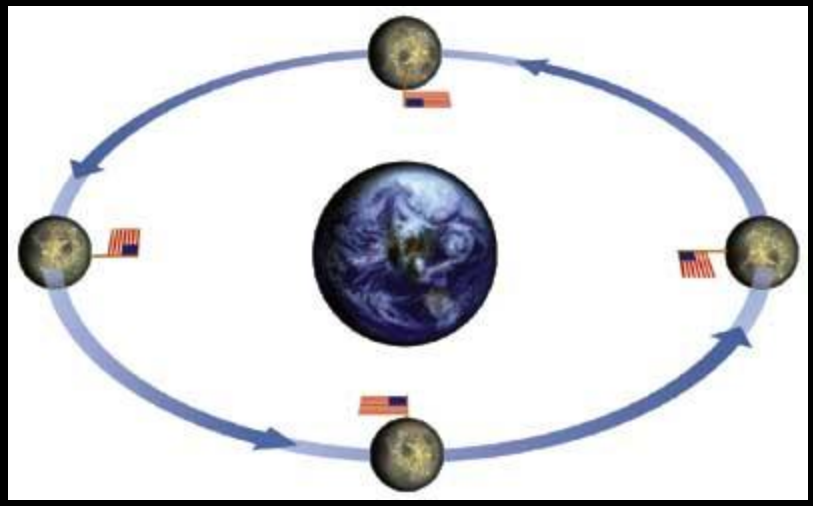
Moon Phases

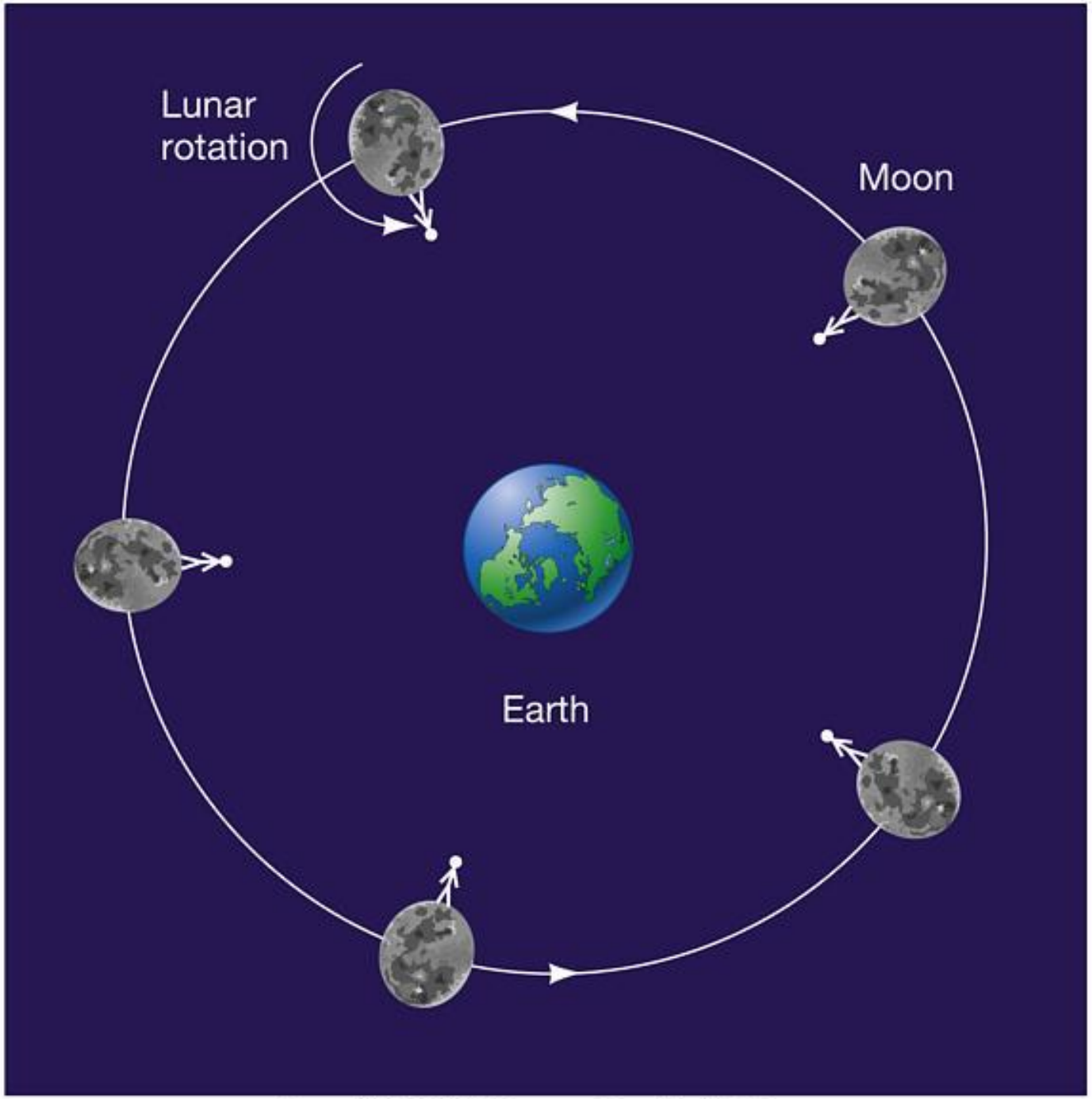
What Causes moon phases?

