

The phases of the moon

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Word Count **854**

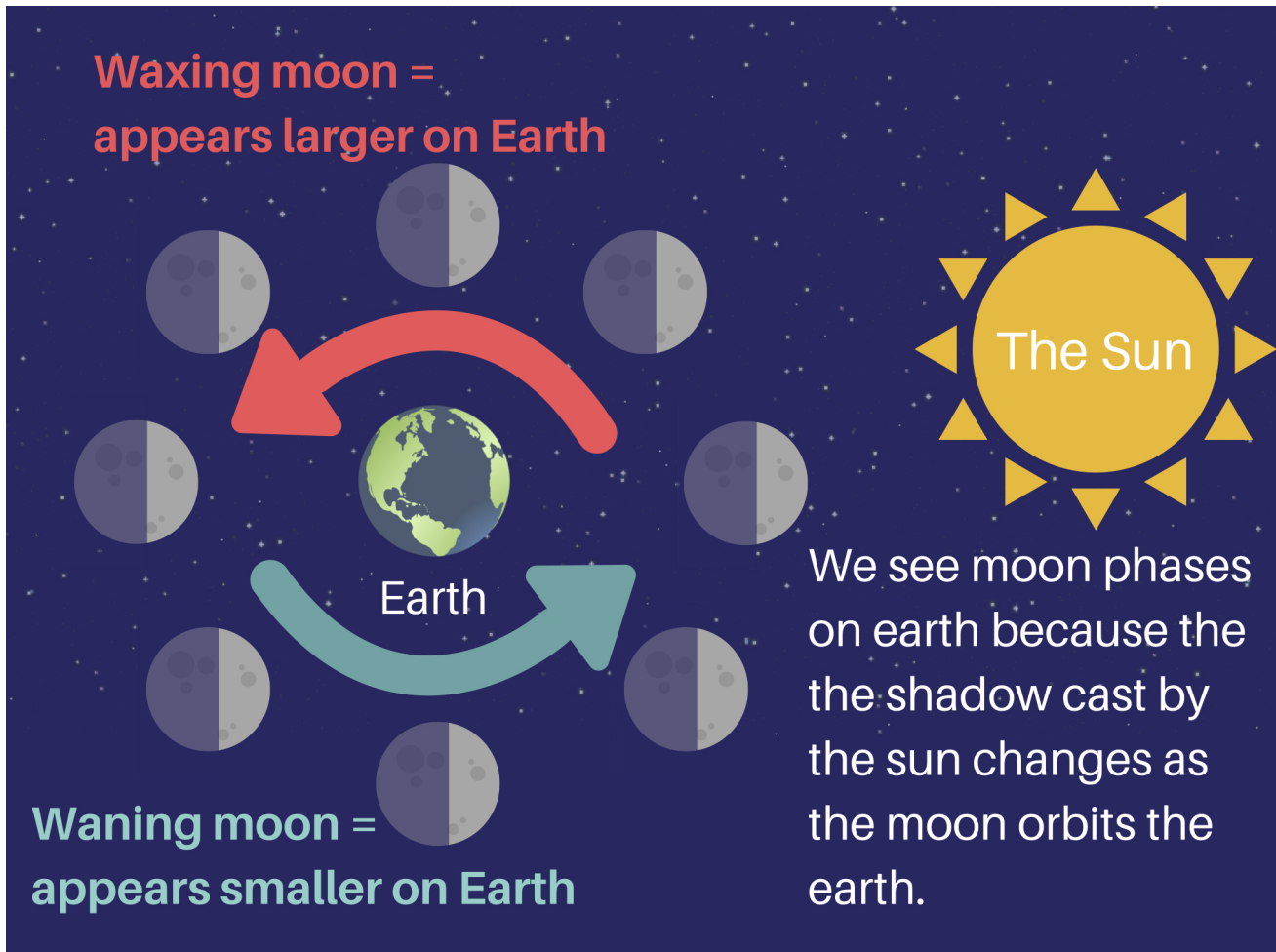
Level **MAX**



TOP: The phases of the moon are shown in the night sky. The phases change over the course of the lunar month. Photo from: Spirit-Fire/Flickr. BELOW: Phases of the moon, as seen from the solar system and from Earth. Images by: Newsela Staff.

