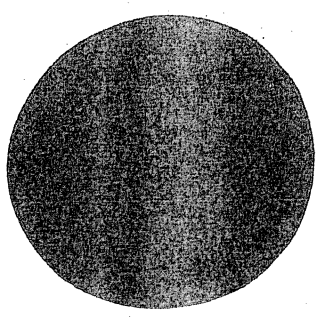


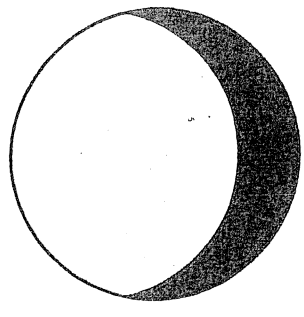
Phases of the Moon Matching

Directions: Using the Phases of the Moon chartlet, match the letter of the phase of the Moon with the correct picture.

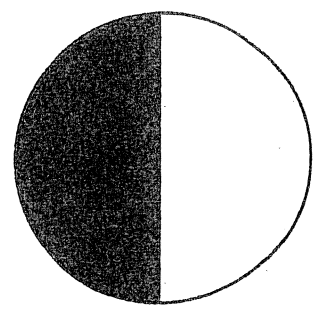
- A. First Quarter
- B. Full Moon
- C. Waxing Gibbous
- D. Waning Crescent
- E. Third Quarter
- F. New Moon
- G. Waning Gibbous
- H. Waxing Crescent