- **Space view:** Looking down from above the Earth, half of the moon is always lit up by the reflected sunlight.
- The moon **revolves** around the Earth and **rotates** on its own axis.



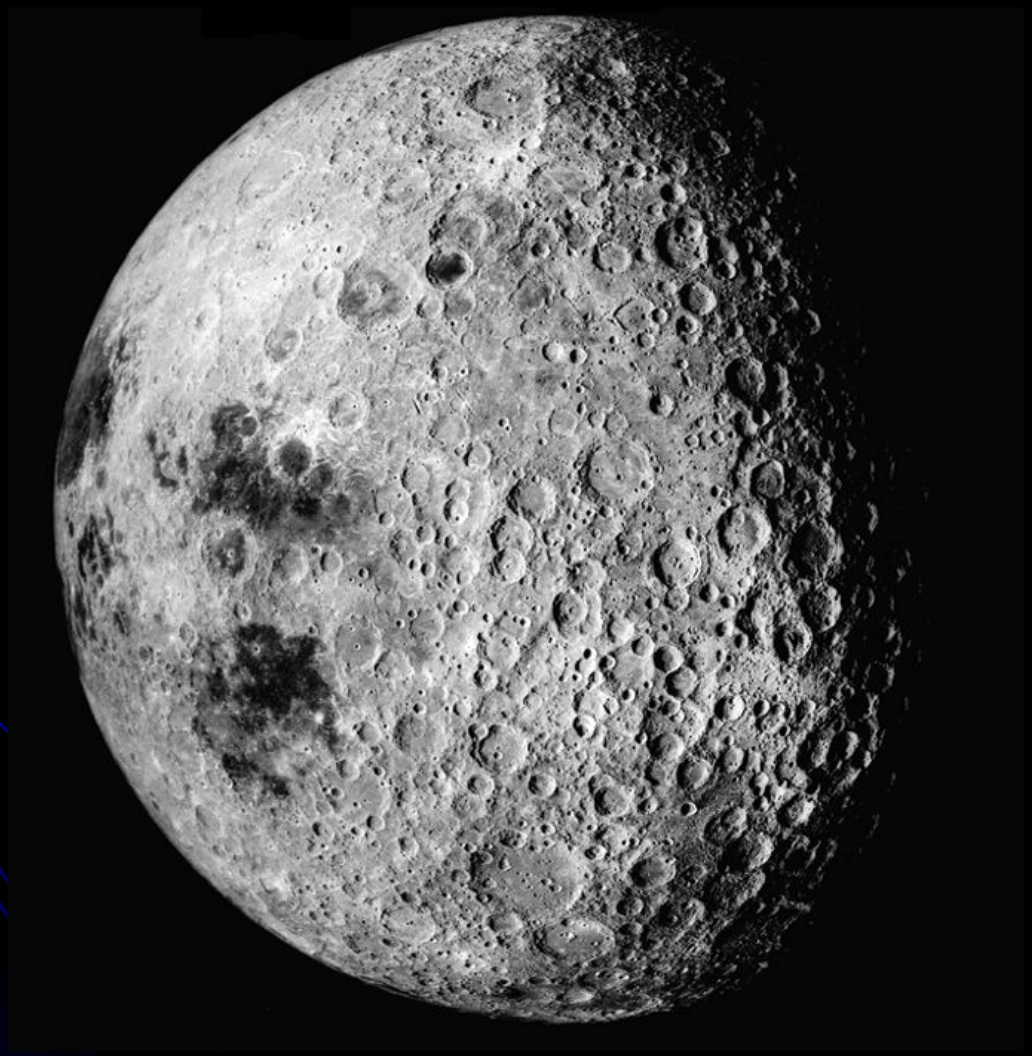
Revolution Rate – Moon orbits the Earth every 27.3 days

Rotation Rate – Moon turns on its axis every 27 days



Near Side of the Moon

Far Side of the Moon



Misconception: Dark Side of the Moon

- The “Dark Side” of the Moon should really be called the “Far Side.”
  - 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!