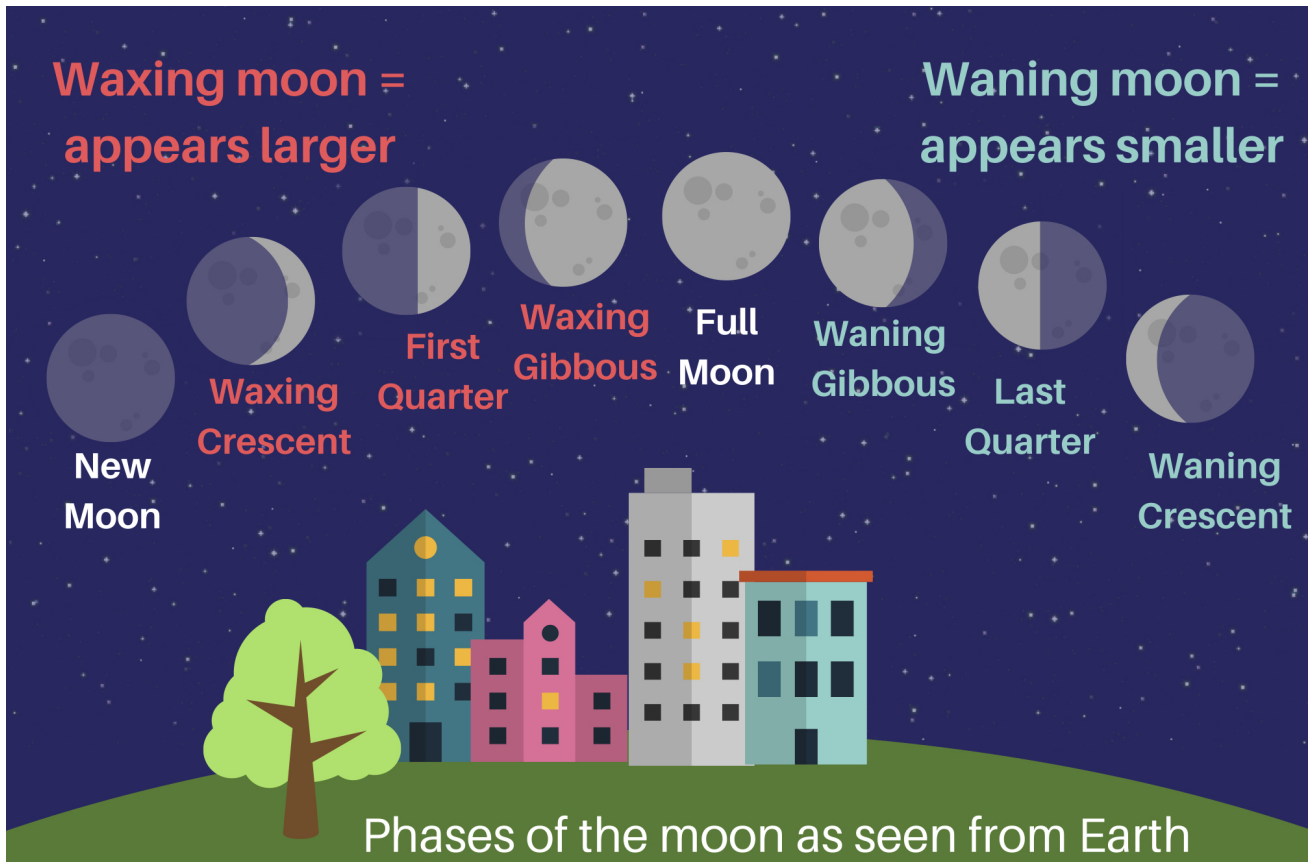
Question: What are the phases of the moon?

Answer: The moon orbits Earth at an average distance of 382,400 kilometers. The lunar month is the 29.53 days it takes to go from one new moon to the next. During the lunar month, the moon goes through all its phases. You can see the phases drawn in the image below. Just like the Earth, half of the moon is lit by the sun while the other half is in darkness. The phases we see result from the angle the moon makes with the sun as viewed from Earth. The diagram below on the right is one you typically see in books. Don't let it confuse you. The images of the moon show you what the moon looks like from Earth when it is at given points in its orbit. It does not show which side of the moon is lit by the sun. The side lit by the sun is always the side that is pointed toward the sun, as seen in the diagram below.



