Name _____ Date _____ Block _____Lab #____

The Moon

Phases and Eclipses

Since the dawn of man, the Moon has been an object of wonderment and mystery. Many early cultures worshiped the Moon, and some even tried to please it with human sacrifice.

The Moon has also inspired observers since ancient times. Many people all over the world independently developed calendars based on the phases of the Moon. The Moon an observer sees depends on the relative positions of the Moon, Earth, and the Sun

People have speculated about how the phases of the Moon affect conditions on Earth. Such things as weather patterns the planting and harvesting of crops and life cycles and reproductive cycles of many living things have all been related to the lunar phases. Some of these relationships between the Moon and Earth are purely speculative and controversial and lack scientific proof. Other relationships, however such as the Moon and tides on Earth have been scientifically proven.

Objective : In this activity you will study the phases of the Moon and you will also study.

Materials: Color pencils, scissors, tape or glue

Part one Phases of the Moon

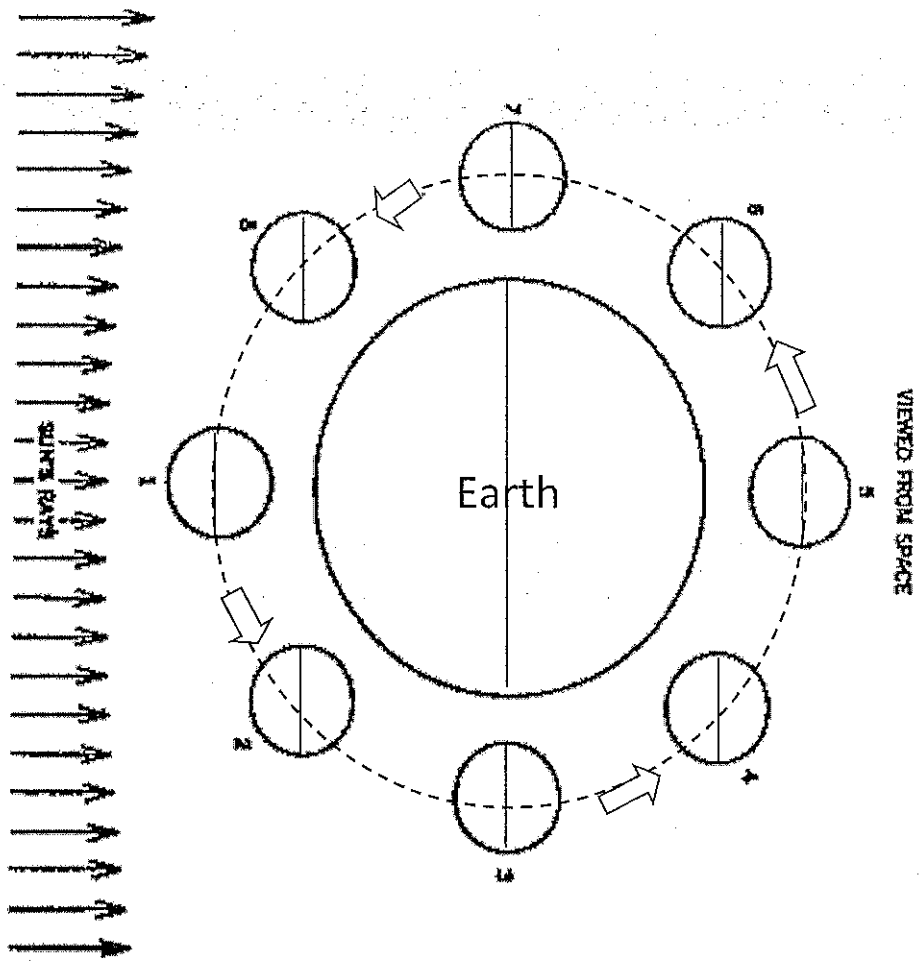
Step 1: Diagram 1 on the next page shows the Moon orbiting Earth as it would appear from space many miles above the North Pole. The Moon is shown in eight different positions in its orbit around Earth. From this space view, both Earth and the Moon would always be half lighted or illuminated and half darkened in respect to the Sun

- To represent the lighted half, color the half of the Earth and the half of the Moon that faces the Sun - yellow.
- The Moon should be colored like this in all eight positions in its orbit.
- To represent the darkened half, color the other half of the Earth and the Moon grey or brown

- To an observer on Earth the lighted part of the Moon appears to change. This is because as Moon revolves around Earth, and we see a different portions of the lighted half.
- In diagram 1 the Moons orbital path around Earth is shown by the dashed line and arrows.
- This can also be used to show the side of the Moon that faces Earth.
- The half of the Moon on the inside of its orbital path is the half that faces Earth and is <u>therefore visible from Earth</u>.

