



*A Lesson from Civil Air Patrol's  
Aerospace Connections in Education (ACE) Program*

**A Moon Munchy  
Grade 2 Academic Lesson #6**

**Topic:** moon phases, shapes (science)

**Length of Lesson:** 45-60 minutes

**Objectives:**

- Students will identify shapes of the moon.
- Students will place the moon phases in order.
- Students will learn why the moon looks different at different times of the month.



**Next Generation Science Standards:**

- Ask questions based on observations to find more information about the natural and/or designed world. (K-2- ETS1-1)
- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

**Background Information:**

The Moon is a natural satellite of the Earth. Many of the planets have moons. Jupiter has the most with sixty-three. Earth's moon is about 239,000 miles away from Earth. Moons do not make light, but reflect the sun's light (like a mirror). When the sun shines on the moon, its light reflects off the moon's surface. The Earth's moon orbits around the Earth one time a month, every 28 days. The same side of the moon points toward Earth all the time. Different shapes appear to us as we look at the moon at different times of the month. These different shapes are called "phases of the moon." The different phases have to do with the position of the moon and sun.



- When all the sun is shining on the far side of the moon (the side away from Earth), we call this the new moon.
- As the moon moves around the earth, we get to see more and more of the illuminated half, and we say the moon is waxing. At first, there is only a sliver called the crescent moon. (If you were to draw a line from the bottom point of the crescent to the top point of the crescent and extend the line upward, it would form a lower case "b" to remind you that the moon is "being born" and will grow bigger.)
- A week after the new moon, when the moon has completed about a quarter of its turn around the earth, we can see half of the illuminated part; that is, a quarter of the moon. This is the first quarter phase.

- During the next week, we keep seeing more and more of the illuminated part of the moon, and it is now called waxing gibbous (gibbous means "humped").
- Two weeks after the new moon, the moon is now halfway through its revolution, and now the illuminated half coincides with the one facing the Earth, so that we can see a full disk; thus we have a full moon.
- From now on, until it becomes new again, the illuminated part of the moon that we can see decreases, and we say it's waning. The first week after full, it is called waning gibbous.
- Three weeks after new, we again can see half of the illuminated part. This is usually called last quarter.
- Finally, during the fourth week, the moon is reduced to a thin sliver sometimes called the waning crescent. A little after four weeks, the illuminated half of the moon again faces away from us, and we come back to the beginning of the cycle: a new moon.

**Materials:**

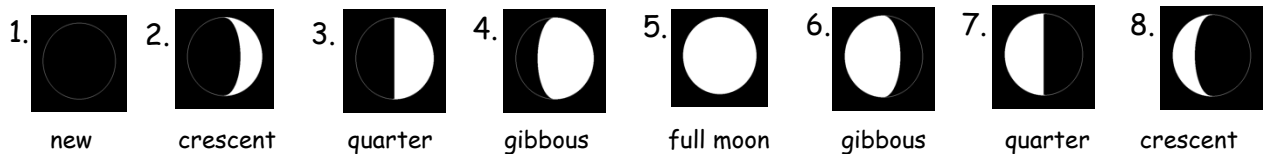
- any poster-sized picture (maybe one of the Earth and Moon from a school supply store)
- piece of bulletin board paper or butcher paper that covers the entire poster mentioned above. Make sure students cannot see the picture underneath the paper.
- Copies of "Large Moon Phases" (one per student)
- scissors
- chocolate cookies with a white cream center (one per student)
- plastic knives or forks
- paper towels (one or two per student)
- wipes to clean hands before and after the activity (one per student)

**NOTE:** Time-saving tips: Have students clear their desks of everything except a pair of scissors. Have steps 1 and 6 set up prior to beginning the lesson.

**Lesson Presentation:**

1. Bring a poster picture and cover it with butcher paper. Put it in the front of the room and have students predict what picture they think is under the paper. After they have given a few guesses, cut or tear a little bit of the paper (or move the paper to one side) and reveal a small portion of the poster. Ask students to again make predictions. Continue this process until students can guess what is under the paper.
2. Ask students what they know about the moon. Connect the poster paper demonstration to what we see of the moon. We don't see the entire "picture" (the surface of the moon) until the full moon (when the moon is in the correct position in the sky that allows us to see the sun's light being reflected by the moon's surface).

