

PHASES OF THE MOON

Procedure:

- a) Each pair of students will receive seven Oreo cookies and Diagram A.
- b) Separate your cookies carefully, so one 1/2 has all the frosting, and the other 1/2 no frosting. Do not make a mistake. There will be NO replacement cookies! See figure 1:



Figure 1: Properly separated cookie.

- c) Use your plastic butter knife to scrape off the frosting from the first cookie making a shape with the frosting that resembles the cookie in figure 2:



Figure 2: Oreo frosting scraped to represent a moon phase.

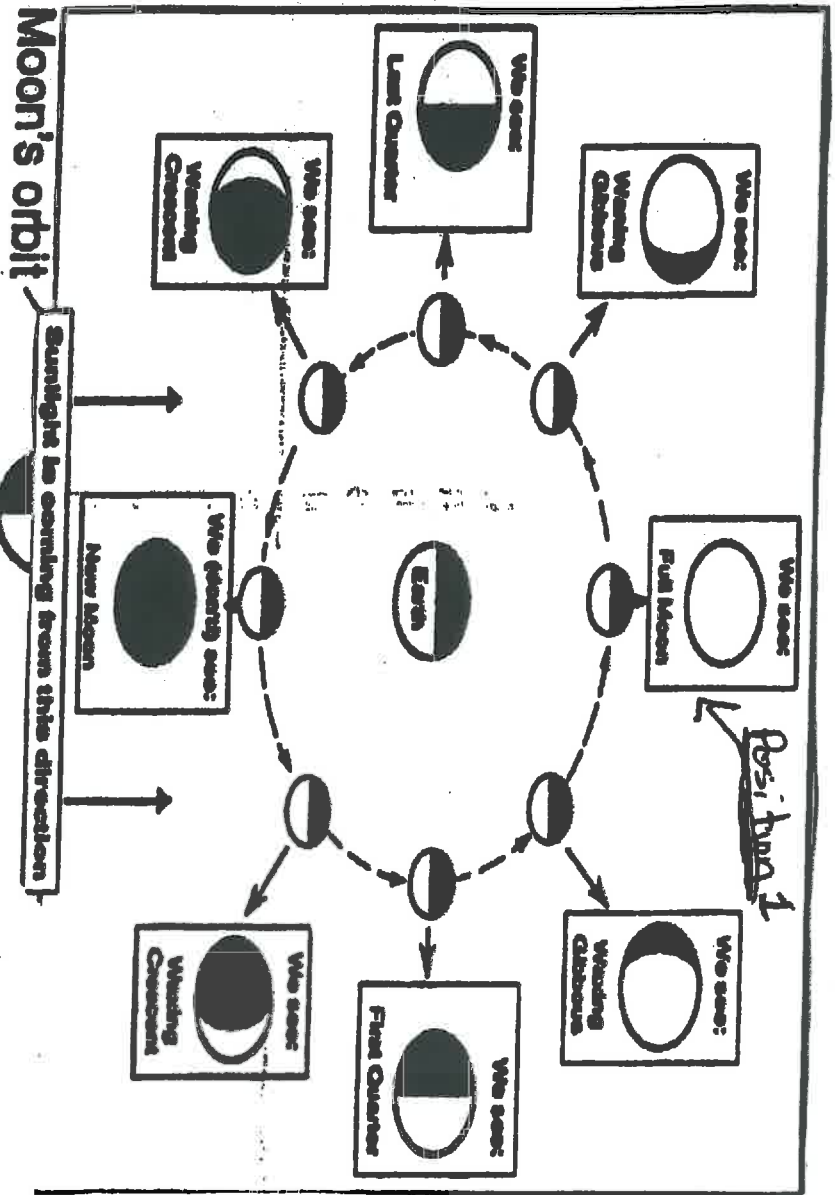
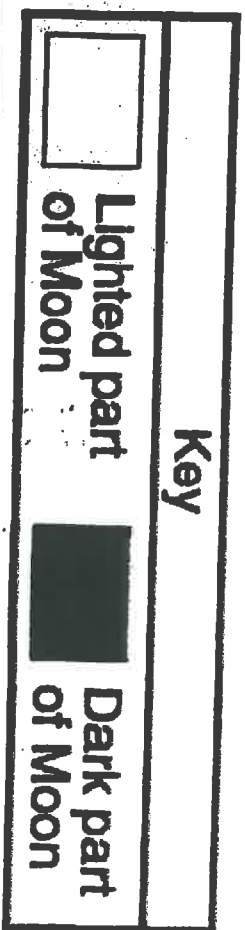
What is the name of this moon phase?

d) Repeat step C with the other cookies scraping the frosting to the shape of the other 6 phases as seen by Earthlings. You will need to create waxing and waning phases.

e) Diagram A represents the Moon in its phases. *Position 1* on the diagram represents a certain location of the Moon in its orbit. On Diagram B, place the cookie moons you created in their proper locations starting from Position 1 and working counterclockwise according to the order on Diagram A.

o How will you represent the New Moon?