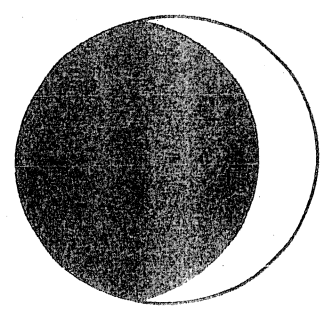
1. _____



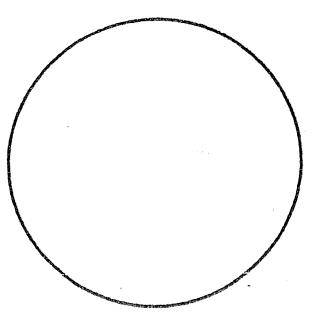
2. _____



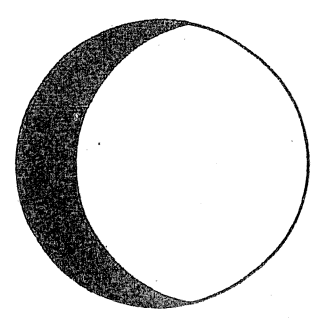
3. _____



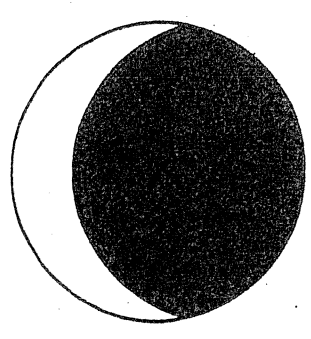
4. _____



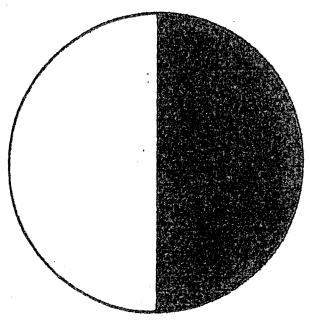
5. _____



6. _____

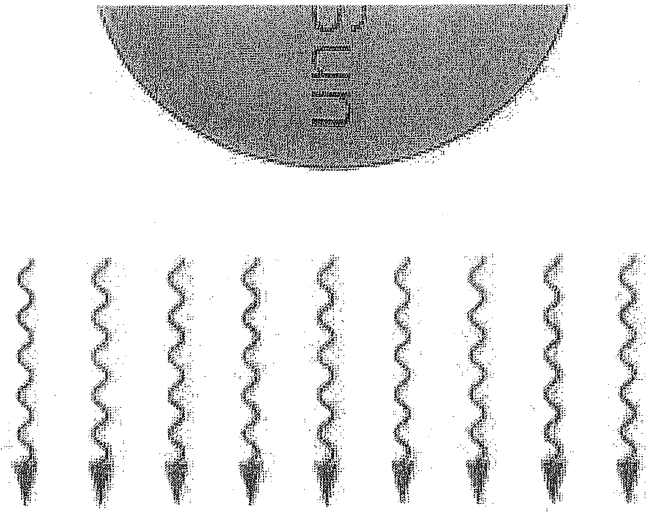


7. _____



8. _____

Diagram 1: Space View



Backyard-astronomy.com

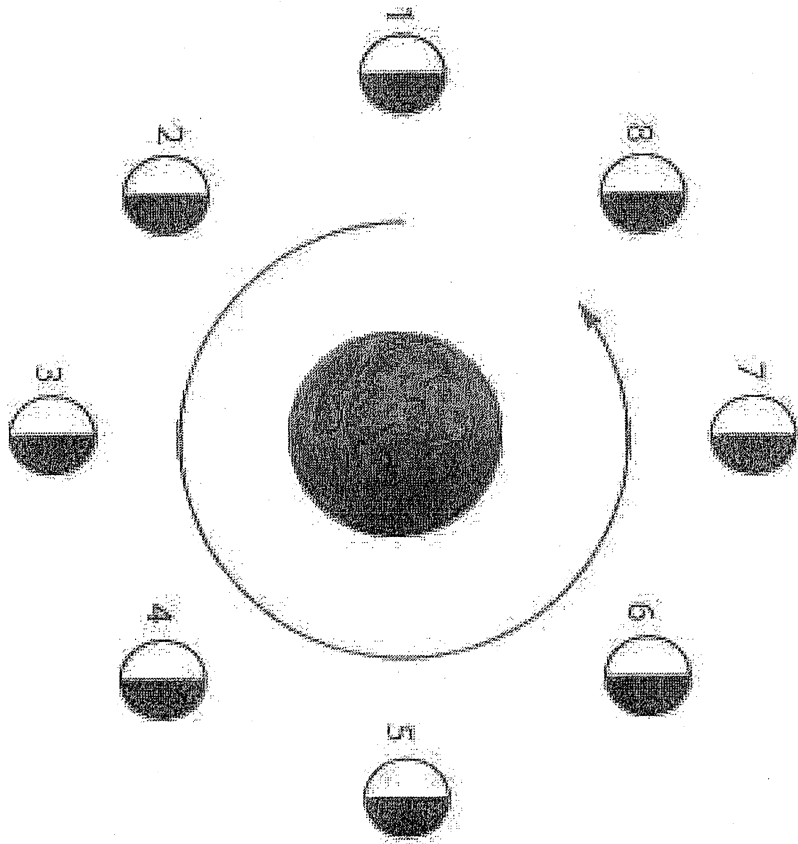
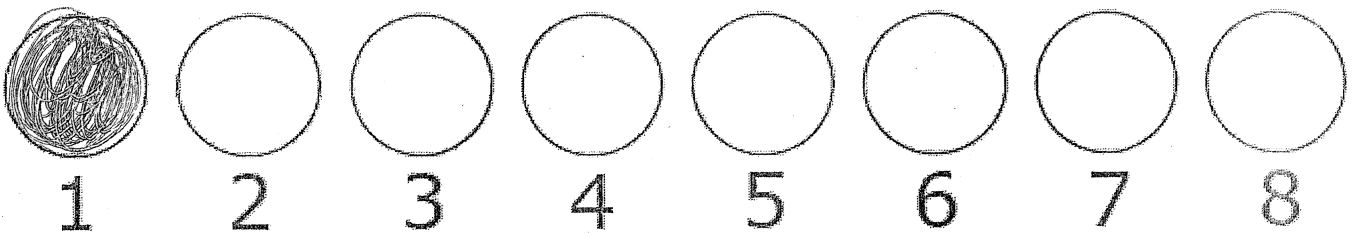


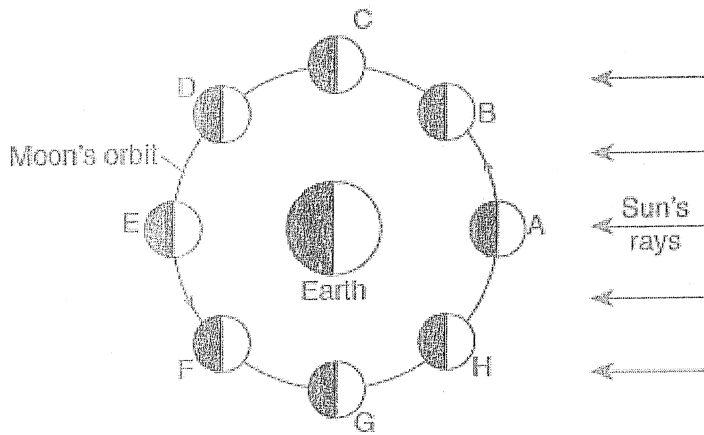
Diagram 2: Phases of the moon as seen from Earth.



