

Lunar Phases Flipbook

Waxing, waning, or full moon! Animate your own flipbook to understand the physics of moon phases and better identify which part of Earth's Moon you are seeing in the night sky.

TEKS:

SCI 2.8 C: The student is expected to observe, describe, and record patterns of objects in the sky, including the appearance of the Moon.

SCI 4/5.8: The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system.

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 the observable appearance of the moon over time.

Materials:

- Lunar Phases Flipbook Template (attached)
- Markers
- Scissors
- Stapler

How To:

1. Print the Lunar Phases Flipbook Template.
2. Cut out each rectangular moon phase.
3. Place the moon phases in the following order from top to bottom. The New Moon should be the first page of your flipbook and the Waning Crescent should be your last page.
 - a. New Moon
 - b. Waxing Crescent
 - c. First Quarter
 - d. Waxing Gibbous
 - e. Full Moon
 - f. Waning Gibbous
 - g. Third Quarter
 - h. Waning Crescent

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4. Staple the left side to create a book. (Tip: the book will “flip” best if the right side of each page is increasingly ~1/8 inch to the left of the page below it. See photo below.)



5. Flip through the pages and watch the phases of the moon change!
6. Optional: Use markers to decorate each moon phase and create a cover for your flipbook.

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 third quarter moon. As the Moon continues to wane, it will appear as a half-moon once again, only this time it is called the third quarter instead of the first quarter. The final waning stage is called 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 no longer visible in the sky, and the cycle repeats itself!

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Career Connection:

Stop-motion animators use models, puppets, or clay to create animated films, television shows, and commercials. They create pictures of objects, characters, or scenes that show them in various positions. When the pictures run together, it appears that the object is moving on its own, creating an optical illusion that can trick the viewer's eye and mind.

Resources:

<https://lessonplans.craftgossip.com/make-a-cool-phases-of-the-moon-flipbook/>

<https://www.natgeokids.com/au/discover/science/space/the-phases-of-the-moon/>

<https://www.timeanddate.com/astronomy/moon/super-full-moon.html>

https://kids.kiddle.co/Phases_of_the_Moon

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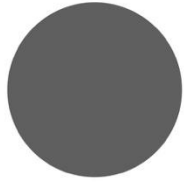
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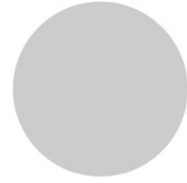
Lunar Phases Flipbook Template

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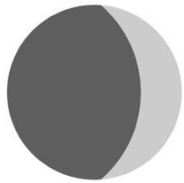
New Moon



Full Moon



Waxing Crescent



Waning Gibbous



First Quarter



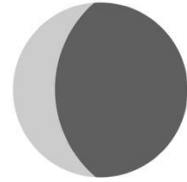
Third Quarter



Waxing Gibbous



Waning Crescent



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