

## **All About the Moon**

Earth's Moon is rocky and is full of craters! Well, what is a Crater? A crater is a cup-shaped depression or hole on the surface of the moon.



*Image source: [nasa.gov/mediacast/gravity-assist-podcast-why-so-many-craters-on-the-moon-with-david-kring](https://www.nasa.gov/mediacast/gravity-assist-podcast-why-so-many-craters-on-the-moon-with-david-kring)*

How are Craters made? The craters on the moon were made by asteroids and meteorites colliding, or smashing, into the moon.

How many craters are on the Moon? Thousands! Unlike the Earth, the Moon doesn't have an atmosphere to protect itself from things that are in its path, which ultimately causes it to sustain more craters from solar debris in space.

How did the Moon Form? Scientists believe that the Moon was formed early in the Solar System's history after Earth and an object about the size of Mars smashed into each other. This impact sent chunks of Earth and the impactor into space. These objects were pulled together by gravity, creating the Moon!

The Moon is an average of 238,855 miles away from Earth!

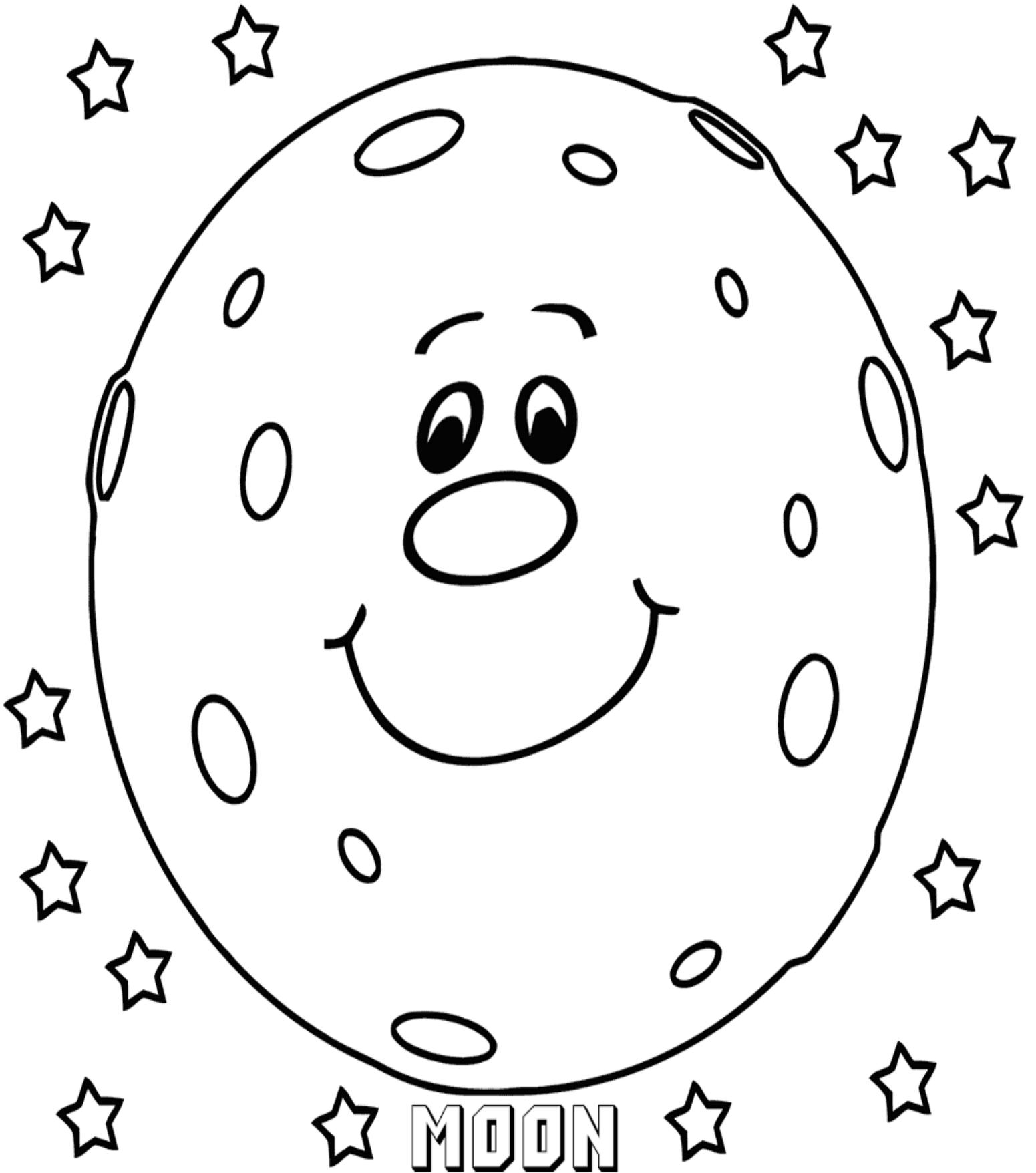
When looking up into the night sky one of the first things we see is the glow from the Moon. The glow, or shine, of the moon doesn't happen on its own. It simply reflects light coming from the Sun.