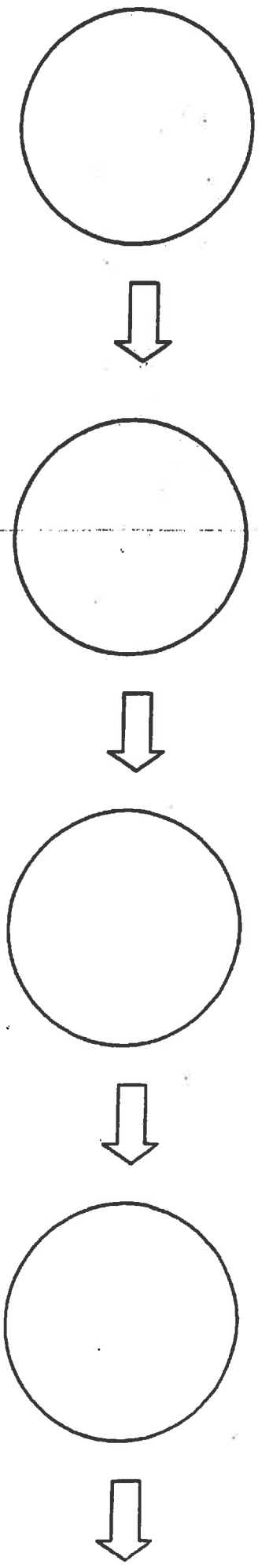
DIAGRAM A --
 This diagram represents the Moon in its orbit around the Earth, *Position 1* represents a certain location of the Moon in its orbit.



(Not drawn to scale)

DIAGRAM B – How Earthlings view the Moon (place your cookie moons here). Once Ms. Hagen has checked your cookies, shade in the circles to represent each phase.

Position 1

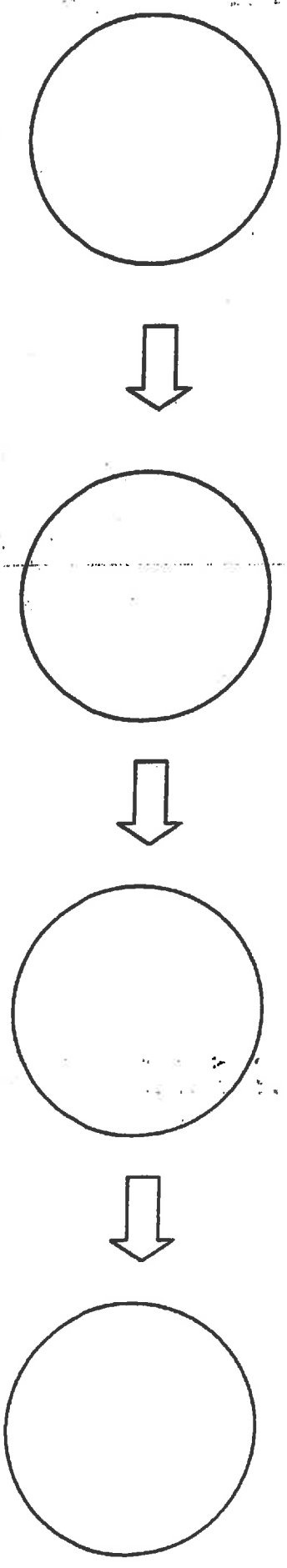


Position 1

Position 2

Position 3

Position 4



Position 5

Position 6

Position 7

Position 8

Now-Up Questions:

- 1. On Diagram B, label each of the phases in order from position 1 to the final phase on Diagram A.**
- 2. Describe the process that causes the moon to appear as these different phases to Earthlings. Why do we see phases of the moon?**

- 3. How long does it take for the moon to orbit earth?**

- 4. There are 8 phases of the moon, and it takes 28 days to complete all of the phases. How many days does each phase last?**

- 5. If we looked at the moon using a telescope, we would see the impact crater "Tycho". Tycho was formed only 108mya, and it is one of the youngest craters on the moon. It was named after the famous astronomer Tycho Brahe. Explain why this crater is always facing the Earth. (Why can't we ever see the far side of the moon?)**

6. How many full moon phases do we have in a year? Hint: (How many full moon phases do we have each month?)

7. Referring to Diagram A, an observer on Earth would see a solar eclipse when the moon is at Position _____, Lunar eclipse position? _____.