3. Ask students to describe or come to the board and draw shapes of the moon that they have seen. Tell students that these "shapes" are referred to as phases and they have names and they keep occurring in the same order.
4. Show the video ["Phases of the Moon: Astronomy and Space for Kids."](#)
5. Distribute a copy of the large moon phase pieces for students to cut out. Let students try to place them in the correct order.
6. (If you are not using computers, skip to step 6.) While students are cutting, set up the projector to display an animation of the moon going around the Earth. Pick one of the following:  
[UW Madison: Moon Phases](#) (must run Java to use)  
Once students have finished cutting out their shapes, direct their attention to the animation. Emphasize that the moon travels around (orbits), the Earth!
7. You may choose to use the pictures in step 5 to discuss the phases of the moon, or you may choose to demonstrate the phases through the method described in this step. Demonstrate the phases of the moon by cutting out a circle in the center of a piece of construction paper and placing the negative on the overhead. Move the "moon" (cut-out circle) over the opening in the negative to show the phases.



As you introduce each phase, have the students place their moon phase cut-outs in the correct order on their desk. You may prefer to have students refer to a "quarter" as a "half" to make it easier.

8. Review the moon phase shapes by calling out each name and asking students to hold up or point to the correct card on their desk. (For example, call out crescent, and students should either hold up both of their crescent cards or point to the two crescent shapes on their desk.)
9. Provide each student with a wet wipe, a paper towel, one chocolate cookie with a white center, and a plastic fork or knife. Ask each student to wipe his or her hands before working with the cookie.
10. Tell students to carefully separate the two cookie pieces. Have them pick ONE of the moon phases, and using the white icing and plastic utensil, have them duplicate the moon phase on the dark cookie.

Tip: For an example of what the moon phase cookies could look like check out the following website: [Science Bob: Oreo Cookie Moon Phases](#).

11. Once everyone has created their moon phase on their cookie, you will call out each moon phase in order and have the students with that phase stand along the wall until all phases are called and students are standing in their correct phase group around the room. (Or, you may choose to just have one volunteer for each moon phase come to stand in front of the room, holding out their cookie for all to see.) For example, call out "new moon" and ask all the students who have a new moon on their cookie to gather on one side of the wall in the room. (You may choose to draw or show a picture of the phase you are calling out.) Next, call out "crescent that looks like a backwards 'C'," and have all students with that phase stand in a group next to the "new moon" students. Next, call out "quarter moon with the right side white," (right side when looking at it), and have that group stand on the next wall nearest the crescent group. Continue until each phase has been called and all students are standing around the room. Tell students that they have helped to demonstrate the phases of the moon in order!
12. Tell students that they may now eat or throw away their moon cookie, and have them clean up their work area.

**Summarization:**

Ask students to share what they learned today. Over the course of a month, we notice that the moon seems to change its shape, from a thin crescent to a bright white ball. These changes in the moon's shape or phase are due to the moon's motion around Earth and how we view it. The half of the moon that faces the sun (or sunlit side), reflects the light from the sun to us on Earth. As the moon orbits the Earth, we see different amounts of the moon's sunlit half.

**Character Connection:** Tell students that just as the moon phases always occur in the same order, students should also develop good routines. They should brush their teeth each morning and night. They should be at school on time and do their best. They should have a good dinner and be sure to do their homework. They should get plenty of sleep each night. Just like the moon keeps its routine, second graders need to have a good routine too, which should always include making good choices and following the Golden Rule!

**Assessment:**

- student answers to class discussion questions
- teacher observation
- Phases of the moon cookie display sheet
- extension worksheet #1 and/or #2 (optional)

**Additional activity ideas to enrich and extend the primary lesson (optional):**

- Place students in groups of 8. Give each group a chocolate cookie with white icing. Ask groups to each pick a different phase of the moon to create on their cookie. Then, instruct the groups to arrange themselves in the correct order of the moon phases. (Provide an overhead or some display for students to refer to in order to help them arrange themselves in the correct order.)
- Have students create models of the moon phases and label them using materials found around the house (ex. Paper plates colored with the different phases).
- Have students research and present information (using software such as HyperStudio, Kid Pix, PowerPoint, Google Slides), on some aspect of the Earth's moon (ie. man's exploration, geology, phases, lunar eclipse, or folklore).
- Teach and sing "Phrases with phases" song (lyrics on the following page)
- NASA Space Place ["Why does the Moon look different through the month?"](#)
- Students can keep a journal of what the moon looks like each night for a month, create a picture book for younger children explaining why the moon goes through phases and what the moon looks like for each phase, research about moon landings, or explore myths and folklore pertaining to each full moon during the year.