From Earth it seems like the moon is changing its shape each night, from a tiny sliver, to a half moon, to almost a full moon. What we are seeing is the different parts of the moon that is lit up by the Sun as the Moon travels around Earth. *(You'll learn more about the Moon's Phases on the Phases of the Moon: Explained sheet that's included in your kit).*

NASA's next mission is titled, *Artemis* and it hopes to land the first woman and next man on the Moon by 2024! NASA hopes to explore more of the Moon and will use what they learn to help them take the next giant leap of sending astronauts to Mars!



*Image Source: [nasa.gov/featured/goddard/2020/moon-more-metallic-than-thought](https://www.nasa.gov/featured/goddard/2020/moon-more-metallic-than-thought)*



★ MOON ★

## Tin Foil Moon

### Materials

- 1 - Sheet of Tin Foil
- 1 - Paper Plate
- 1 - Penny



### Instructions

Step 1: Place the penny anywhere on the paper plate.



Step 2: Grab the tin foil sheet and place over the plate and penny. Gently rub your finger on top of the covered penny. Once you start to see the "crater" form stop.



Step 3: Pick up the tin foil enough so you can move the penny to a different location on the paper plate.

Step 4: Repeat Step 2 until you have as many craters as you want on the surface of your moon.

Step 5: Trim off any excess tin foil, leaving enough for you to fold over the edge of the plate.



Ta-Da! Tin Foil Moon!



## Phases of the Moon: Explained

The Moon itself doesn't give off light, the 'moonlight' we see is the Sun's light reflected off the Moon's surface.

As the Moon orbits (circles) the Earth the sun lights up different parts of it making it seem like the Moon is changing its shape. However, it's just our view that's fluctuating.

It takes the Moon 27.3 days to make a complete orbit around Earth, but because Earth is moving around the Sun at the same time, it takes the Moon 29.5 days to go through its eight different 'phases' - a lunar month. Each lunar cycle begins with a New Moon.

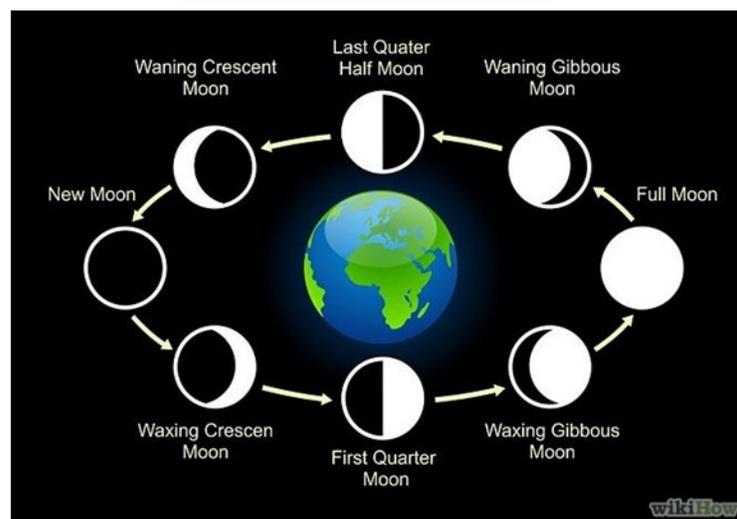
When the Moon appears to be getting bigger, it's called waxing. When the Moon looks like it's getting smaller, that's called waning. Once the face of the Moon is fully turned towards the Sun, it's called a Full Moon.