New

Moon

Base your answers to questions 1 and 2 on the diagram below and on your knowledge of Earth science. The diagram represents the Moon in eight positions, *A* through *H*, in its orbit around Earth.



(Not drawn to scale)

1. Which Moon phase is observed in New York State when the Moon is located at position *F*?

- | | | | |
|----|--|----|--|
| 1) | | 2) | |
| 3) | | 4) | |

2. How many days are required for the Moon to complete a cycle of phases from the new Moon position represented in the diagram to the new Moon the following month?

- | | | | |
|----------|-----------|-----------|-------------|
| 1) 2.2 d | 2) 27.3 d | 3) 29.5 d | 4) 365.26 d |
|----------|-----------|-----------|-------------|

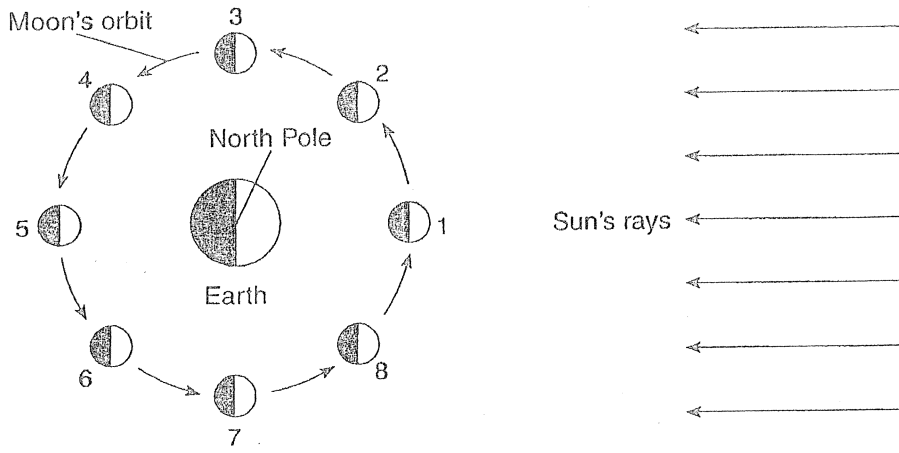
3. If the distance between the Moon and Earth were double its present distance, the Moon's cycle of phases would occur

- 1) in reverse order and more slowly
- 2) in reverse order and more quickly
- 3) in the same order but more slowly
- 4) in the same order but more quickly

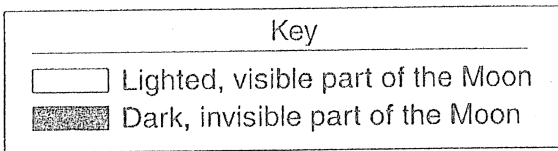
4. The same side of the Moon always faces Earth because the

- 1) Moon's period of rotation is longer than its period of revolution around Earth
- 2) Moon's period of rotation is shorter than its period of revolution around Earth
- 3) Moon rotates once as it completes one revolution around Earth
- 4) Moon does not rotate as it completes one revolution around Earth

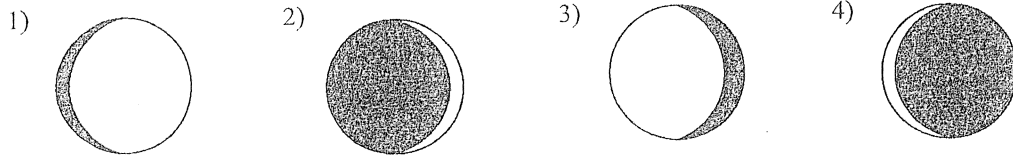
Base your answers to questions 5 and 6 on the diagram below, which represents the Moon orbiting Earth as viewed from space above the North Pole. The Moon is shown at eight different positions in its orbit.