**Literature Resources:**

- ***What the Moon Is Like.*** Franklyn M. Branley.  
Beginning with observations from Earth, we learn what astronauts discovered about the moon. Picture Book.
- [\*\*\*Why Does the Moon Change Its Shape?\*\*\*](#) Patricia Murphy. (Amazon)  
Answers questions about how the moon was formed, phases, eclipse, tides, observing the moon.
- [\*\*\*The Moon.\*\*\*](#) Seymour Simon. (video reading) All about the moon. NASA photos and clear text make this a good introduction to studying the moon.
- [\*\*\*Faces of the Moon.\*\*\*](#) Bob Crelin. (video reading) Die-cut pages and rhyming text takes us through all of the moon's phases.
- [\*\*\*Papa, Please Get the Moon for Me.\*\*\*](#) Eric Carle. (video reading) Monica wants the moon to play with. Her father goes to great lengths to get it.

**Worksheet #1 (page 80) answer key:**

1. new moon
2. crescent
3. quarter
4. gibbous
5. full moon
6. gibbous
7. quarter
8. crescent



**Worksheet #2 (page 82) answer key:** (Moon phases in order beginning with a new moon, which was #1.)



# Phrases with Phases

Lyrics by Becky Nelson,

The Lunar and Planetary Institute Sung to the tune The Ants Go Marching . .

*Moon phases and important terms are in capital letters.*

Each Moon phase marches COUNTERCLOCKWISE —

Now, let's start . . .

The FIRST PHASE is the NEW MOON that we see as DARK.

Then next the WAXING CRESCENT shines

A LITTLE LIGHT upon the RIGHT,

And after that's the

QUARTER MOON, where the

RIGHT HALF'S LIGHT.

Following is WAXING GIBBOUS on the RIGHT,

Where the LIGHT continues SPREADING and becoming bright.

We'll be HALFWAY through the phases soon,

With the FULLEST, brightest, biggest MOON,

Just before the DARK creeps

On the RIGHT

Of a WANING MOON.

The WANING GIBBOUS phase is when the LIGHT will SHRINK,

Then what will be the next phase after that, you think?

It's once AGAIN a QUARTER MOON,

But the DARK HALF's now upon the RIGHT,

And the LEFT side is the

One that's BRIGHT!!

Did you get that right?

The next phase is the LAST phase where there's just a spark

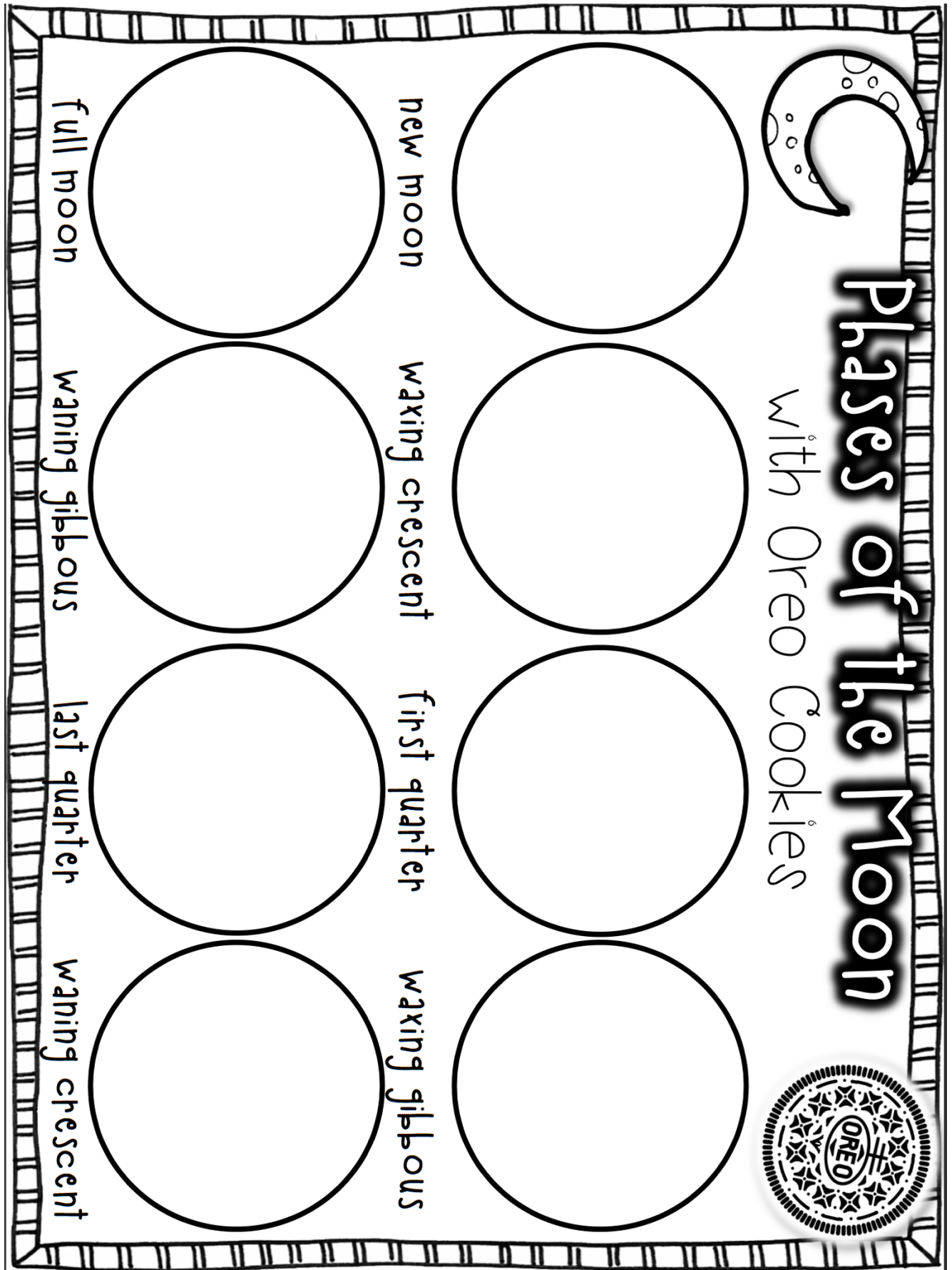
Of light, so WANING CRESCENT appears ALMOST DARK!