However, as the Moon moves around the Earth the face pointing towards us gradually becomes hidden from the Sun until we can hardly see it at all. That is called a New Moon.

A Waxing Gibbous Moon occurs when the Moon appears to be more than one-half but not fully illuminated by direct sunlight. Gibbous refers to the shape, which is less than a full circle of a Full Moon. A Waxing Gibbous Moon happens when the moon is between a 45- and 90-degree angle in respect to the Earth and Sun. We are seeing more than half of the moon illuminated and less than half in shadow.

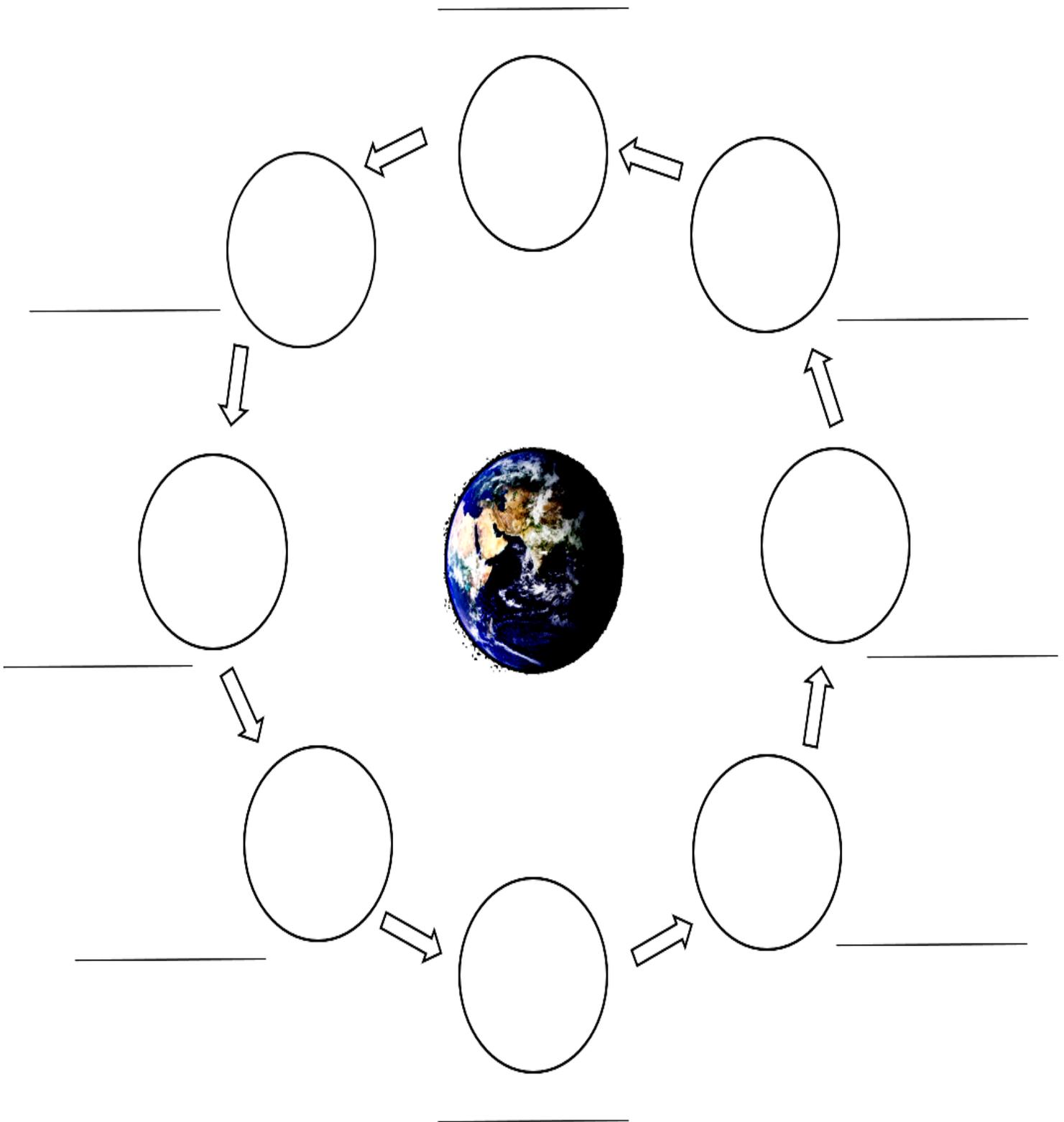
A Waning Gibbous Moon happens when the moon is between a 90- and 135-degree angle with respect to the Earth and Sun. After the Full Moon phase, the moon grows thinner each night, entering the waning phases. Each evening, as the moon's orbital motion carries it away from the Earth-Sun line, we see less of the moon's day side.