(Not drawn to scale)



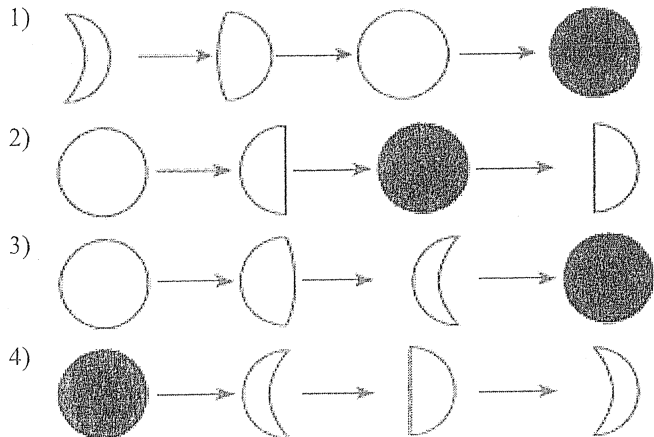
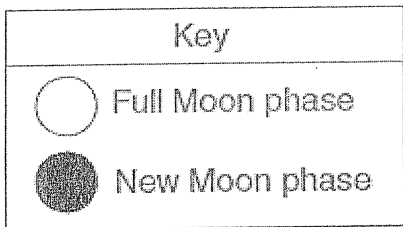
When the Moon is in position 2, which phase would be visible to an observer in Maine?



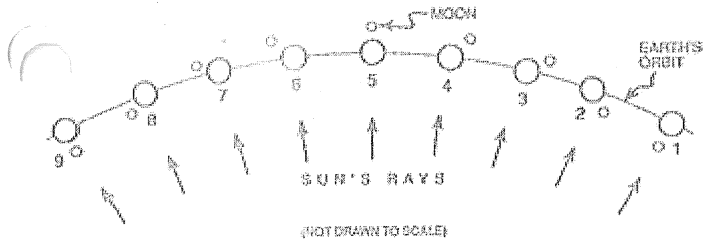
As the Moon changes location from position 2 to position 6, the visible portion of the Moon as observed from Earth

- 1) decreases, only
- 2) increases, only
- 3) decreases, then increases
- 4) increases, then decreases

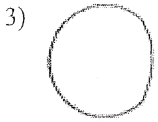
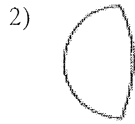
Which sequence of Moon phases could be observed from Earth during a 2-week period?



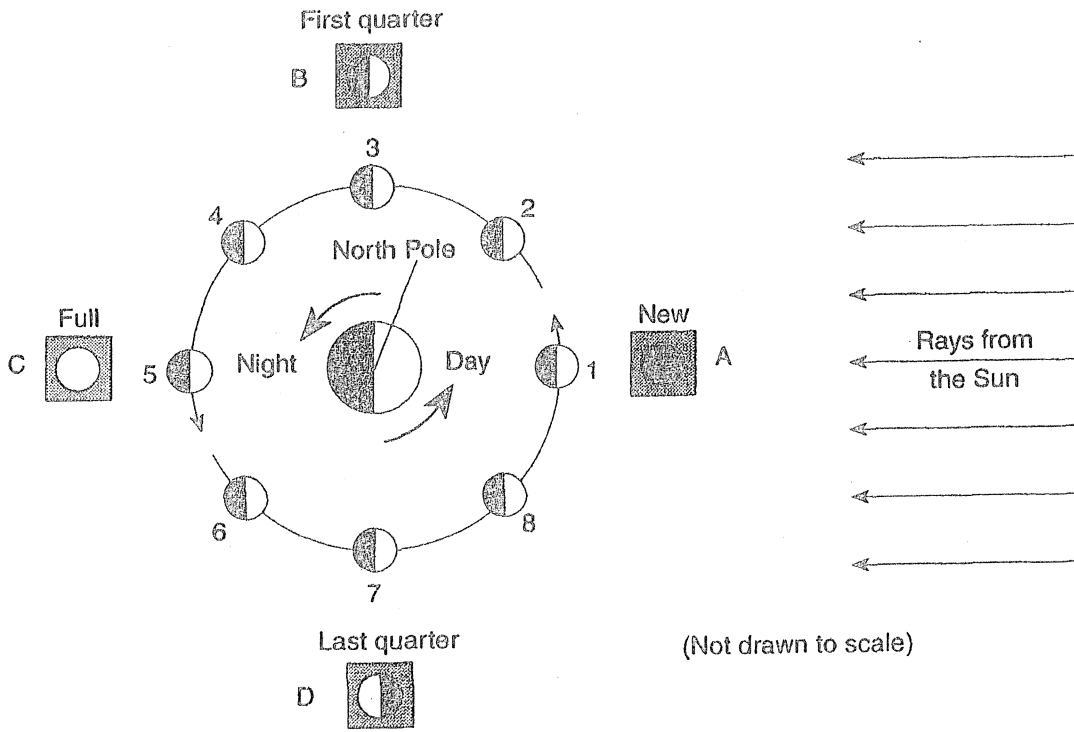
Base your answers to questions 8 through 10 on the diagram below which represents nine positions of the Earth in orbit around the Sun during one complete orbit of the Moon around the Earth.



