

# Moon's Phases Lab

Name \_\_\_\_\_

Date \_\_\_\_\_

Period \_\_\_\_\_

(3) **Background:** Circle true, false, or don't know.

**T / F / DK** A) If it is not cloudy, everyone on Earth sees the same phase of the moon during the same 24 hour period.

**T / F / DK** B) It takes approximately 27 days for the moon to go through all its phases once.

**T / F / DK** C) The phase immediately after a full moon is a new moon.

**T / F / DK** D) The moon revolves around Earth in a counterclockwise direction.

**T / F / DK** E) The part of the moon we can't see during a phase is caused by the moon's shadow.

**Materials:** Large Styrofoam moon, one SEM stick, flashlight

**Testable Question:** *Starting with a new moon, how does the portion of the moon we see from Earth change as it orbits Earth?*

**Procedure:** Read the procedure *carefully* before beginning the data collection!

1. Stand with the moon in your hand, arm outstretched, so the moon is in position 1 on the diagram. Hold the moon somewhat low to simulate the tilt in the moon's orbit.
2. Have a partner shine the flashlight on the moon
3. Observe and record any part of the moon that you, as Earth, see lit up at the first position.
4. Move the moon to position 2 on the diagram. Be sure the moon is held a little higher than position #1.
5. Make sure the flashlight is shining on the moon at position #2 (it may have to move a bit to the right or left.)
6. Observe and record any part of the moon that you, as Earth, see lit up at the second position.
7. Continue moving the moon around in its tilted orbit, making observations and recording how much of the moon is lit up at each of the eight positions on the diagram. (At position 5, you will need to be sure the moon is above your head so the flashlight can reach it.)

**Variables** (if we change this, then we can record that)

- (1) 1. What is the manipulated (independent) variable? (circle one)
- a. the portion of the moon we see from Earth
  - b. the position of the moon in its orbit around Earth
- (1) 2. What is the response (dependent) variable? (circle one)
- a. the portion of the moon we see from Earth
  - b. the position of the moon in its orbit around Earth

**Variables we will keep the same:** The direction and angle of the Sun from the moon.

**Safety:** Do not drop or swing the flashlight, do not drop or break the sphere, do not shine the flashlight at anyone

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(2) 3. **Prediction:** Using words AND diagrams, answer the testable question as best you can.

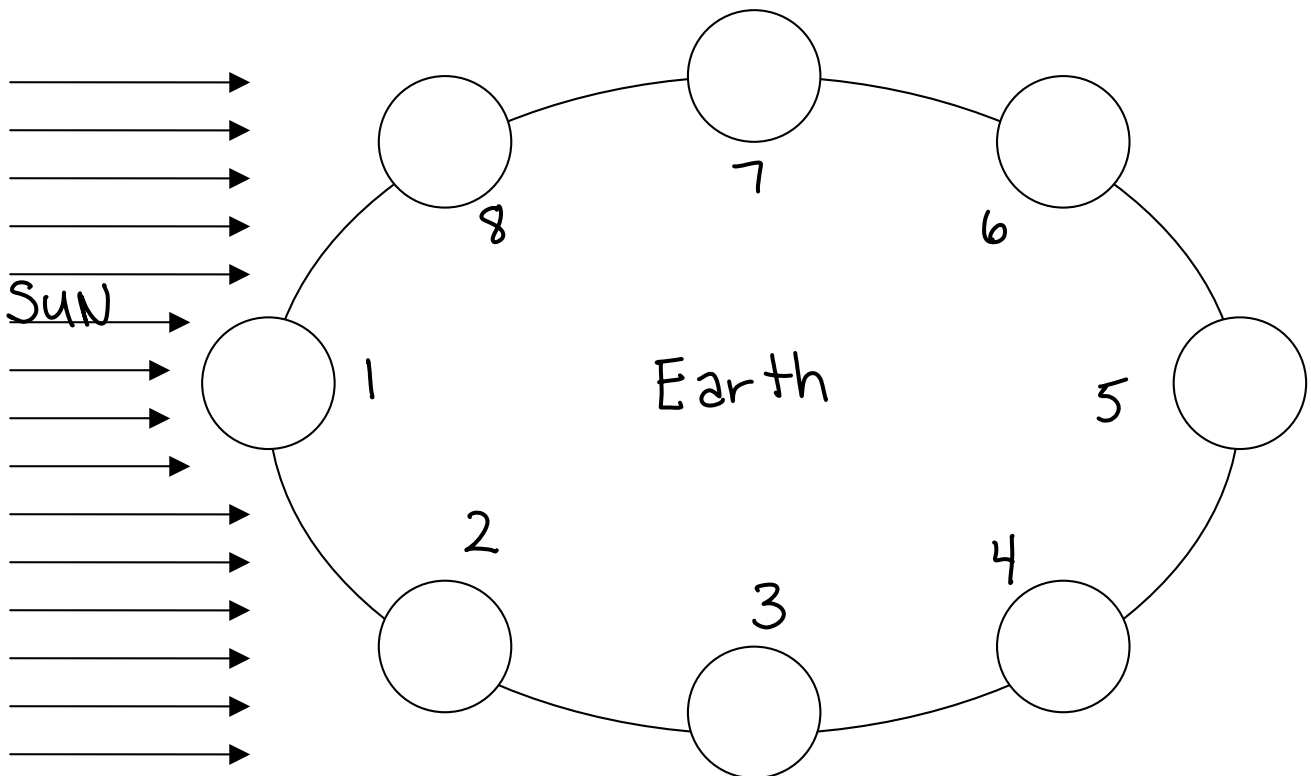
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(4) 4. **Collecting Data** Fill in the diagram as you complete the inquiry.

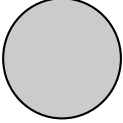
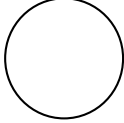
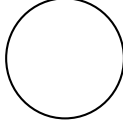
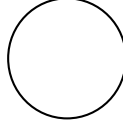
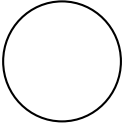
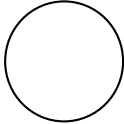
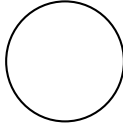
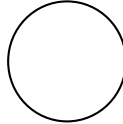
## The Moon As Seen From Earth



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(4) 5. **Presenting Data** Draw the phases of the moon in the order they happen, starting with new moon. (Hint: coloring it in means the moon is dark/in shadow; leaving it white means we can see it from Earth.) THEN, using EIS pages 68-69, label each phase with its *properly spelled* name.

			
_____ _____	_____ _____	_____ _____	_____ _____
			
_____ _____	_____ _____	_____ _____	_____ _____

(6) 6. **Answer:** Looking at your results, describe any conclusions you can make about the testable question: *Starting with a new moon, how does the portion of the moon we see from Earth change as it orbits Earth?*

\_\_\_\_\_  
\_\_\_\_\_

(1) 7. **Problems:** Describe any problems and how they might have affected the results. Suggest possible improvements.

\_\_\_\_\_  
\_\_\_\_\_

(4) 8. In your own words, what causes the phases of the moon?

\_\_\_\_\_  
\_\_\_\_\_

➔ 9. Review (and change, if necessary!) your answers to the true/false/don't know questions at the beginning of the inquiry.

(2) 10. Using the phase names and the pattern created in question #5, what do the words waxing and waning mean?

WAXING: appearing to get \_\_\_\_\_

WANING: appearing to get \_\_\_\_\_