### Lunar Cycle of the Moon

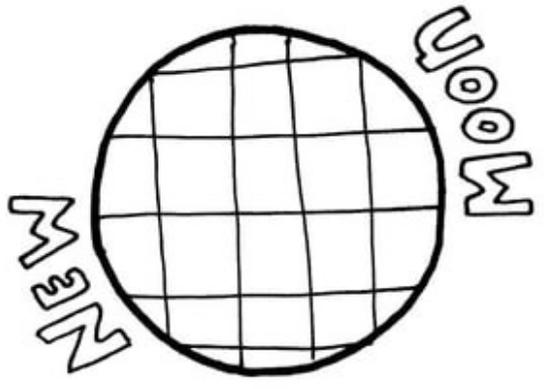


Create the 8 Phases of the Moon by cutting out the black construction paper to represent the correct phase. Glue down the correct phase into the “moon circle” then label it based on what phase it is.

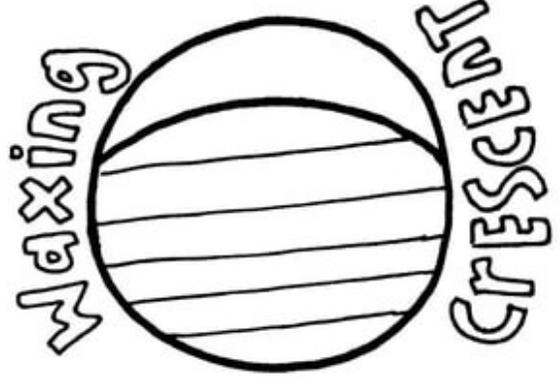
*Note: Chocolate sandwich cookies are also a great tool for creating the phases of the Moon!*



