

SCIENCE ARTICLE

NEWS

Our Moon



The Moon

Our closest neighbor

As the brightest object in the night sky and our closest neighbor, we have so much still left to learn about our moon!

The Moon

The moon is about 239,000 miles away from us in space. It is much smaller than the Earth. In fact, about 50 moons could fit into a hollowed-out Earth. The moon has almost no atmosphere, and temperatures are very extreme. In the light of the moon, temperatures can reach 127° C, which is 270° F, or boiling! In the

below freezing! The moon does not make light of its own. We can see the moon from Earth due to the light reflected from the sun. Due to the position of the moon and Earth on a given day, we can only see certain portions of the lit moon. These portions are called **moon phases**.

Phases of the Moon

It is important to remember that one-half of the moon is always illuminated by the sun, but due to the positions of the Earth and the moon, we can usually only see a part of that illuminated portion of the moon. A series of phases the Moon goes through over the course of a month is called a **lunar cycle**.

The lunar cycle begins with a **new moon**, when it appears invisible in our night sky. During a new moon, the side of the moon visible to Earth is not reflecting light. The moon will then begin its **waxing crescent** phases, which means that the lit part of the moon visible to Earth is getting larger but is still less than half. Once the moon gets to its first quarter phase, the right half of the moon is visible to Earth.

The moon will appear to grow in the **waxing gibbous** phase until it reaches its **full moon**. After the full moon, the moon appears to shrink in size during its **waning** phases.



After the full moon, the moon appears illuminated through the waning phases until it reaches its third or **last quarter phase**. During the last quarter phase, the left half of the moon is illuminated. The moon then continues to continually shrink through its **waning crescent** phases until it reaches the new moon, and the cycle begins again. With all the information we can see from the surface, it's no wonder why we've explored this celestial body for generations.

Exploration

The first humans landed on the moon on July 20, 1969, and the last time humans walked on the moon, they explored different parts of the surface and brought back samples. Now, we explore the moon with probes.

Several probes are orbiting the moon and collecting data. The most recent are from the ARTEMIS missions. They have been orbiting the moon and collecting data about the moon's magnetic field to see how it affects solar wind particles.



The next mission to land humans on the moon is in 2025. The Artemis program will begin the construction of an ARTEMIS camp on the moon to prove that we can live on other worlds and learn how to use the resources found there. This mission will also land the first woman and the first person of color on the moon to inspire the next generation of space travelers.



TERMS OF USE

Copyright 2022 The Science Penguin Incorporated
All rights reserved by author.

Permission to copy and upload for single classroom use only.
Not for public display.

Respect the Digital Millennium Copyright Act (DMCA) by only using this resource on password protected sites. **You MAY use Google Classroom, Canvas, Schoology, etc.**

Do not place this resource openly on the Internet, on shared district or campus drives, or on social media for others to access.

Do not share this resource with other teachers without proper licensing.



The Moon

Our closest neighbor

As the brightest object in the night sky and our closest neighbor, we have so much still left to learn about our moon!

The Moon

The moon is about 239,000 miles away from us in space. It is much smaller than the Earth. In fact, about 50 moons could fit into a hollowed-out Earth. The moon has almost no atmosphere, and temperatures are very extreme. In the light of the moon, temperatures can reach 127°C , which is 27° above boiling! In the darkness of the moon, temperatures can dip down to -183°C , which is 183°

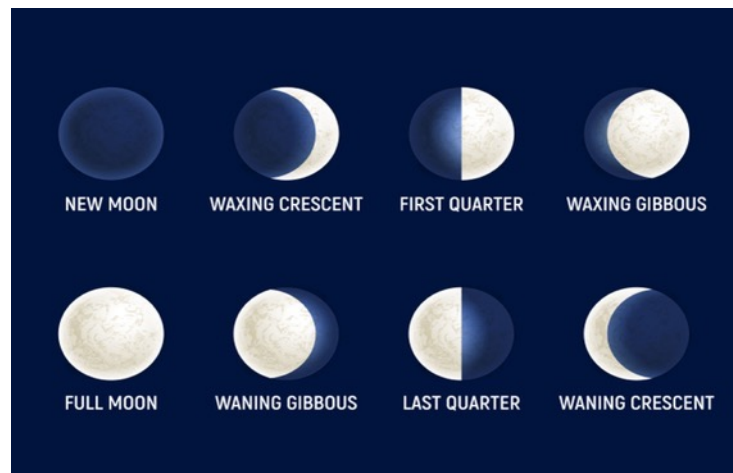
below freezing! The moon does not make light of its own. We can see the moon from Earth due to the light reflected from the sun. Due to the position of the moon and Earth on a given day, we can only see certain portions of the lit moon. These portions are called **moon phases**.

