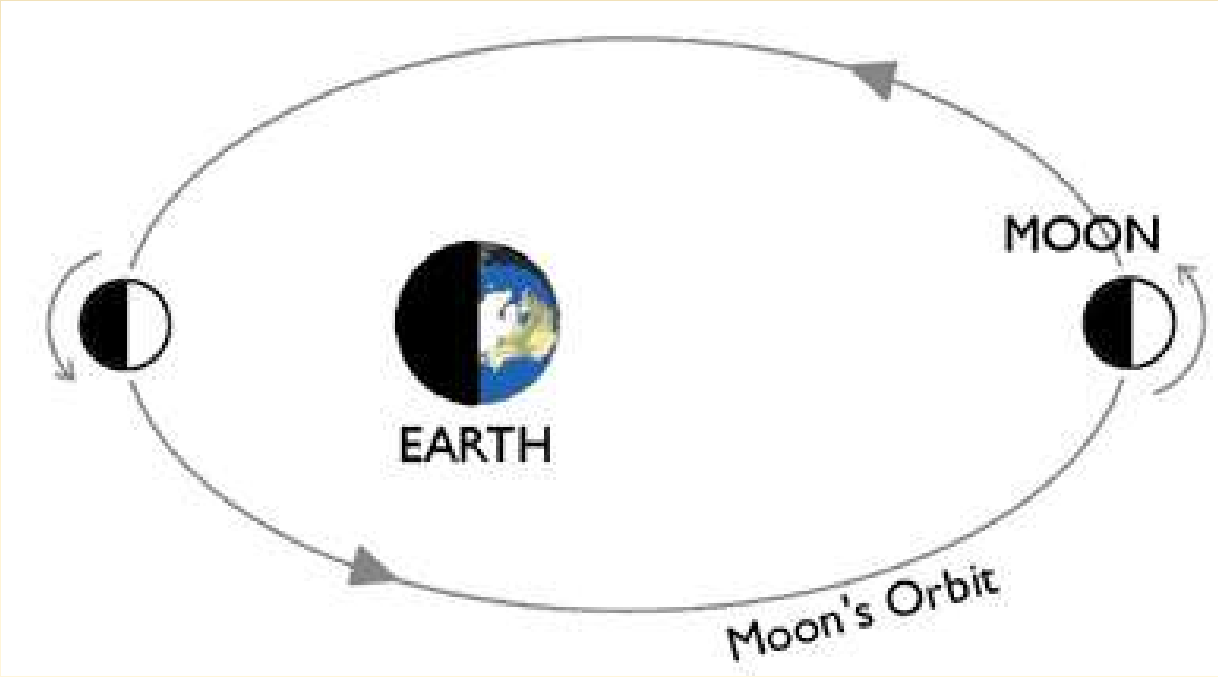
4) How did the Moon form?