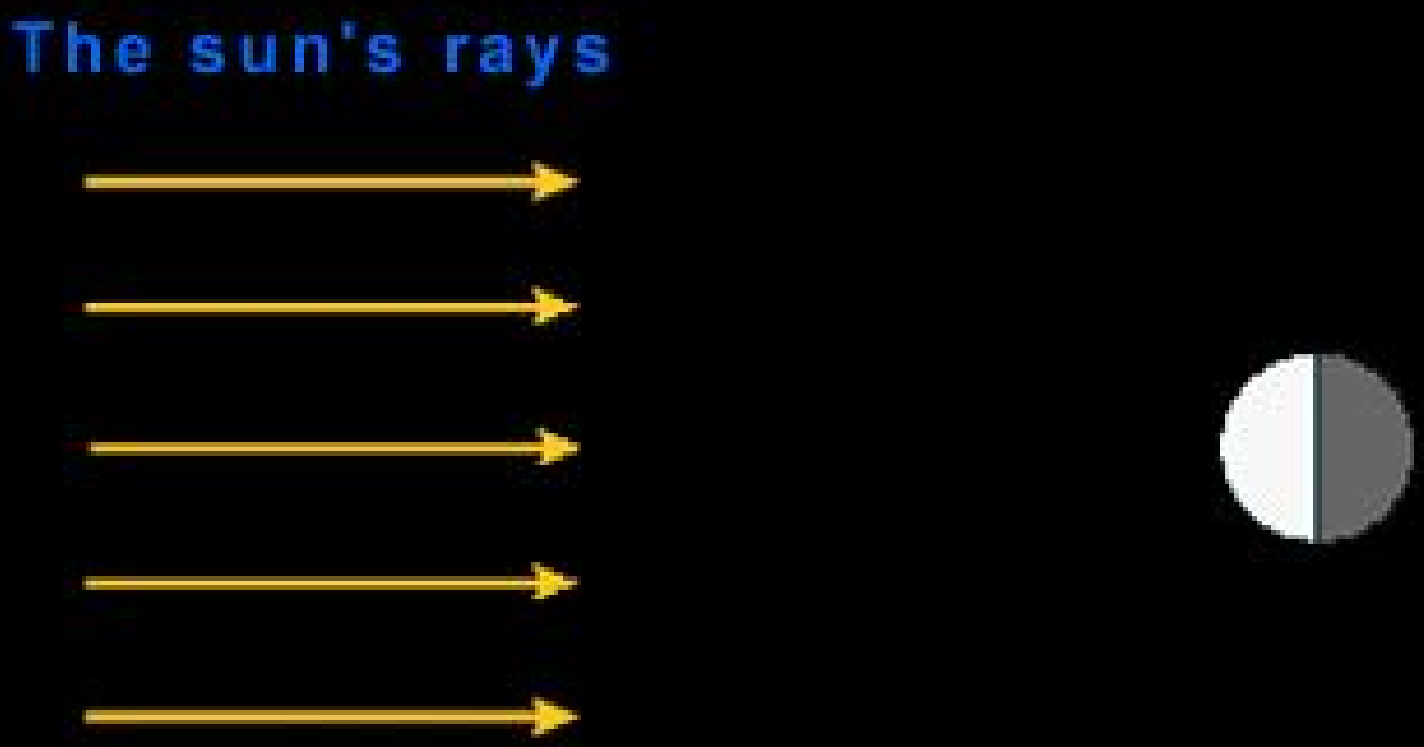
Why do we always see the same side of the moon?

- Because the moon rotates/revolves at the same rate, we always see the same side of the moon.

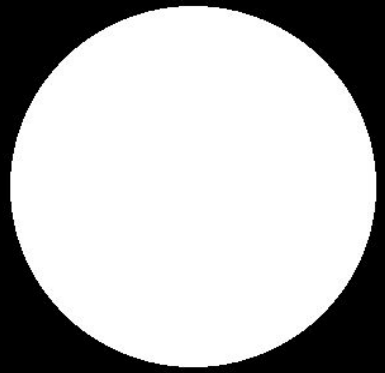
It’s Just a Phase

- Moonlight is reflected sunlight
- **Half the moon’s surface is always reflecting light**
- From Earth we see different amounts of the Moon’s lit surface
- The amount seen is called a “phase”

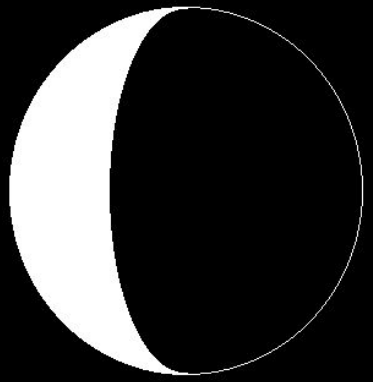
Half of the Moon is always lit up by the sun. As the Moon orbits the Earth, we see different parts of the lighted area.



