

Phases of the Moon

Cross-Curricular Focus: Earth Science



Have you noticed that sometimes the moon looks like a tiny sliver of light in the night sky? Other times it is a big, brilliant circle. The moon has many different looks during the month. Each look is called a **lunar phase**. Lunar means "of the moon." The moon has phases because it orbits Earth. The Earth revolves around the sun. The moon revolves separately around Earth. The moon itself does not actually change size. It appears to change size because different parts of it are in the shadow.

In the new moon phase, none of the part of the moon that is facing Earth is lit by the sun. It appears as only a dark outline. During the waxing crescent phase, the moon looks small. Only a tiny sliver of the moon's side that is facing Earth is lit by the sun. The next phase is the first quarter phase. In it, half of the moon's nearest side is lit by the sun. We see it as about one-fourth of a full moon. During the waxing gibbous phase, more of the moon is lit. Even so, it is not quite a full moon yet. In the full moon phase, all of the side of the moon that is facing Earth is lit by the sun. It appears as a large, bright circle. During the waning gibbous phase, some of the part that was lit as a full moon begins to fall into the shadows. In the last quarter phase, a different side of the moon is lit. Again, the moon appears as one-fourth full. During the waning crescent phase, the moon slips further into shadows. It is a thin crescent shape once more. After this phase, the entire lunar cycle begins again with a new moon.

Name: _____

Phase use complete sentences

Answer the following questions based on the reading passage. Don't forget to go back to the passage whenever necessary to find or confirm your answers.

1) What is meant by a "phase" of the moon?

2) Why does the moon appear to be different sizes?

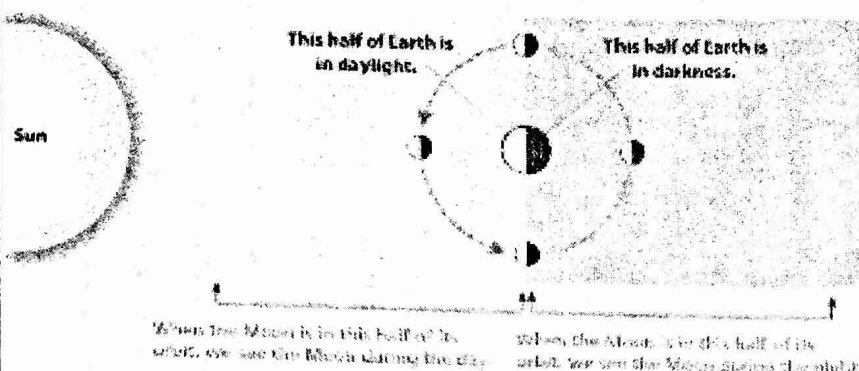
3) What are the two phases during which the moon appears almost full, but not quite?

4) What are the two phases during which the moon appears as only a tiny sliver?

5) What is your favorite phase of the moon? Why?

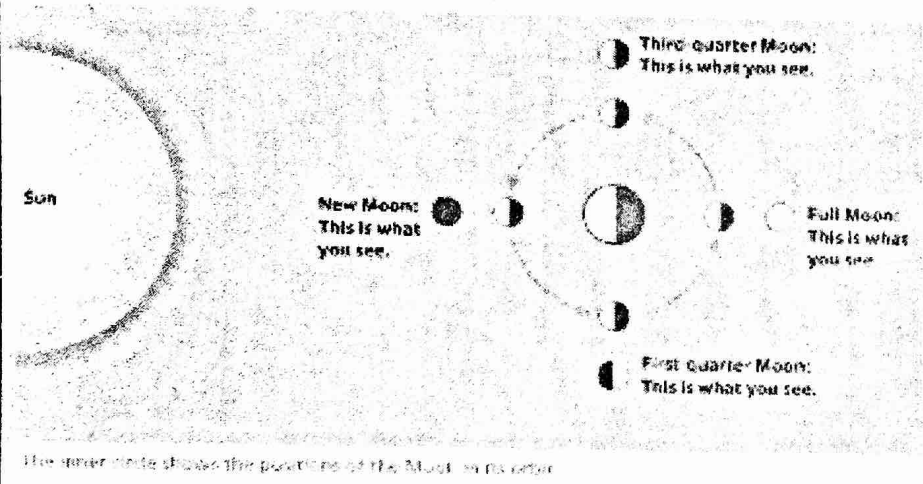
Phases of the moon reading and questions

The moon shines so brightly in the sky that sometimes it can be seen even during the day. But the moon doesn't make its own light. The light you see coming from the moon is reflected sunlight.



Like the Earth, the moon is a sphere, so it is always half lit and half dark. The variations we see in the moon happen because as the moon orbits the Earth, we see different amounts of its lighted half.

There are four main phases, which each happen about a week apart. As shown in the diagram below, the **new moon** occurs when the moon is positioned between the earth and sun. The three objects are in approximate (but not exact) alignment. The entire lighted portion of the moon is on the back side of the moon, the half that we cannot see. At this point, the moon is invisible to us.



At a **full moon**, the earth, moon, and sun are again in approximate alignment, just as the new moon, but the moon is on the opposite side of the earth, so the entire sunlit part of the moon is facing us. The shadowed portion is entirely hidden from view.