Moon Stats

- _____

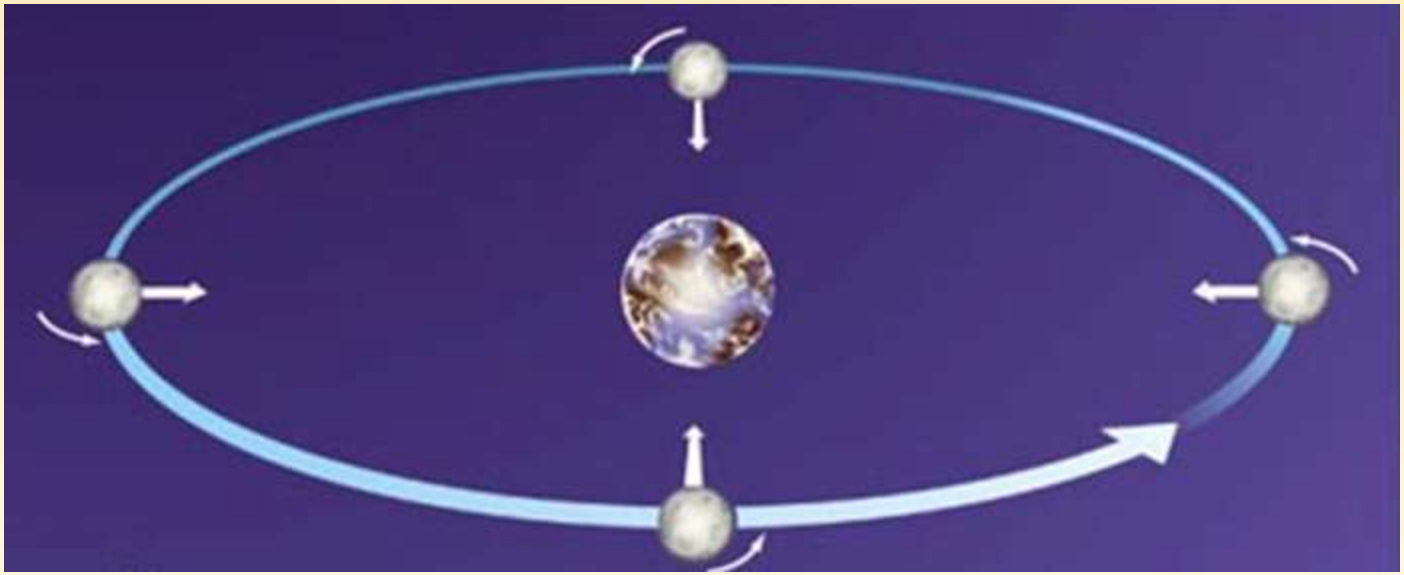
- Diameter of the Moon is 3475.9 km = 27% diameter of the Earth (12756 km)
- Mass is 1.23% of Earth.
- Volume 2.04% of the Earth.