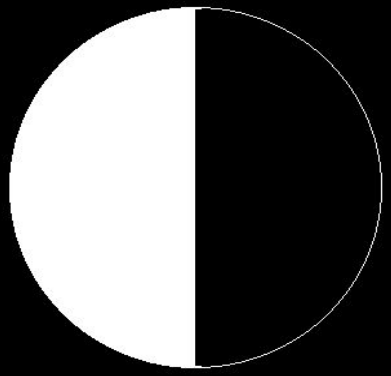
FOUR MAIN SHAPES



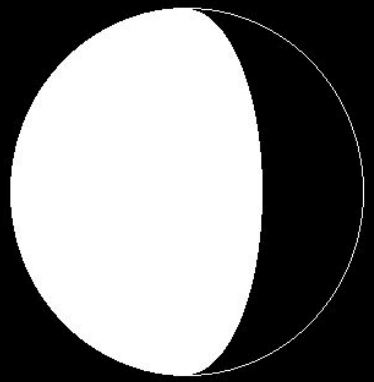
FULL



CRESCENT



QUARTER

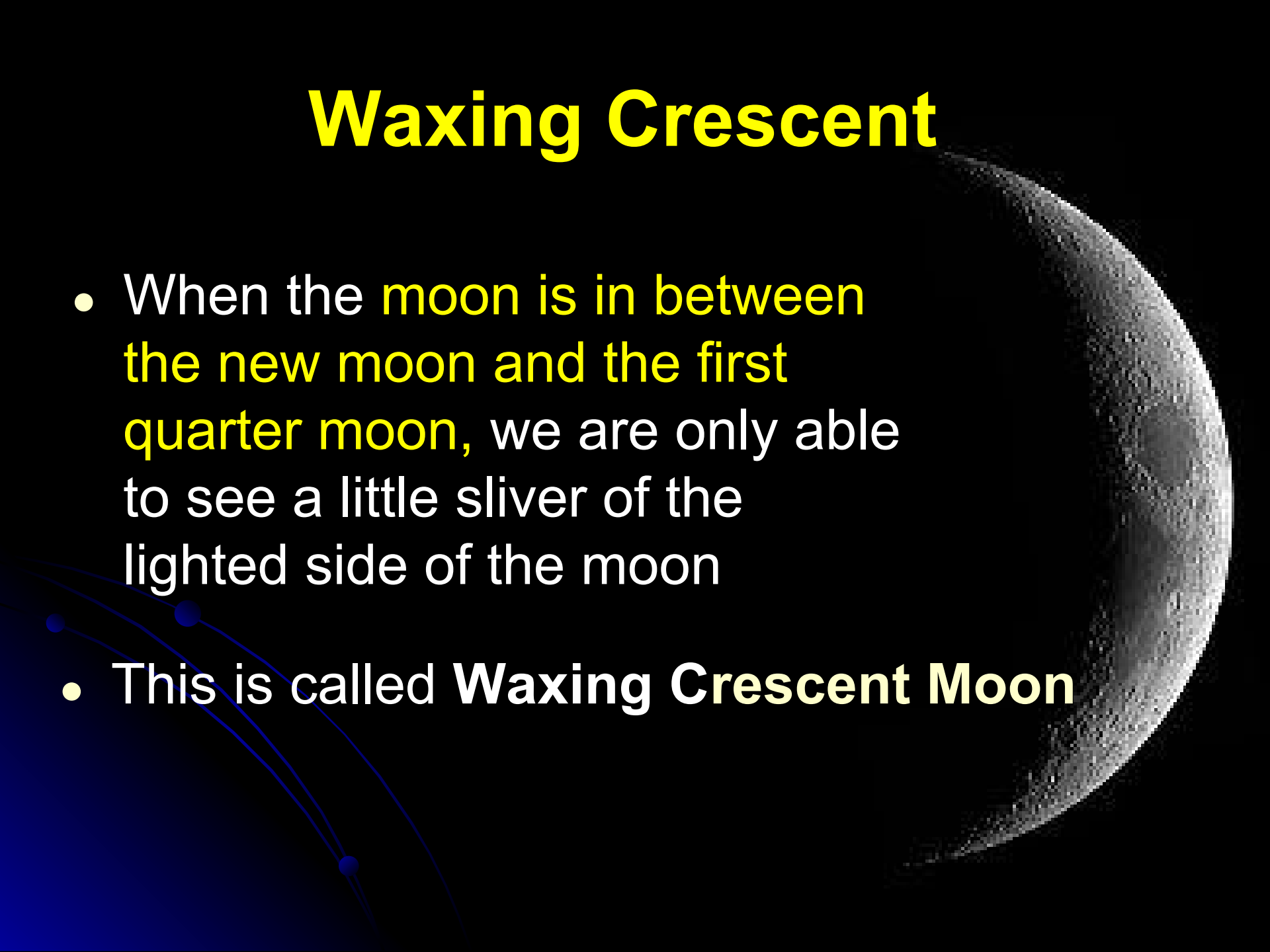


GIBBOUS

New Moon

- When the moon is in between the sun and the Earth, we cannot see the moon
- This is called **New Moon**

Waxing Crescent



- When the moon is in between the new moon and the first quarter moon, we are only able to see a little sliver of the lighted side of the moon
- This is called **Waxing Crescent Moon**

First Quarter

We can only see half of the lit area of the moon (light on right)

- This is called **First Quarter Moon**

Waxing Gibbous

- When the moon is in between the first quarter moon and the full moon, we are able to see about ¾ of the lighted side of the moon

- This is called **Waxing Gibbous**

Full Moon

- When the Earth is in between the moon and the sun, we see the whole part of the moon which is lit up by the sun

