

# Moon Phases

Track the Moon this DeSTEMber to learn about the different Moon phases! Head outside every evening to observe and document how the Moon changes.

## TEKS:

SCI 4.8 C: The student is expected to collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and observable appearance of the Moon over time.

SCI 5.8 D: The student is expected to identify and compare the physical characteristics of the Sun, Earth, and Moon.

## Materials:

- Moon Observation Journal (attached)
- Pen, pencil, or markers

## How To:

1. Read through the STEM Explanation below to learn more about Moon phases.
2. Use the attached Moon Observation Journal to keep track of the Moon for 28 days.
3. Starting tonight, go outside when it is dark and look at the Moon.
4. Fill in the date and time of your observation.
5. Use a pencil, pen, or marker to shade in the part of the Moon that you can't see, so the visible part of the Moon is white. For example:
  - a. On Saturday, December 4th, 2021, there will be a new moon. This means that no Moon is visible in the night sky! You should completely shade the Moon on the Moon Observation Journal for this day.
  - b. On Sunday, December 19th, 2021, there will be a full moon. This means that the entire lit side of the Moon is visible to us, so you shouldn't shade any of the Moon.
6. Repeat steps 3-5 for 28 days to see how many different Moon phases you can identify in the night sky. Once all the days are filled in, you have completed your Moon Observation Journal!

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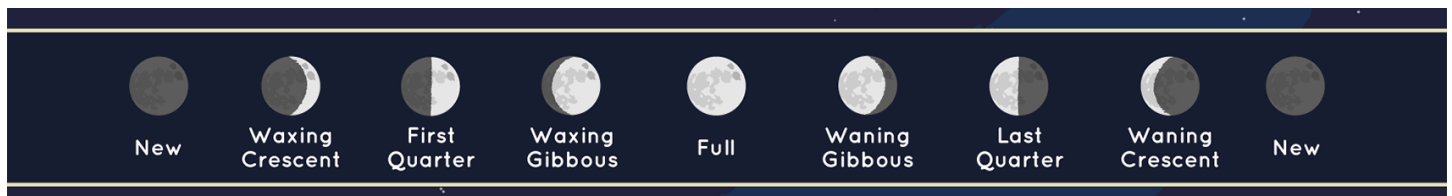
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## STEM Explanation:

When you look outside and see Earth's Moon, it appears to be shining brightly in the night sky. However, the Moon does not give off any light itself. The "moonlight" we see is light from the Sun reflected off the Moon's surface. As the Moon orbits the Earth, the Sun lights up different parts of its surface, making it appear to us that the Moon is changing shape. The Moon itself never actually changes shape; we just see different parts of it.

When no part of the Moon is visible in the sky, this is known as a new moon. After a new moon, a thin crescent appears in the sky. The Moon's increasing visibility is called waxing, so this stage is waxing crescent. The Moon then continues to "grow" and enters the first-quarter stage. Even though half of the Moon appears visible to our eyes, we only see a quarter of the entire spherical shape of the Moon. The next phase is known as waxing gibbous, and it lasts from the first quarter phase all the way until a full moon is visible in the night sky.

A full moon happens when the entire lit portion of the Moon can be seen from Earth. This occurs when the Moon is on the opposite side of the Earth from the Sun. After a full moon, the visible part of the Moon begins to decrease in size, and we use the term waning to describe a moon that is getting visibly smaller. The first waning moon phase is called waning gibbous. This phase happens between a full moon and a last-quarter moon. As the Moon continues to wane, it will appear as a half-moon once again, only this time it is called the last quarter instead of the first quarter. The final waning stage is called the waning crescent. The waning crescent moon phase happens when the Moon once again looks like a crescent, but this time, the crescent gets smaller and smaller from one day to the next. After a waning crescent, the Moon goes back to being a new moon or is no longer visible in the sky, and the cycle repeats itself!



## Career Connection:

*Astronomers* study planets, moons, stars, galaxies, meteors, comets and their interactions with each other. They investigate the origin of the universe and observe how forces, such as gravity, change throughout space. Astronomers collaborate with their peers to better understand how the universe works at microscopic and macroscopic levels.

## Resources:

<https://www.hpschools.org/cms/lib/NY01913715/Centricity/Domain/117/Moon%20Phases%20Observation%20Sheet.pdf>

[https://www.calendar-12.com/moon\\_calendar/2021/december](https://www.calendar-12.com/moon_calendar/2021/december)

<https://moon.nasa.gov/resources/12/moon-observation-journal/>

<https://moon.nasa.gov/moon-in-motion/moon-phases/>

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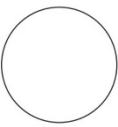
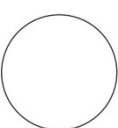
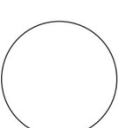
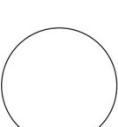
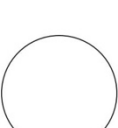
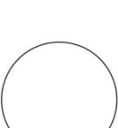
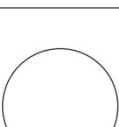
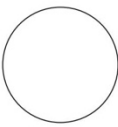
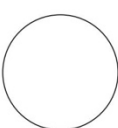
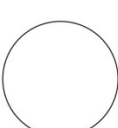
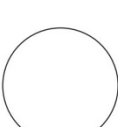
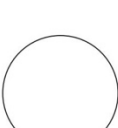
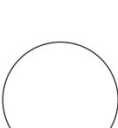
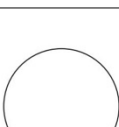
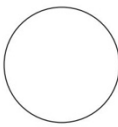
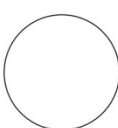
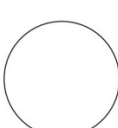
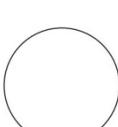
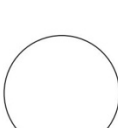
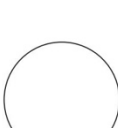
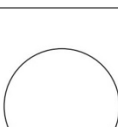
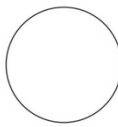
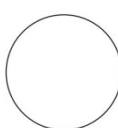
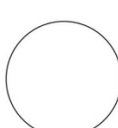
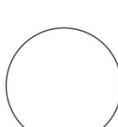
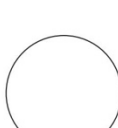

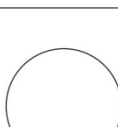
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# Moon Observation Journal



**Moon Observation Journal** NAME \_\_\_\_\_

**DIRECTIONS:** Observe the Moon each day for one month. Write down the date and time you make each observation, and illustrate how the Moon looks each day by shading in the circles to reflect the shape of the Moon. For example, if you can see the whole Moon, you do not need to shade in any part of the circle. If you can only see half of the Moon, shade the side of the Moon that you cannot see in the circle for that day. If you cannot see the Moon at all on a day, indicate this on your journal and also write down why you could not see the Moon.

Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 
Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 	Date: _____ Time: _____ 
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moon.nasa.gov/observe

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