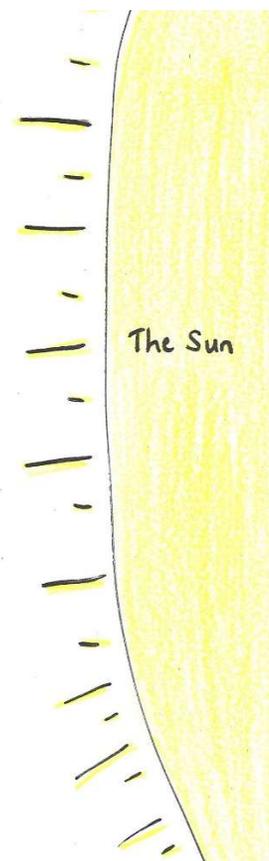
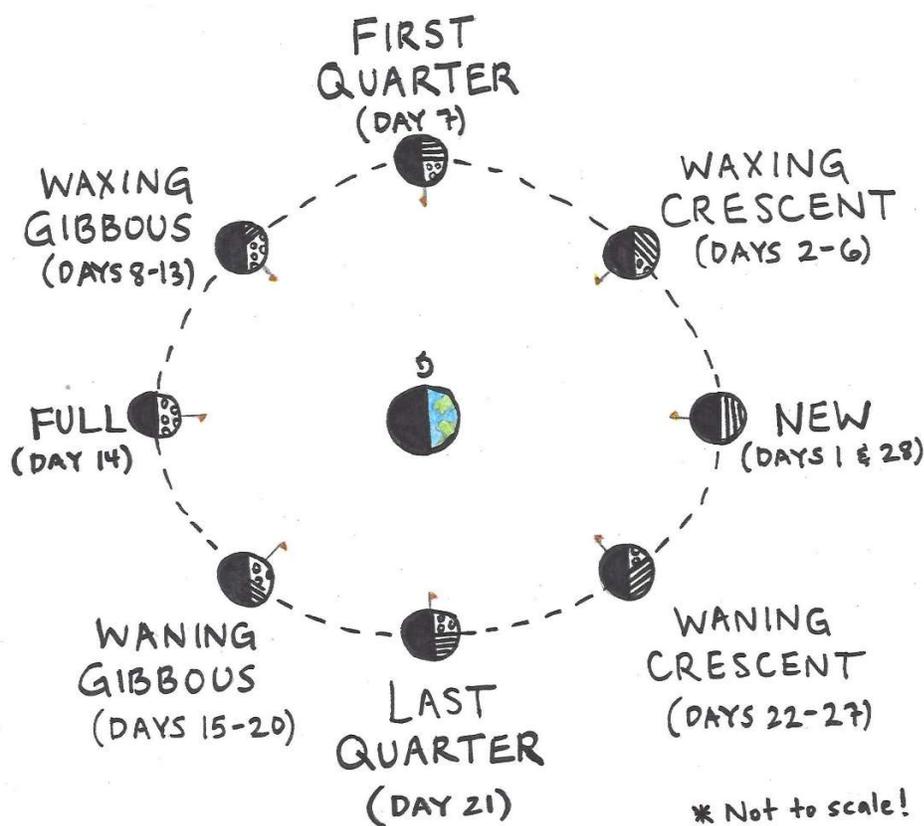


What on Earth are

Moon Phases?

Have you noticed that the moon appears to change shape throughout the month? Have you ever wondered why? Read the steps below to help understand the diagrams.

- The moon only shines by reflected sunlight. It doesn't make its own light because it is not a star.
- Since light can't go through the moon, it always has a day (light) side and a night (dark) side, just like Earth. In the diagram below, the night is always shaded black.
- We can only see one face of the moon from Earth. That side always faces Earth like someone walking around you while always looking at you. As the moon orbits Earth, we also cannot see beyond the moon's orbit (dashed line). This is shown as the color striped, always on the outside of the orbit.
- What we see from Earth at any time are the parts of the moon that are **both** inside the moon's orbit and that are facing the sun.



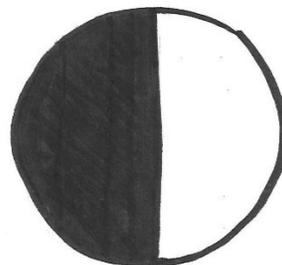
What does each phase look like from Earth? Remember, we can only see the light from the moon that is reflecting sunlight and the light that is on the inner side of Earth's orbit. How much of the light can we see during each phase?



NEW



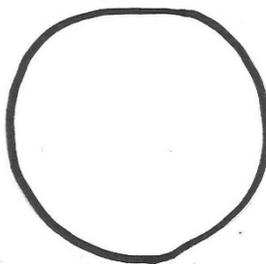
WAXING
CRESCENT



FIRST
QUARTER



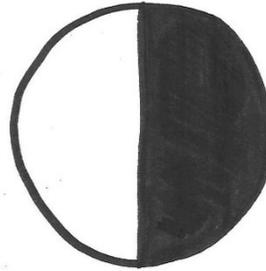
WAXING
GIBBOUS



FULL



WANING
GIBBOUS



LAST
QUARTER



WANING
CRESCENT

Waxing: “Growing” or getting larger. The waxing phases happen between the new moon and the full moon.

Waning: “Shrinking” or getting smaller. The waning phases happen between the full moon and the new moon.

New moon: no light can be seen. **Waxing crescent** (sliver): right side, less than half can be seen. **First quarter:** right side, half can be seen. **Waxing gibbous** (rounded or “hump-backed”): right side, more than half can be seen. Full: all.

Waning gibbous: left side, more than half can be seen. **Last quarter:** left side, half can be seen. **Waning crescent:** left side, less than half can be seen.

Other fun moon facts:

- It takes about a “moonth” (~28.5 days) for the moon to orbit Earth.
- The moon is about $\frac{1}{4}$ the size of Earth and is about 239,000 miles (on average) away from Earth. Earth is about $\frac{1}{109}$ the size of the Sun and is about 93,000,000 miles (on average) away from the sun.
- The moon is in the sky during the day just as much as it is at night. It’s often associated with night time because it’s easier to see against a dark background. Whether or not you see the moon in the sky also depends on what time (and which direction) you’re looking.
- The new moon rises at sunrise and sets at sunset. The first quarter moon rises at noon and sets at midnight.
- The full moon rises at sunset and sets at sunrise. The last quarter moon rises at midnight and sets at noon.