- This is called **Full Moon**

Waning Gibbous

- When the moon is in between the full moon and the last quarter moon, we are able to see about ¾ of the lighted side of the moon
- This is called **Waning Gibbous**

Third Quarter or Last Quarter

we can only see half of the lit area of the moon

- This is called **Third Quarter Moon or Last Quarter Moon**

Waning Crescent

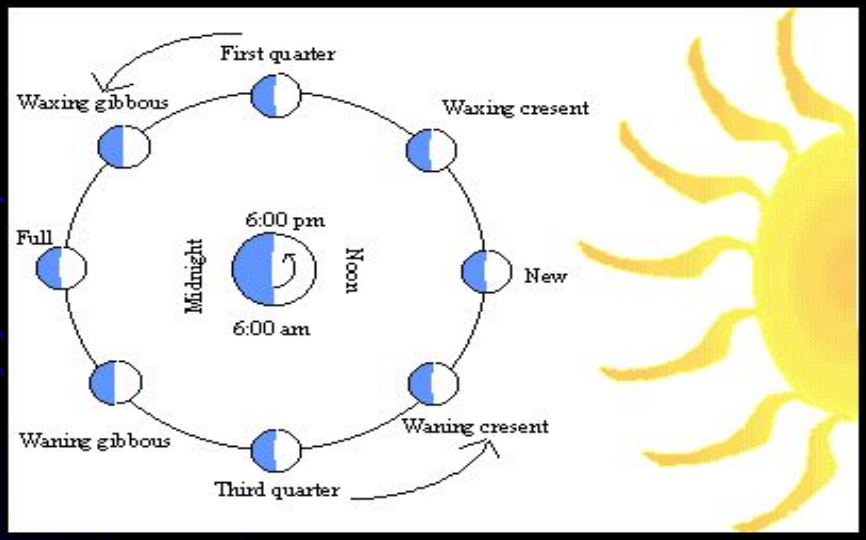
- When the moon is in between the new moon and the last quarter moon, we are only able to see a little sliver of the lighted side of the moon
- This is called **Crescent Moon**

- **Waxing** – increase lighted side (right side). New moon to Full moon

- **Waning** – Decrease in lighted side (left side). Full moon to new moon.

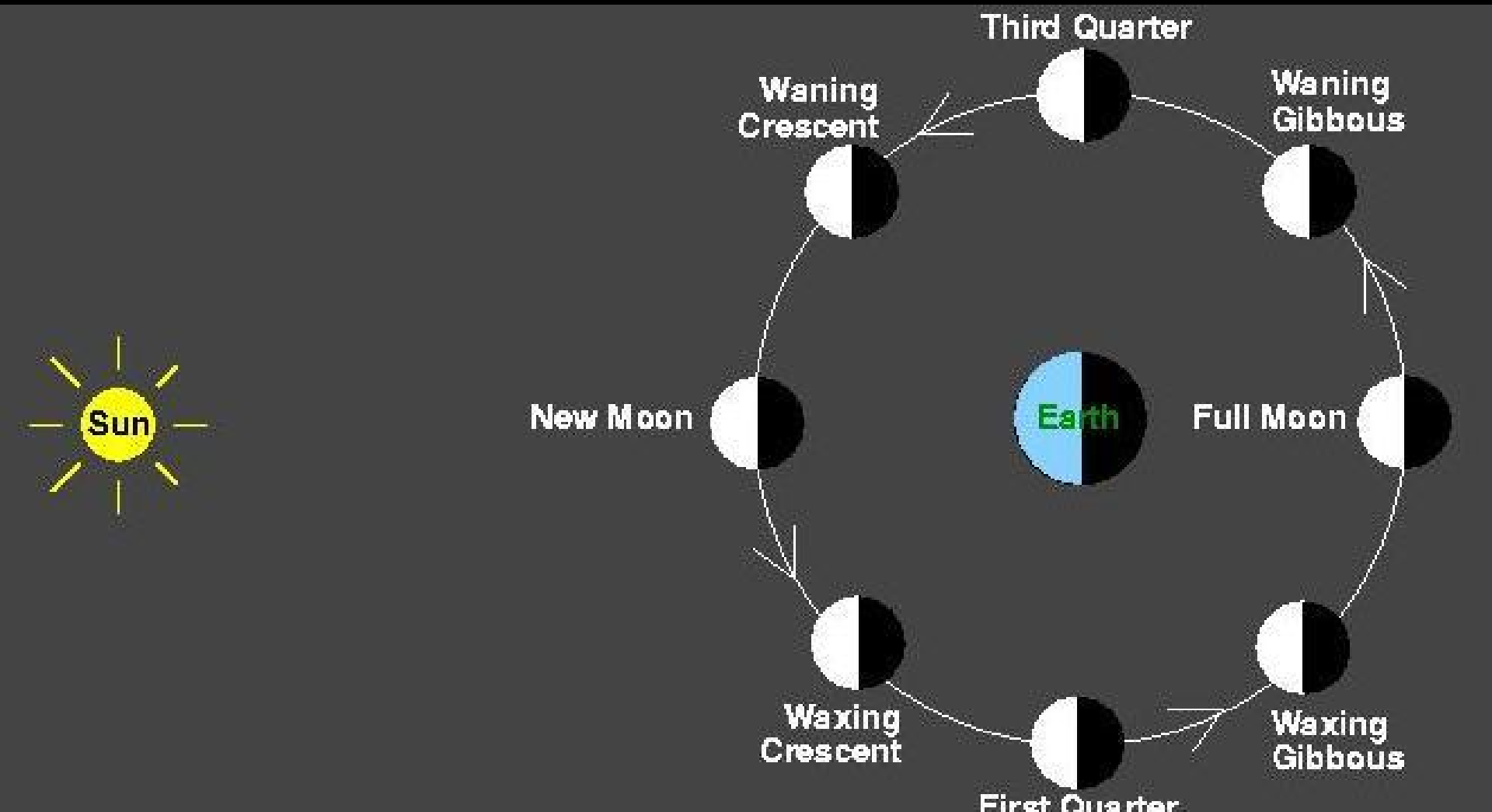
So What causes Phases?