The **first quarter** and **third quarter** moons (both often called a "half moon"), happen when the

moon is at a 90 degree angle with respect to the earth and sun. So we are seeing exactly half of the moon illuminated and half in shadow. (The word quarter refers to the moon's position in its cycle around Earth, not how much we can see of it).

The moon changes through its phases in a predictable pattern. The first appearance of the moon after a new moon is a thin crescent (defined as a moon less than half illuminated). The next day the crescent will be a little bigger, and will get a little bigger each day as the moon moves in its orbit. When the moon is getting bigger it is called waxing. After the first quarter, the moon continues waxing, but it is no longer a crescent- it is now a gibbous moon (more than half full). The moon continues waxing until the moon is full.

For the next 2 weeks, the moon is waning. Each day it appears a little smaller. The moon is moving in its orbit so we are seeing a little more of the dark part and a little less of the lit part. The waning gibbous moon becomes a third quarter moon, then a waning crescent. At the end of just about four weeks, the lunar cycle is complete and the moon is new again. This same cycle continues month after month.

Tuesday HW

Please use
complete
sentences

Reading comprehension questions

1. What is it called when the moon is positioned between the Earth and the Sun?

2. What is the difference between waxing and waning?

3. What is the difference between gibbous and crescent?

4. How much moon can you see on the first and third quarter moons?

5. During a full moon....

- a) the sun is between the moon and Earth
- b) Earth is between the moon and sun
- c) the moon is between Earth and the sun
- d) none of the above

6. If you compare sunrise and moonrise data for any location on Earth, you will notice that sunrise occurs a few minutes later each day, but moonrise occurs almost a full hour later each day. Why do you think this is?

Objective 2: Identifying Supporting Ideas

Facts or details are important. By noticing and remembering them, you will know what the passage is about.

Starfish of different sizes and colors live in the oceans. Starfish are often yellow, orange, or brown. But they can be bright colors, too. From point to point, a starfish can be as small as a paper clip or as long as a yardstick. Most starfish are shaped like stars, with five arms extending from their bodies. But some starfish, called sunstars, have a dozen arms. Other types have 25 arms.

1 From point to point, a starfish can be the size of a —

- A grain of rice.
- B car.
- C yardstick.
- D door.

Hint: Look at the sentence that starts "From point to point."

Tide pools are nature's aquariums. Ocean water flows inland with the tide. The water carries with it many living creatures. The water collects in hollows in rocks and in small holes in the earth. Tide pools are created when the tide goes out. The creatures stay behind in the pools.

2 What causes ocean water to flow inland?

Hint: Look for the sentence that talks about the ocean water's flow.

Wednesday HW

The last two steps in making toys are packaging and advertising them. Toy makers know that children like colorful objects. So they design bright packages for the toys. Writers think of catchy names for the toys. They hope children remember the names when they shop. With these steps completed, the toys are sent to toy stores. There, children decide whether or not a toy becomes a big seller.

3 Toy makers know that colorful packages —

- F are liked by children.
- G are assembled easily.
- H are cheap.
- J last a long time.

Hint: Find the sentence about colorful packages.

Our sun is one hundred times larger than Earth. But it is only a medium-sized star. The brightest, hottest stars are twenty times larger than the sun. They are called blue giants. Red dwarfs are stars that are smaller than our sun. These stars are the most common in the sky.

4 Compared to Earth, the sun is —

- A smaller.
- B the same size.
- C ten times larger.
- D one hundred times larger.

Hint: Look for the sentence that talks about the sun's size.

Answers

- 1 (A) (B) (C) (D) 3 (F) (G) (H) (J) 4 (A) (B) (C) (D)

GO ON 

Specific Objectives

Objective 1: Determining Word Meanings

Prefixes and suffixes are parts of some words. A *prefix* appears at the beginning of a word. A *suffix* appears at the end of a word. Both prefixes and suffixes affect the meaning of the word. You can use them to help figure out the meaning of a word.

Phil went to the weight room almost every day after school. The trainer had told him that frequent workouts would strengthen his muscles.

1 In this paragraph, the word strengthen means —

- A make weak.
- B make strong.
- C tire out.
- D energize.

Hint: The suffix “-en” means cause to be.

There are two types of secret codes. In one kind of code, symbols take the place of letters. These symbols can be numbers, words, or even letters. A code book is used to read the message. The other kind of code changes the arrangement of the letters in a word. The letters have to be unscrambled to read the message.

2 In this paragraph, the word arrangement means —

- F face.
- G size.
- H shape.
- J order.

Hint: The suffix “-ment” means the result of.

Maya Lin drew a design for a monument for a contest. Her design won and was built. Thousands of names were carved on two walls of shiny black stone. The names were Americans who had died in the Vietnam War. At first, people thought that the stone was ugly. They disliked it. But then they began to change their minds. They found that they could walk up to the walls. They could touch the names of loved ones.

3 What is the meaning of the word disliked?

Hint: “Dis-” is a prefix. It means the opposite of.

None of the soldiers was prepared for the predawn drill. It seemed as though they had just fallen asleep. The sergeant disagreed and wanted them up, dressed, and ready to obey orders.

4 In this paragraph, the word predawn means —

- A before daybreak.
- B early.
- C difficult.
- D old.

Hint: “Pre-” is a prefix. It means before.

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Answers

- 1 A B C D 2 F G H J 4 A B C D

GO ON 