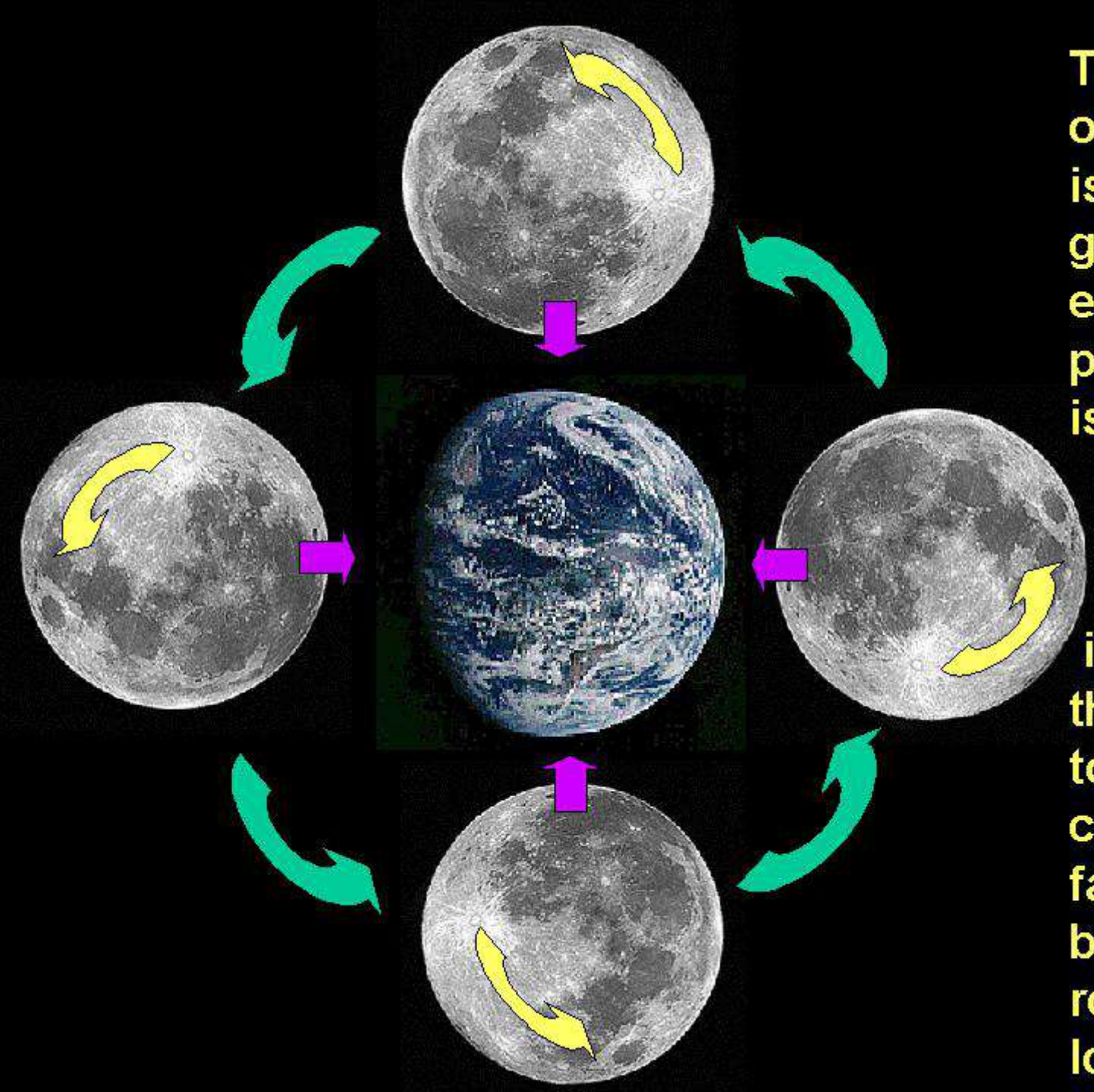
Orbit of the Moon



Rotation of the Moon

- The Moon always presents the same face towards Earth.
  - _____





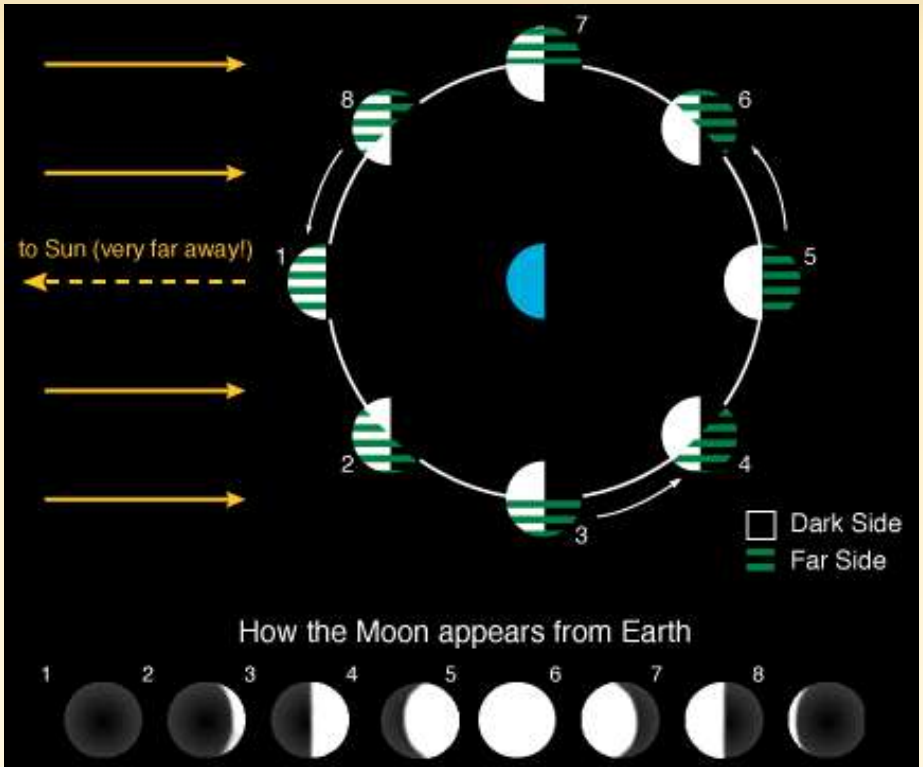
The rotation of the moon is locked by gravity to the earth, so its period or "day" is the same as its orbital period around the earth. Thus, it always keeps the same face toward us; we cannot see the far side except by launching a rocket and looking back.