The Moon is really magical,

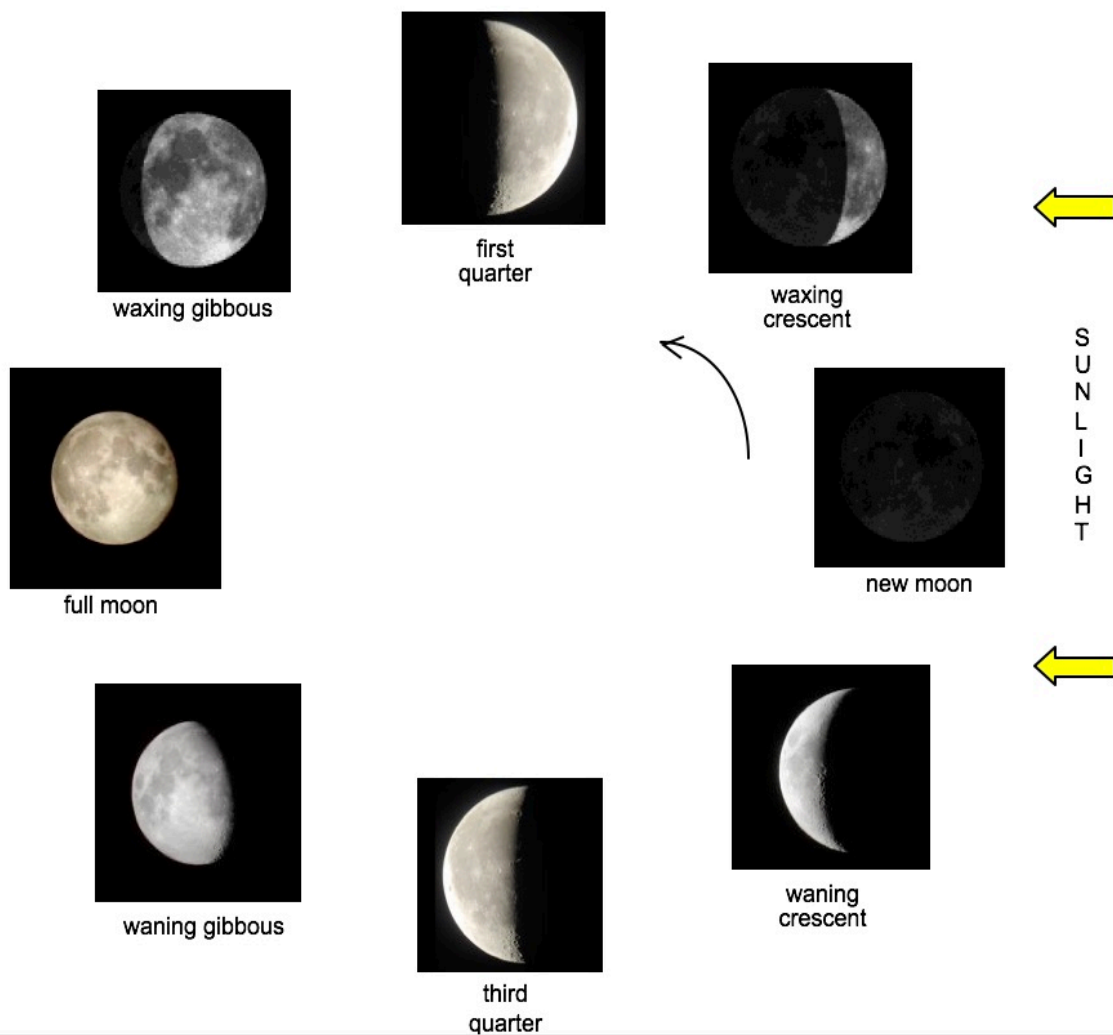
When it's WAXING, WANING, NEW OR FULL.