We only see the moon because sunlight reflects back to us from its surface. During the course of a month, the moon circles once around the Earth. If we could magically look down on our solar system, we would see that the half of the moon facing the sun is always lit. But the lit side does not always face the Earth! As the moon circles the Earth, the amount of the lit side we see changes. These changes are known as the phases of the moon and it repeats in a certain way over and over.

At new moon, the moon is lined up between the Earth and the sun. We see the side of the moon that is not being lit by the sun (in other words, we see no moon at all, because the brightness of the sun outshines the dim moon!) When the moon is exactly lined up with the sun (as viewed from Earth), we experience an eclipse.



As the moon moves eastward away from the sun in the sky, we see a bit more of the sunlit side of the moon each night. A few days after new moon, we see a thin crescent in the western evening sky. The crescent moon waxes, or appears to grow fatter, each night. When half of the moon's disc is illuminated, we call it the first quarter moon. This name comes from the fact that the moon is now one-quarter of the way through the lunar month. From Earth, we are now looking at the sunlit side of the moon from off to the side.

The moon continues to wax. Once more than half of the disc is illuminated, it has a shape we call gibbous. The gibbous moon appears to grow fatter each night until we see the full sunlit face of the moon. We call this phase the full moon. It rises almost exactly as the sun sets and sets just as the sun rises the next day. The moon has now completed one half of the lunar month.

During the second half of the lunar month, the moon grows thinner each night. We call this waning. Its shape is still gibbous at this point, but it grows a little thinner each night. As it reaches the three-quarter point in its month, the moon once again shows us one side of its

disc illuminated and the other side in darkness. However, the side that we saw dark at the first quarter phase is now the lit side. As it completes its journey and approaches new moon again, the moon is a waning crescent.

Want Another Description Of Why The Moon Has Phases?

You can demonstrate the phases of the moon for yourself by using a lamp and a baseball. Place the lamp with its shade removed in one end of a darkened room. Sit at the other end of the room and hold the baseball up in front of you so that it is between your face and the lamp. Now move the ball around your head at arm's length. Do this slowly and move your arm from right to left. As the baseball orbits your head, you will see it go through the same phases as the moon.

Skywatchers

Fishermen, hunters, gardeners, hikers, photographers, teachers, researchers, psychologists, New Age enthusiasts, paranormal investigators, astrologers, astronomers, dieters and many others watch the phases of the moon for their own interests and hobbies.

In 18th-century England, a small group of entrepreneurs, inventors and free thinkers — James Watt and Charles Darwin's grandfathers among them — started a club. They named it the Lunar Society, and the "lunatics" scheduled their dinner meetings on evenings of the full moon. The timing wasn't based on any kind of superstition, it was based on practicality. In the days before electricity, seeing one's way home after dark was far easier by the light of a full moon. In the early 21st century, electricity has banished the need for such careful scheduling, but the light of the full moon still makes a difference.

Quiz

- 1 Read the excerpt from the article.

As the moon circles the Earth, the amount of the lit side we see changes. These changes are known as the phases of the moon and it repeats in a certain way over and over.

Which term BEST applies to the content of this excerpt?

- (A) lunar month
- (B) gibbous moon
- (C) waning crescent
- (D) solar eclipse

- 2 Read the following sentence.

The moon continues to wax.

Which phrase from the article helps explain what "wax" means?

- (A) appears to grow fatter each night
- (B) the amount of the lit side we see changes
- (C) the moon grows thinner each night
- (D) it completes its journey and approaches new moon again

- 3 What does the last paragraph of the article accomplish?

- (A) It establishes when people first became knowledgeable about the phases of the moon.
- (B) It introduces the idea that people's knowledge of the phases of the moon has diminished over time.
- (C) It illustrates how knowledge of the phases of the moon used to influence the lives of people.
- (D) It emphasizes that the phases of the moon have lost their importance except for the full moon.

- 4 How effectively does the section "Want Another Description Of Why The Moon Has Phases?" present another description of why the moon has phases?
- (A) not very effectively, because the text does not describe any of the specific phases of the moon
 - (B) very effectively, because the text clearly describes what each phase of the moon looks like when modeled by a baseball and lamp
 - (C) somewhat effectively, because the text describes a method that can be used to model the phases of the moon, but it does not actually describe the phases
 - (D) not very effectively, because there is no direct mention of what causes the phases of the moon