Misconception: Dark Side of the Moon

- The far side gets just as much light as the near side. For example, during a new moon, the near side of the Moon is dark, and the far side of the Moon is fully illuminated!

The Faces of the Moon

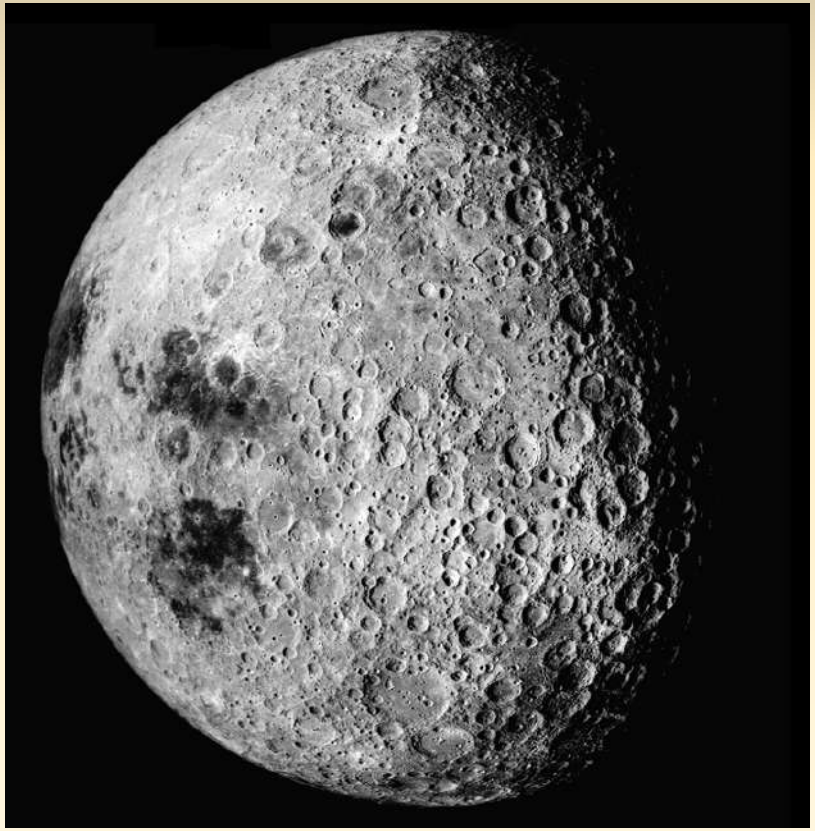
- Since we are always seeing the same side of the Moon, the Far Side must receive the same amount of sunlight as the Near Side.