- Caused by changes in the relative position of the moon, Earth, and the sun.
- The “light” of the moon is actually reflecting the sun’s light



Moon Phase Animation

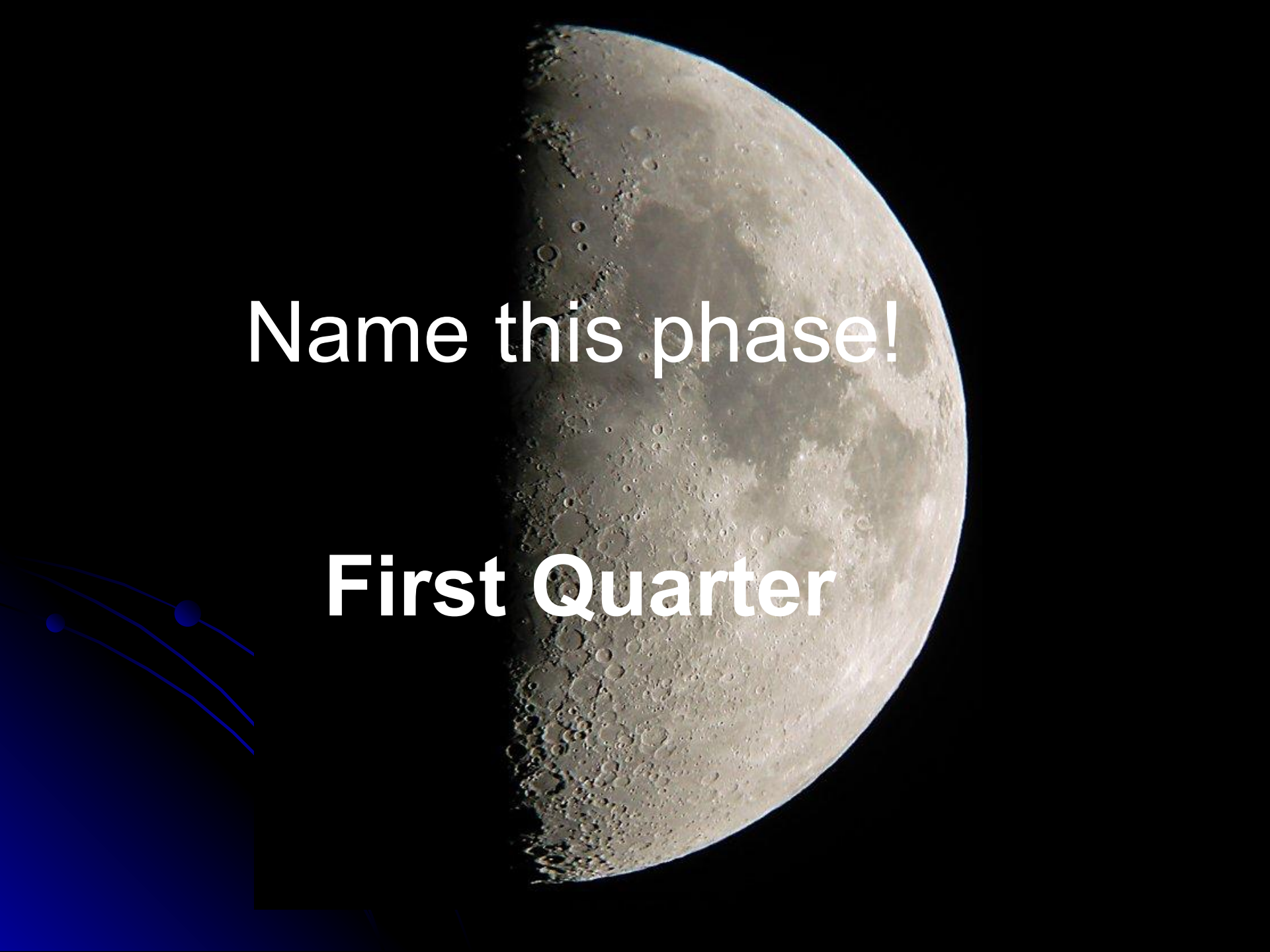
Space View

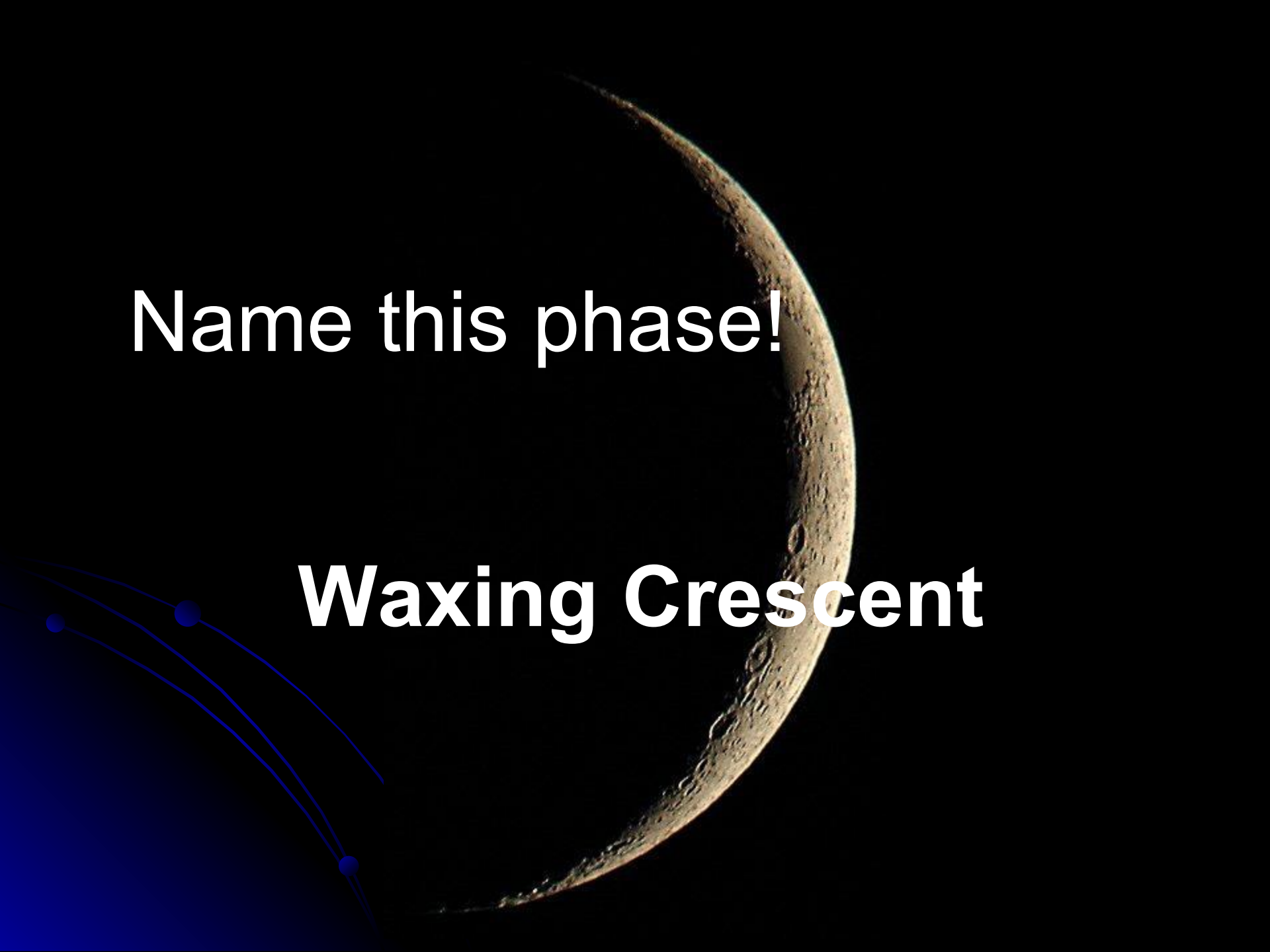


The Lunar Challenge!

Name this phase!