And it COULDN'T SHINE at all

WITHOUT..... THE SUN'S.....bright light!!



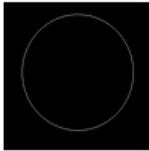
## Phases of the Moon



NAME \_\_\_\_\_

Extension Worksheet #1.

Write the word that correctly names the moon shape.



1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_



7. \_\_\_\_\_



8. \_\_\_\_\_

### WORD BANK

New Moon

Crescent (Use 2 times!)

Quarter or Half (Use 2 times!)

Gibbous (Use 2 times!)

Full Moon



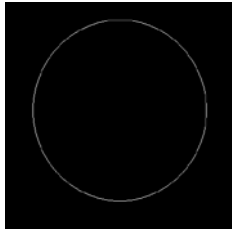
NAME \_\_\_\_\_

Extension Worksheet #2.



Cut out the pictures below the dotted line and put them in the order they appear during the month, starting with a new moon.

1. New Moon



2. Crescent

seeing a little (backward c)



3. Quarter

seeing even more (half)



4. Gibbous

seeing almost all



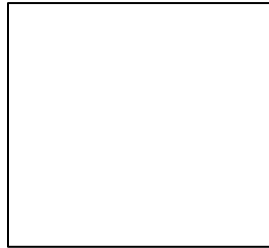
5. Full Moon

seeing all



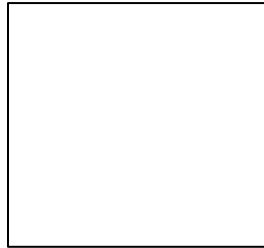
6. Gibbous

seeing almost all



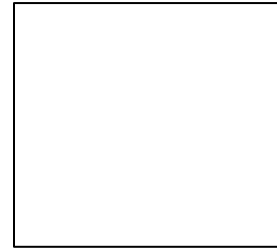
7. Quarter

seeing half

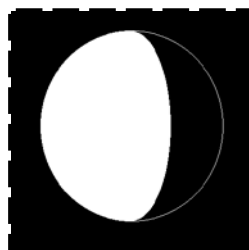
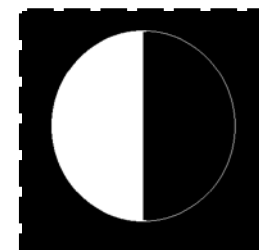
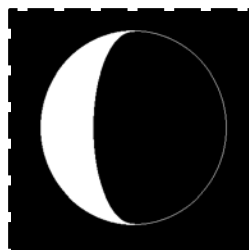
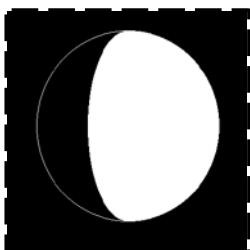
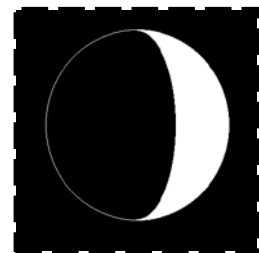
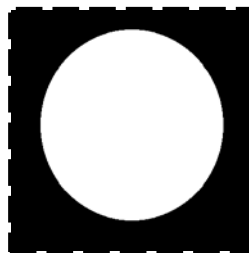
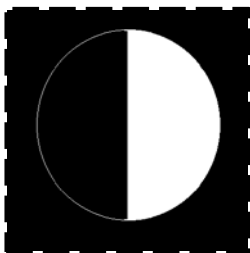


8. Crescent

shaped like a "c"



-----  
Cut out the moon pictures and glue them in their correct position in the squares above.



## LARGE MOON PHASES

Cut out the moon shapes below and try to put them in the correct order on your desk!  
Start with the completely shaded moon (the moon that looks all black) as the first one.