The Faces of the Moon

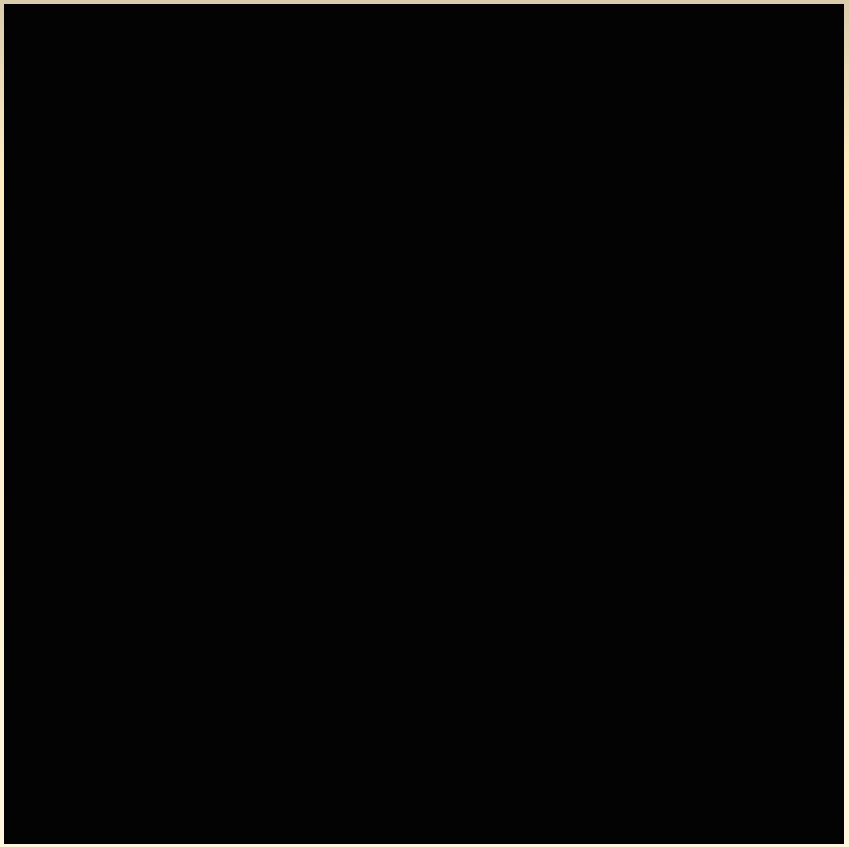
The near side of the Moon (what we see)

The far side of the Moon (what we don't see)



Phases of the Moon

- What causes the phases of the Moon?



What causes the phases of the Moon

- A common misconception is that the phases of the Moon are caused by the shadow of the Earth. They are not.