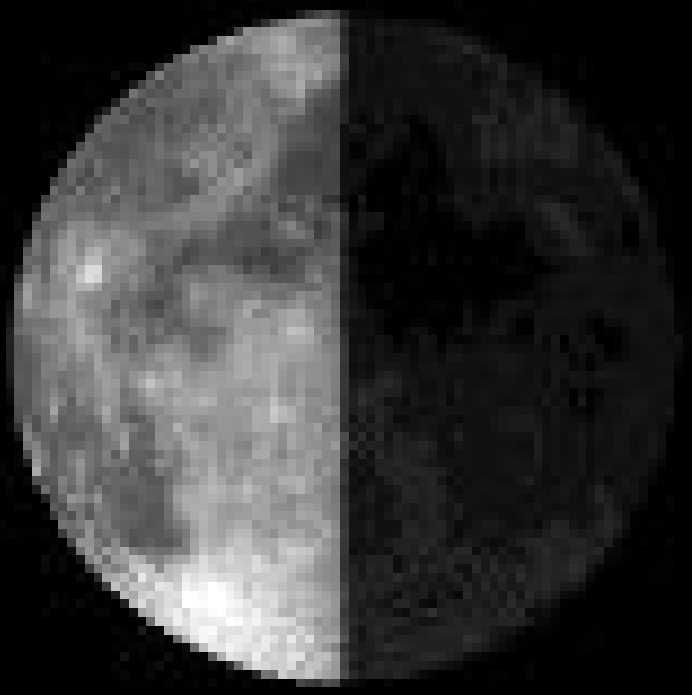
Full Moon


Name this phase!
First Quarter


Name this phase!
Waxing Crescent

Name this phase!

Waning Gibbous



Name this phase!

Third Quarter

Name this phase!

Waxing Gibbous

Name this phase!

Waning Crescent

Name this phase!

Full Moon

Name this phase!

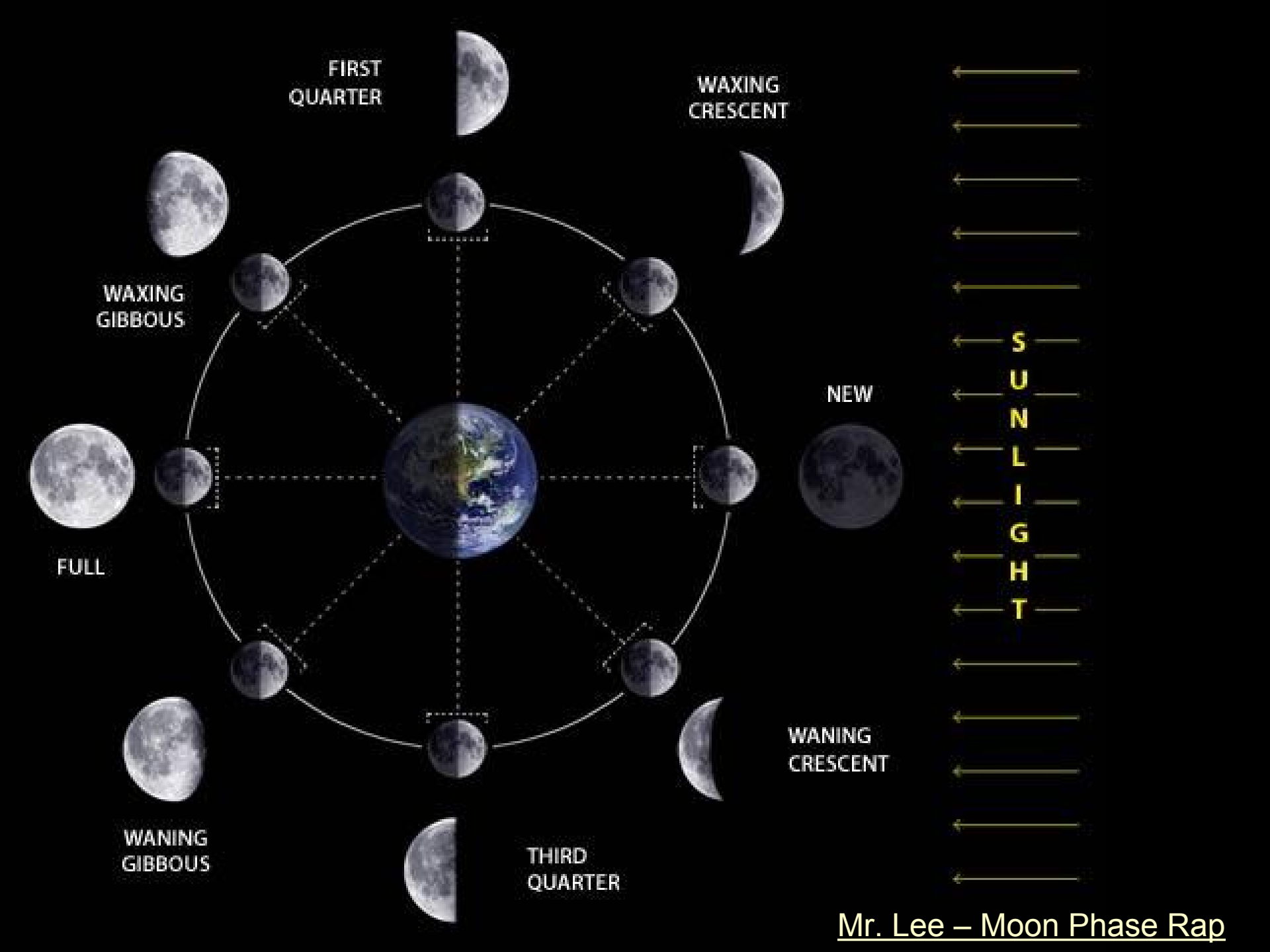
New Moon

Name this phase!

Waning Gibbous

Name this phase!

Waning Crescent



Mr. Lee – Moon Phase Rap