8. The Earth rotates on its axis, causing the Moon to appear to rise each day. Moonrise occurs about 52 minutes later each day because as the Earth completes one rotation, the Moon also
- 1) completes one rotation on its axis
 - 2) wobbles on its axis
 - 3) is inclined $23\frac{1}{2}^\circ$
 - 4) revolves part way around the Earth
9. During the time that the Earth travels from position 1 to position 9, an observer on the Earth will see the lighted portion of the Moon
- 1) decrease, only
 - 2) increase, only
 - 3) decrease, then increase
 - 4) increase, then decrease
10. Which phase of the Moon will be seen from the Earth at position 5?



Base your answers to questions 1 through 13 on the diagram below, which represents a model of the Earth-Moon system as viewed from above the North Pole. The numbers 1 through 8 represent positions of the Moon as it revolves around Earth. The parts of the diagram lettered A through D show how the Moon's phases appear to an observer in New Jersey.



1. Which Moon phase appears highest in the sky at midnight to an observer on Earth?

- 1) full moon 2) new moon 3) first quarter 4) last quarter

2. Which motion causes the Moon to show phases when viewed from Earth?

- 1) rotation of Earth 2) revolution of Earth
 3) rotation of the Moon 4) revolution of the Moon

3. As the Moon's phase changes from first quarter to last quarter, the visible portion of the Moon as observed from Earth will

- 1) decrease, only 2) increase, only
 3) decrease, then increase 4) increase, then decrease

Regents Earth Science: Lunar and Solar Eclipse Handout

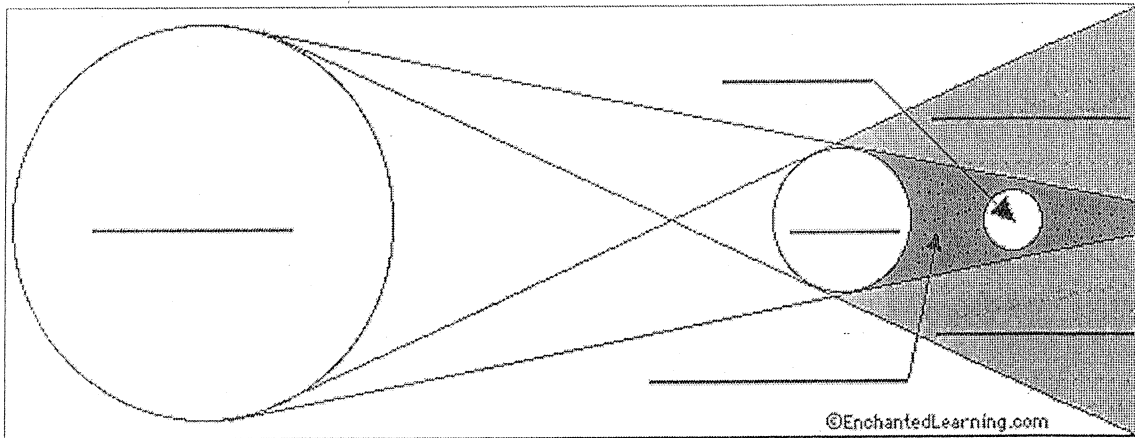
Name: _____

I. Lunar Eclipse

- a. What exactly is a lunar eclipse and how often do they occur?