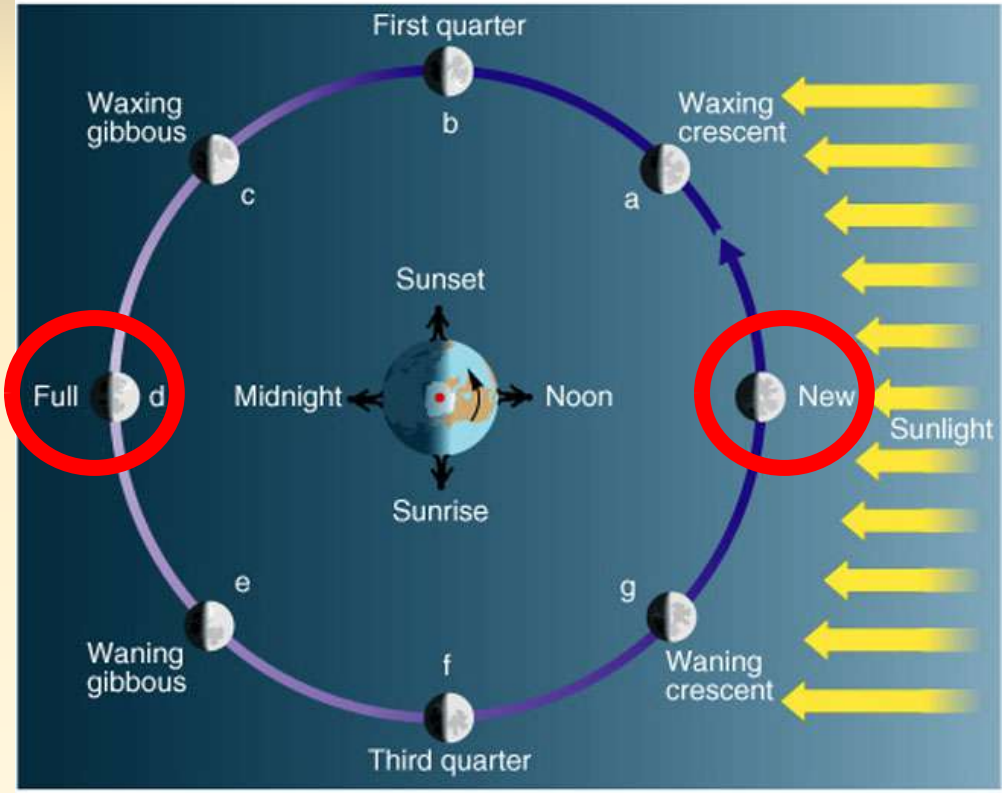
- The phases of the Moon _____

The phases of the Moon

The Phases of the Moon

- We can only see the part of the Moon which has been lit up by the Sun.
- At New Moon, the part lit by the Sun is facing away from us
  - _____
- At Full Moon, the part lit by the Sun is facing towards us
  - _____
- _____

a



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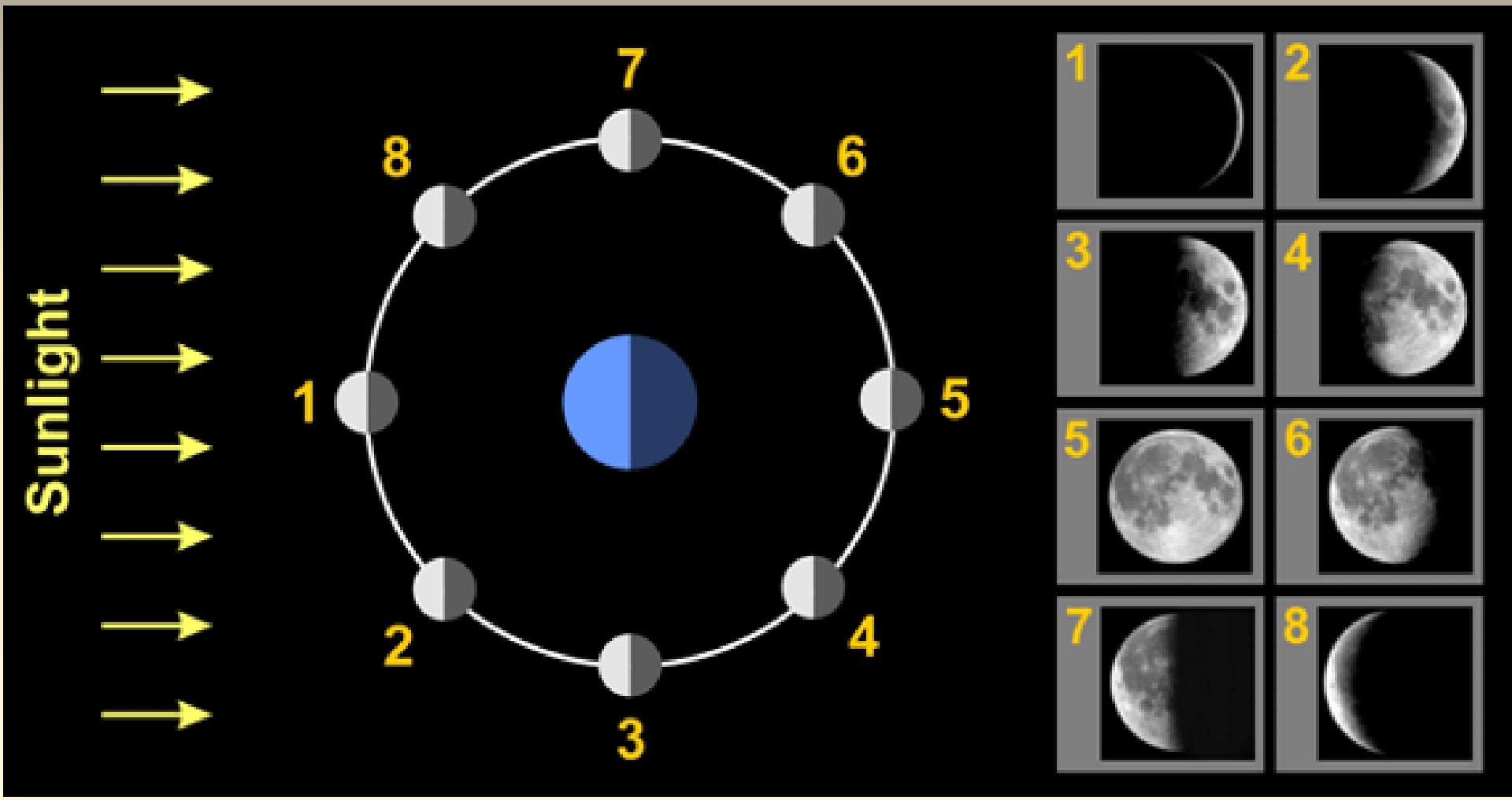
The Phases of the Moon