Step 2: Use a red or an orange color pencil to outline the Moons orbital path

Diagram 1

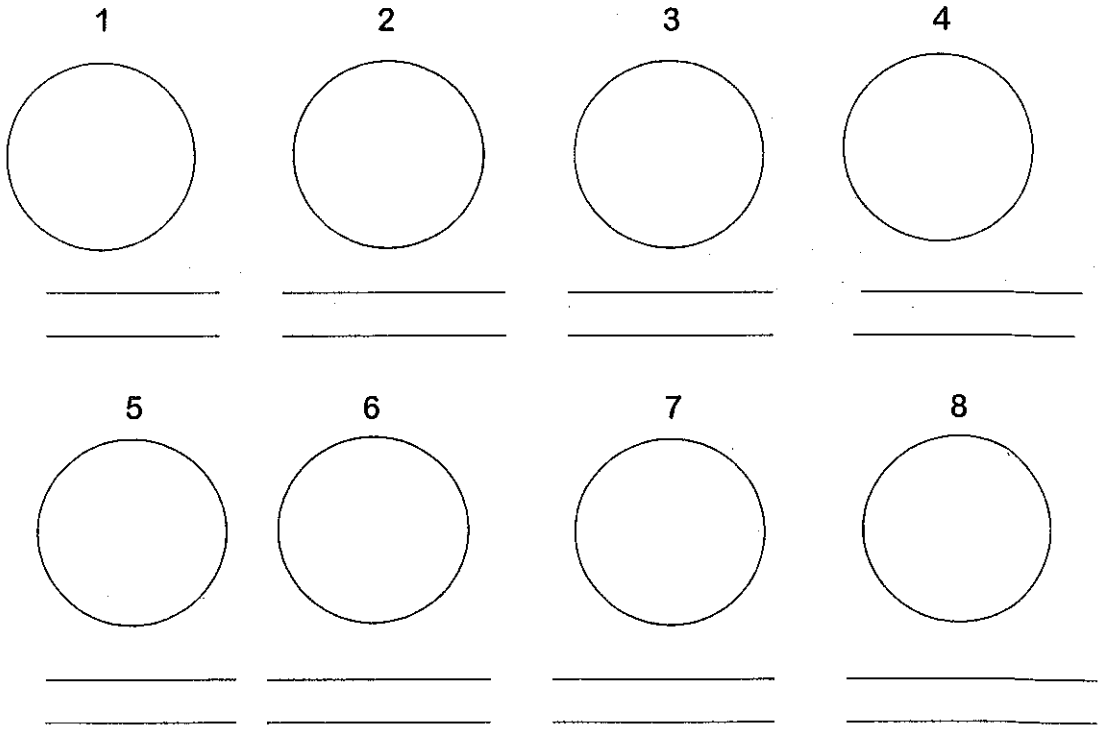


- Figure 1 on page 7 (the last page) can be used to show the side of the moon that faces Earth, in other words, the half of the moon that gives us the phases.
- Cut out figure 1 on the last page. Cut out the circle inside the rectangle.
- Now use the rectangle with the circle cut out and place it over diagram 1 and you should see the phase of the moon facing earth in all eight (8) positions

1. By referring to the numbered positions of the Moon in diagram 1 show each phase of the Moon as it would be seen from Earth by coloring diagram 2 below :

   To do this
   a. Place the figure 1 cut out over diagram 1 to show the side of the Moon that is facing Earth this will help you determine each phase of the Moon
   b. Color the visible lighted part of the Moon yellow
   c. Color the darkened part of the Moon grey or brown
   d. Be Careful, the side that is dark or lite does matter.

   Diagram 2: Phases of the Moon as seen from Earth



5. By referring to your Review book, textbook glossary or other references define:

Waxing-

_____

Waning -

_____

In Diagram 2 page 3 label each phase of the moon in the space provided below in each illustration. Choose from the following:

- ✓ New Moon
- ✓ Full Moon
- ✓ Waning Crescent
- ✓ Waxing Crescent
- ✓ Waning Gibbous
- ✓ Waxing Gibbous
- ✓ Waning Quarter
- ✓ Waxing Quarter

It takes the moon one month (29.3) days to complete one revolution around Earth. So each quarter of a phase change takes about a week. By referring to diagram 1 on page 2 and diagram 2 on page 3 determine how long it would take the moon to:

(Your choices are 1 week, 2 weeks, 3 weeks, or 4 weeks)

1. Travel from position 1 to 5? _____
2. Travel from position 5 to position 7? _____
3. Travel from position 1 to 3? _____
4. Travel from position 4 to 8? _____
5. Change from new moon to full moon? _____
6. Change from waxing quarter to waning quarter? _____
7. Change from waning crescent to waxing crescent? _____
8. Change from waxing crescent to waning crescent? _____

In this part of the lab you will make a lunar calendar for this month. The outline for your calendar is on page 6, carefully follow the steps below:

1. From you teacher, a calendar or other reference source find out on what day of the month there is a full Moon.
    i. This month there is a full Moon on :
    Date: _____ (b) day of the week: _____
2. On your lunar calendar the dates may go into last month or into next month of the year.
3. In the third row on the calendar on page 6. Number the week of the full moon
4. Next carefully cut out the full moon phase on page 7 and glue or tape the full moon to the appropriate space on the calendar. So if the full moon where on Tuesday you glue the full moon on the third block on the third row (week).
5. Now cut out the waxing phases and glue them in the correct box and in the correct order on the calendar. (These should be glued in the boxes leading up to the full moon.)
6. Then fill in the date before the full moon also indicate if you enter the month before the present month
7. Now cut out the waning phases of the moon and glue them in the dates after the full moon
8. Then fill in the dates of the month in these boxes. If you go into the next month please indicate the dates and the month on the calendar.
9. Now you should have a complete lunar month for the present time.

Use your calendar to answer these simple questions

1. State the date of the last full Moon? _____

2. State the date of the first quarter Moon? _____

3. State the date of the last New Moon? _____

4. How many days in one lunar Month? _____

Lunar Phase Moon Calendar

For the month of ______ (may go into the previous or next month)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Cut out the square below in order to answer the questions on diagram 1 moon phases

After you have cut this out, place it over diagram 1 to see Phases of the moon

Please cut out this circle along the dashed lines for Diagram 1 phases of the Moon.

Lunar Cycle