- b. Explain why a lunar eclipse does not occur every month as the moon passes behind the Earth's shadow

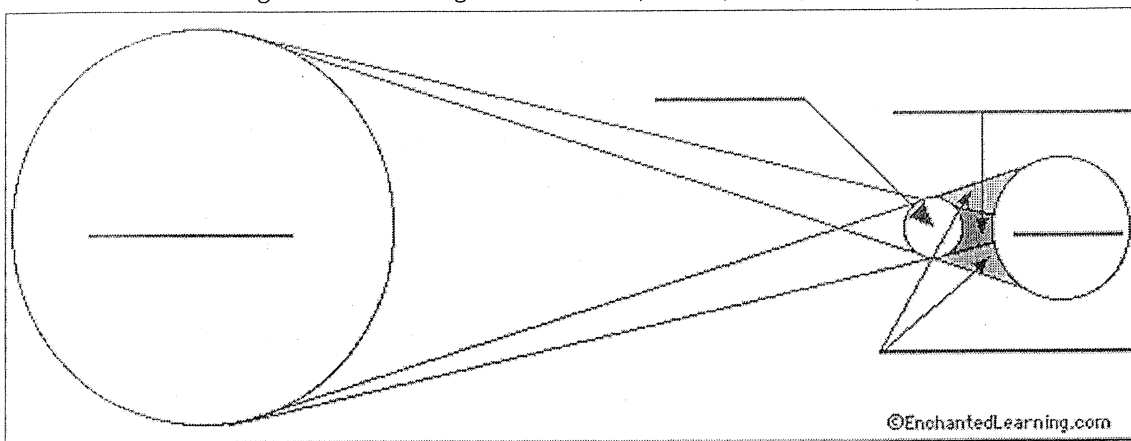
- c. Label the following diagram below : Use the terms "Earth, Moon, Penumbra, Umbra, Sun"



- d. What phase of the moon always occurs during a lunar eclipse? _____
- e. What part of the Earth's shadow do we pass through in a total lunar eclipse? _____
- f. What part of the Earth's shadow do we pass through in a partial lunar eclipse? _____

II. Solar Eclipse

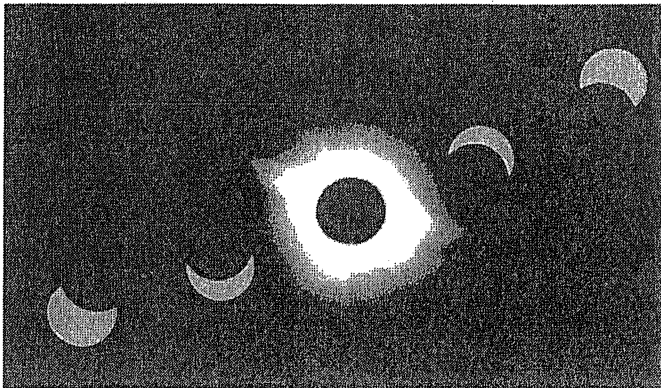
- a. A solar eclipse must be viewed using special glasses to block out the sun's harmful rays from the corona. Label the diagram below using the terms sun, moon, earth, umbra , penumbra



- b. In a lunar eclipse, the Earth's shadow is cast upon the moon, blocking it out, however, what shadow is cast upon the Earth during a Solar Eclipse? _____
- c. The sun is 416 times times larger than the moon. Explain why you think it is possible that the moon blocks out the sun in the path of its orbit if it is this many times smaller! How is that possible? _____
- d. A solar eclipse only occurs every 200 years in the same location on Earth but every 18 months in general. Using the moon's shadow in comparison with the Earth's shadow, explain why a solar eclipse is so much rarer than a lunar eclipse. _____
- e. What lunar phase is always occurs during a solar eclipse? _____
- f. What part of the moon's shadow do we pass through in a total solar eclipse? _____
- g. What part of the moon's shadow do we pass through in a partial solar eclipse? _____

III.

- a. The following diagram is depicting which type of eclipse? _____



- b. The diagram below represents an observers photographs taken at several time periods over the course of one night. Which type of eclipse is occurring? _____
- c. Explain why one could not explain this phenomena to be the result of the monthly phases of the moon _____