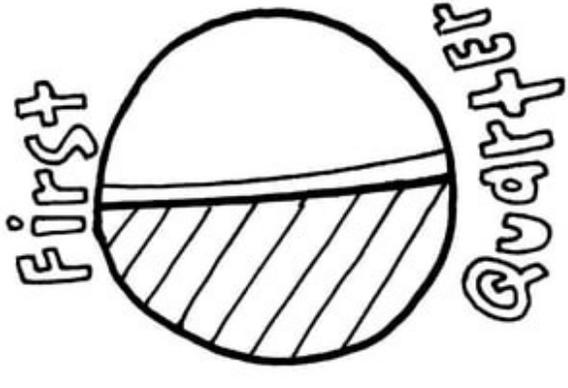
# PHASES OF THE MOON



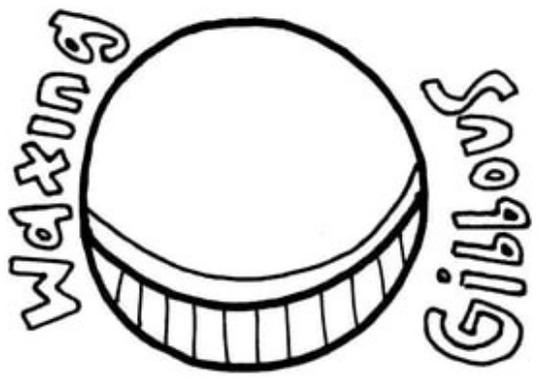
NEW MOON



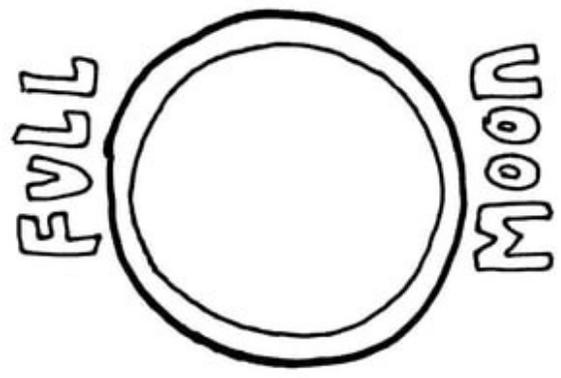
WAXING CRESCENT



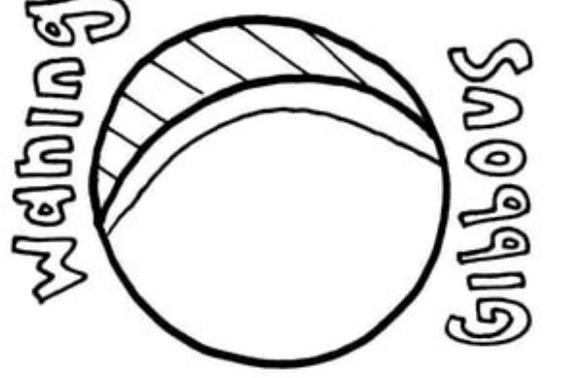
FIRST QUARTER



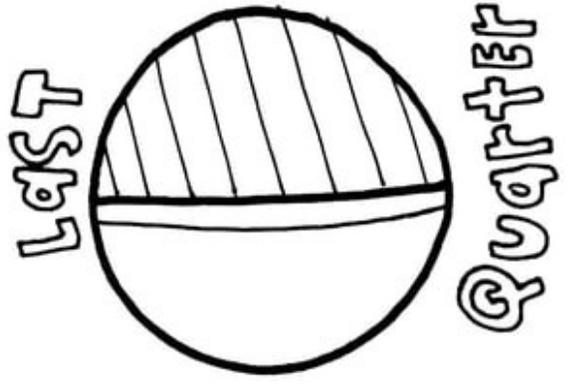
WAXING GIBBOUS



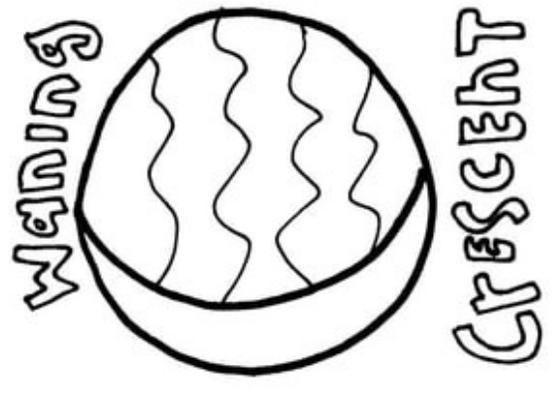
FULL MOON



WANING GIBBOUS



LAST QUARTER



WANING CRESCENT

# Button Crescent Moon

## Materials

1 sheet – Black Construction Paper

2 sheets – Contact Paper

Crescent Moon Template

Bag of Buttons

## Instructions

Step 1: Cut out the crescent moon. After cutting it out place onto black construction paper and trace.



Step 2: Cut out the inside of the crescent moon traced onto the black construction paper.



Step 3: Take 1 sheet of contact paper and place over the open area of the crescent moon.

Step 4: Using the buttons, place onto the contact paper. Press hard to make sure that the button "face," adheres to the contact paper.



Step 5: After completing your design, take the 2<sup>nd</sup> sheet of contact paper and press to the open end of the buttons. Due to the button's posts the contact paper will not lay flat. This is okay! You just want to be sure that all the buttons are pressed against the second sheet of contact paper and are secure.



## Crescent Moon Button Craft Continued...

Step 6: Use scissors to trim off any excess paper. Make sure to leave some extra around the sides of the crescent moon so the contact paper will not create a gap for the buttons to fall out of. While the back of the crescent moon looks wacky, the front will look neat! Hang it up in front of a window to allow light to come through!

