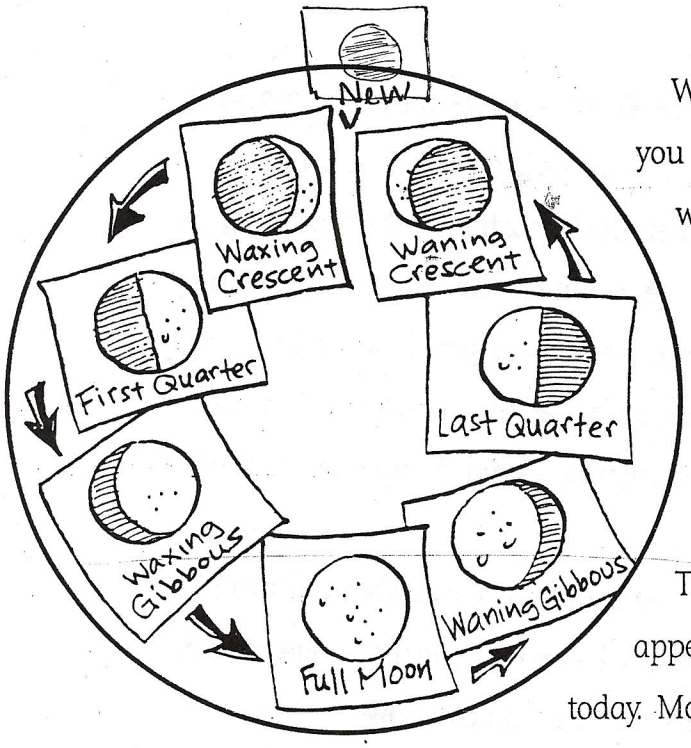
Phases of the Moon



What do you see when you look at the Moon? Do you see a man in the Moon? Some people think that what they see looks like a man's face. What they are noticing are the light and dark patches of the Moon. Scientists used to think that the dark patches were filled with water and named them seas. After astronauts visited the Moon, we discovered that there is no water on the Moon. These dark areas are just lower, flat plains that appear in shadow. However, they are still called seas today. Mountains and craters surround some of these dark areas. That is what makes some people think they see a man's face.

Maybe you have noticed that on some nights there is a full moon and on other nights you can only see a sliver of it. What happened? The different shapes of the Moon are related to the positions of the Moon, the Earth, and the Sun. The Moon does not produce any of its own light. What you are really seeing is the reflection of the Sun's light. It takes the Moon about one month to revolve around the Earth. At the same time, the Moon is rotating, or turning around. Throughout the month, you will notice that the portion of the Moon that is lit up changes the shape of the Moon in the sky. These changes are called the Moon's phases.

Let's begin on a cloudless night when you cannot see the Moon. This phase is called a new moon. This occurs when the Moon is between the Earth and the Sun. The side of the Moon that is not lit up by the Sun faces the Earth at this time. This makes the Moon look dark. Sometimes, we can see a faint outline of the new moon. This is caused by sunlight that is reflected from the Earth back to the Moon. However, most of the time we do not see anything when there is a new moon. A few days later, you would see a crescent moon. By the end of the week, you would see half of the Moon's surface lit up. This is called a quarter moon. A few days later, you could see an area of the Moon's surface that is larger than half of the Moon but less than a full moon. This is called a gibbous moon. Two weeks into

the cycle you would see a full moon. A full moon occurs when the Earth is between the Moon and the Sun. These are the brightest nights of the month. These nights you can walk outside in most areas and see in front of you without using a flashlight! Waxing is when the lit portion of the Moon is growing. Waxing means appearing. A few days after the full moon, we would see the Moon's lit portion decrease. This forms a gibbous moon again. A week later, we would see a quarter moon again. Finally, at the end of the month, we would see a new moon again. Waning is when the lit portion of the Moon is shrinking. Waning means going away. Wow! You can see so many interesting changes in the night sky throughout the month!

The Moon's phases take place in a lunar month (lunar means moon). This is shorter than a month on our calendar. So, every couple of years there will actually be two full moons in one month. This is called a blue moon. Some calendars list the phases of the Moon so you can observe them. You can also get that information in a daily newspaper or on the Internet.

Sometimes when the Earth passes between the Sun and the Moon, the Earth blocks the Sun's light. This creates a shadow over the Moon. When this happens, we cannot see the Moon. This is called a lunar eclipse. This occurs only at the time of a full moon. In a solar eclipse (solar means sun), the Moon passes between the Earth and the Sun and blocks the light of the Sun from hitting Earth for a short time. The Moon's shadow falls on the Earth. A solar eclipse only occurs at the time of a new moon.

Now you are ready to go out and observe the Moon. You do not even need a telescope. You will now be able to identify which phase of the Moon is in the sky on almost any night. You can check to see if your prediction for the next night is correct by looking in your newspaper or on the Internet. If all of this fascinates you and you would like to look at patterns of the Moon's phases from the past, you can look in an almanac. If you are more interested in observations, lunar activity, eclipses, and the phases of the Moon, then one day you might want to become an astronomer.

Name: _____ Period: _____

Phases of the Moon Questions

Complete the following.

1. What resources could you look at to find out what phase the Moon will be in tonight?

2. What do we call the phases of the Moon in which part is appearing or disappearing?

3. Why don't we have eclipses more often?

4. Why is it important for you to learn about the phases of the Moon and why they change over time?

5. The Earth blocks the Sun's light and creates a shadow over the Moon.
   What does the word "blocks" mean? Circle the correct answer.

   covers made of wood stands in the way of highlights

6. What is missing from the following sequence? Circle the correct answer.
   crescent quarter _____ full

   waxing gibbous waning gibbous new moon crescent

7. Which word would finish this analogy?

Waxing is to **appearing** as _____ is to **disappearing**

8. Look at the list of types of moons:

waning gibbous – crescent moon – waxing gibbous – new moon

Which type of moon does not belong with the others? Circle the correct answer.

Waning gibbous waxing gibbous crescent moon new moon

9. If you wanted to learn more about the lunar month or the moon itself, which resource would be most helpful? Circle the correct answer.

dictionary atlas encyclopedia thesaurus

10. What can you see on the surface of the Moon without looking through a telescope?

11. If you had a telescope, what difference would it make?