Phases of the Moon

It is important to remember that one-half of the moon is always illuminated by the sun, but due to the positions of the Earth and the moon, we can usually only see a part of that illuminated portion of the moon. The series of phases the Moon goes through over the course of a month is called a **lunar cycle**.

The lunar cycle begins with a **new moon**, when it appears invisible in our night sky. During a new moon, the side of the moon visible to Earth is not reflecting light. The moon will then begin its **waxing crescent** phase, which means that the lit part of the moon visible to Earth is getting larger but is still less than half. Once the moon gets to its first quarter phase, the right half of the moon is visible to Earth.

From there, the moon will continue to appear to grow in the sky through its **waxing gibbous** phase until it reaches its **full moon** phase. During the full moon phase, the entire side of the moon facing Earth appears fully illuminated. After the full moon, the moon appears to shrink in size through its waning phases.



More than half of the moon appears illuminated through the waning gibbous phases until it reaches its third or **last quarter phase**. During the last quarter moon phase, the left half of the moon is illuminated. The moon appears to continually shrink through its **waning crescent** phase until it reaches the new moon, and the cycle begins again. With all the changes humans can see from the surface, it's no wonder why we've wanted to explore this celestial body for generations.

Moon Exploration

The first human landed on the moon on July 20, 1969, and the last time was in 1972. When humans walked the moon, they explored different landforms and brought back samples. Now, we explore the moon a little differently.

Right now, two probes are orbiting the moon and collecting data. Those probes are from the ARTEMIS missions. They have been orbiting since 2011 and collecting data about the moon's magnetic field to determine how it affects solar wind particles.

The next planned mission to land humans on the moon is in 2025. This ARTEMIS III mission will begin the construction of an ARTEMIS camp on



the moon to prove that we can live in other worlds and learn how to use the resources found there. This mission will also land the first woman and person of color on the moon to inspire the next generation of space travelers.

1. Which of the following is the **best** definition of lunar cycle?
 - A. The illuminated side of the moon
 - B. The time when humans walked on the moon
 - C. A series of phases the Moon goes through over a month
 - D. The gravitational pull of the moon on Earth

2. The 1st phase of the lunar cycle where the moon appears invisible in our night sky is known as—
 - A. a new moon.
 - B. a full moon.
 - C. a blue moon.
 - D. a waning crescent moon.

3. What does it mean for the moon to be **illuminated**?
 - A. The moon is darkened
 - B. The sun's light reflects off it to light it up
 - C. The Earth's gravity pulls on the moon to keep it in orbit
 - D. The light from the Earth reflecting on the moon's surface

4. When the light of the moon appears to be growing, which term is used to describe its phase?
 - A. Waxing
 - B. Waning
 - C. Quarter
 - D. New Moon

5. Which of the following describes the goals of the first human missions to the moon from 1969 to 1972?
- A. To study the moon's magnetic field
 - B. To study water on the moon
 - C. To find other living organisms
 - D. To study landforms and collect samples
6. Which of the following is true about the moon? (Select all that apply.)
- The moon has almost no atmosphere.
 - The full moon phase follows the last quarter moon phase.
 - It is very hot all over the moon's surface.
 - The lunar cycle is about one month long.
 - When the entire moon which we can see is illuminated, it is called a full moon.
 - The goal of the next lunar mission is to collect rock samples.
7. Which of the following is not one of the four objects that can be seen in the picture at the bottom of page 2?
- A. Sun
 - B. Moon
 - C. Earth
 - D. Mars
8. What can the reader infer about the spacecraft pictured in the image at the bottom of page 2?
- A. It was the first spacecraft on the moon.
 - B. It is part of the ARTEMIS mission in 2025, which is why it is only a model.
 - C. It is a science fiction picture.
 - D. It is larger than the Earth.

9. Which of the following best describes the text structure of the last section, "Moon Exploration?"
- A. Comparing and contrasting the moon and Earth
 - B. The causes and effects of the moon phases
 - C. Making an argument to convince you we should visit the moon
 - D. Sequential overview of missions to the moon
10. What is the main idea of the selection?
- A. With all the excitement humans can see from the surface, it's no wonder why we've wanted to explore the moon for generations.
 - B. Due to the position of the moon and Earth on a given day, we can only see certain portions of the lit moon.
 - C. While we can see different portions of the moon from Earth, there have been past, present, and future missions to get a closer look.
 - D. Right now, two probes are orbiting the moon and collecting data. Those probes are from the ARTEMIS missions.

Answer Key

Multiple Choice:

1. C
2. A
3. B
4. A
5. D
6. -The moon has almost no atmosphere.
-The lunar cycle is about one month long.
-When the entire moon which we can see is illuminated, it is called a full moon.
7. D
8. B
9. D
10. C
11. 1969-72: Study surface and landforms and bring back samples.
Current: Study the moon's magnetic field and its effect on solar wind.
Future: Construct a camp on the moon and study ways humans can survive on the moon.