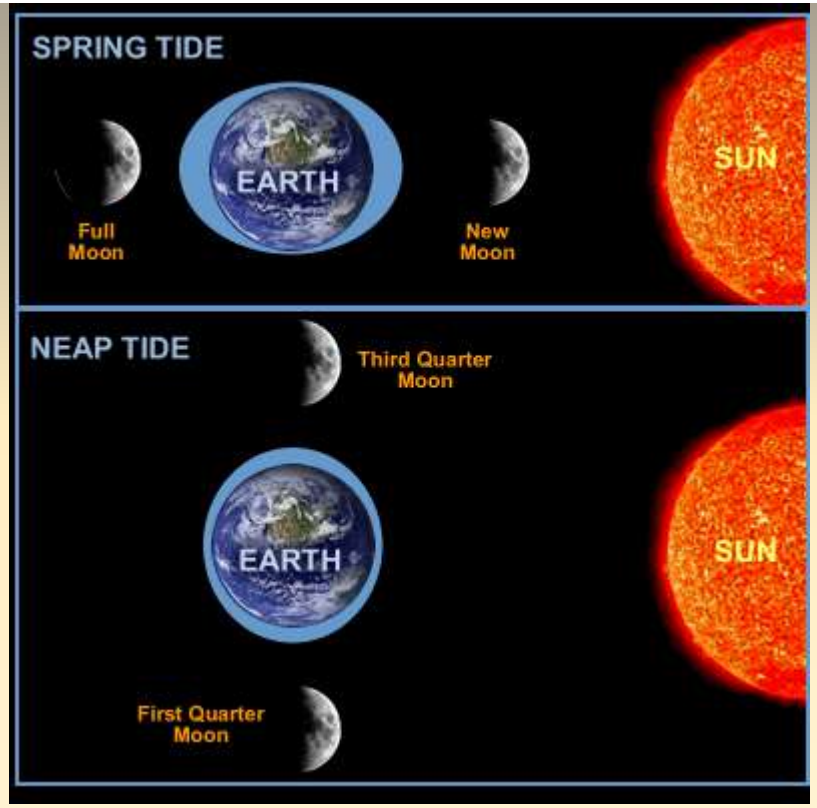


How the Moon Affects the Tides

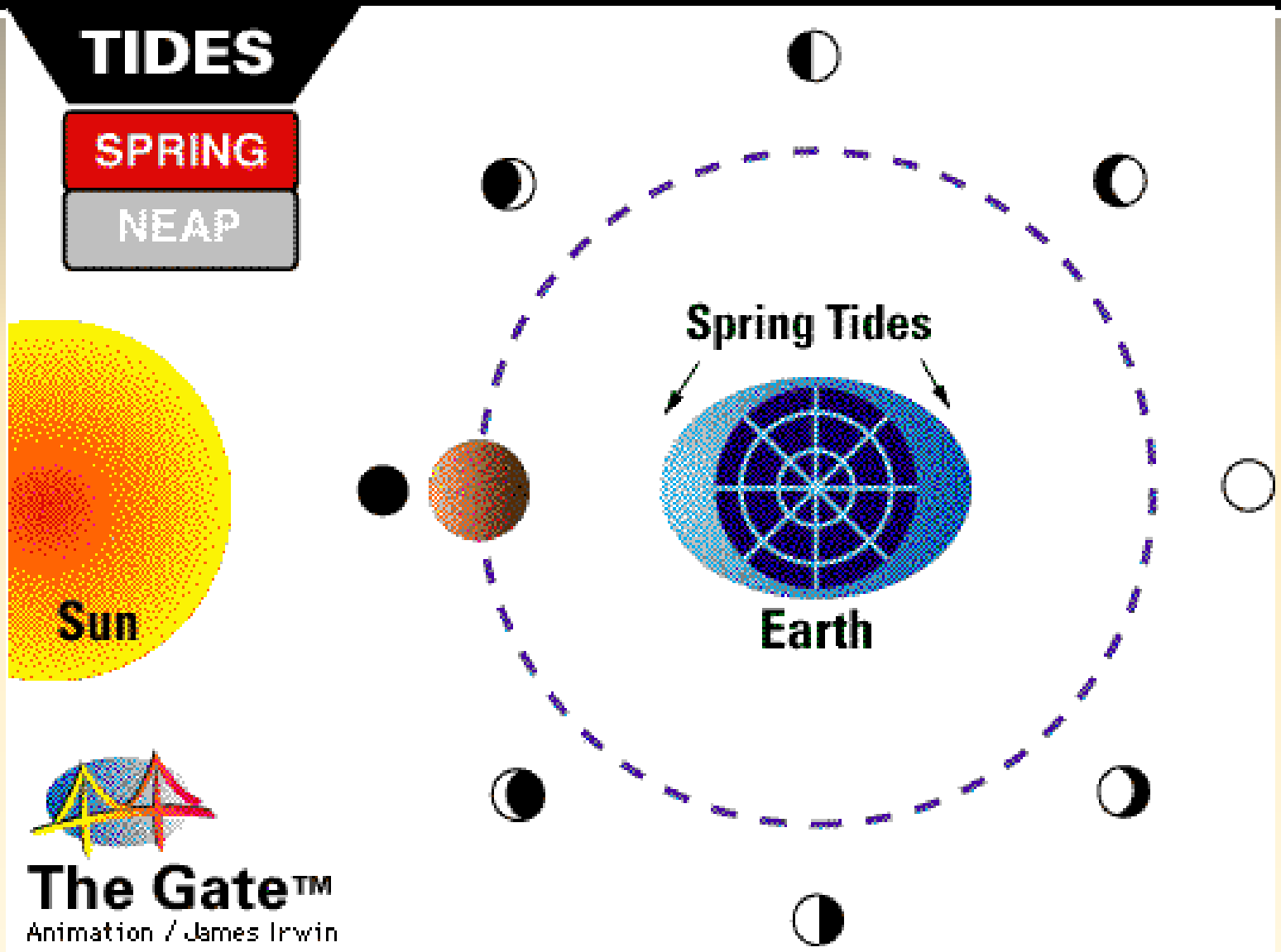
- Tides (tidal bulges) are caused by gravity pulling on the bodies of water the Earth
- There are 2 gravitational bodies that affect the tides - the Sun and the Moon.
- _____

How the Moon Affects the Tides

- When the Moon, Sun and Earth are in line (full and new Moons), the gravitational pull is added
  - called a spring tide
- _____
  - called a neap tide
- There are always a tide at either end of the Earth



The Tides


TIDES
SPRING
NEAP
Spring Tides
Sun
Earth
The Gate™
Animation / James Irwin

The Tides

- This is a time lapse of the tidal rise and fall over a period of six and a half hours. There are two high tides every 25 hours!

The Size of the Rising Moon

- Many people believe the rising moon is larger than when the Moon is high overhead (50-100% larger).
  - The effect is almost entirely an illusion although when the Moon is closest to Earth in its monthly orbit, it appears ~11% larger. The rest is in your head!

- Which is bigger? Click the image and scroll down

The Moon Illusion

- Which circle is larger?
- They are both the same size! Measure it for yourself.