Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**"The Moon's Phases"**

**Introduction:** The moon is Earth’s only satellite and neighbor in space. The current theory is that our moon was born from our Earth in a cataclysmic collision. As the moon orbits the Earth we see changes in its appearance called phases. In this lab you will examine those phases as well as eclipses.

**Vocabulary:**

1. Lunar: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Phases:­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Revolution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Rotation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Eclipse: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Crescent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Gibbous: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 1:** Go to the following website <http://home.hiwaay.net/~krcool/Astro/moon/moonphase/>

Watch the animation that shows the Earth-moon relationship. Read the page and answer the following questions.

1. What does the animation show? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

2. What causes the moon to appear to change shape in the sky? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

3. The moon does not generate its own light; how then is it possible that we can see it?

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4. How long does it take the moon to complete one full cycle of its phases? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Under “Moon Phase Descriptions…”, what phase is position #2? \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe this phase.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Where does the lighted part of the moon always face? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. What percent of the moon is has to be lit at any given time? \_\_\_\_\_\_\_\_\_\_\_\_

**Part 2:** Log onto <https://astro.unl.edu/naap/lps/animations/lps.html>

Wait for the animation to load. When it does, click “Start” and observe.

1. Press “STOP” on the animation when “percent visible” is in the 80’s. Are you now observing a crescent or gibbous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. What is the difference between a crescent and gibbous? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3. Try your best to stop the animation again when the **earth is in the middle** of the sun and moon. You may hit “slow down” to help you. What phase is this?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Which phase is shown here?



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

5. Watch this YouTube video and answer the question that follows: <https://www.youtube.com/watch?v=TLCw_M3VtaA>

How is it possible that the full moon is visible when the Sun, Earth and Moon are all in a straight line? Why doesn't Earth always block the sunlight during a full moon phase?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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6. Watch this YouTube video and answer the question that follows: <https://www.youtube.com/watch?v=6jUpX7J7ySo>

Why does the same side of the moon always face us? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Part 3:** Now is your chance to be an artist! Log onto: <http://www.harcourtschool.com/activity/moon_phases/>

This site will help you with your drawings. You may need to wait for the animation to load.

**Remember, this website will help you do the following on Page 2!**

**1. Draw how the moon appears from Earth!**

**2. Place the moon in the diagram in the correct position for each phase.**

**NEW MOON PHASE**

Draw how the moon appears from earth here**🡪**

Place the moon in this diagram at the New Moon position:

What eclipse *may* occur in this position? \_\_\_\_\_\_\_\_\_\_\_\_



**FIRST QUARTER PHASE**

Draw how the moon appears from earth here**🡪**

Place the moon in this diagram for the 1st Quarter:



**FULL MOON PHASE**

Draw how the moon appears from earth here**🡪**

Place the moon in this diagram for the Full Moon phase:

What eclipse *may* occur in this position? \_\_\_\_\_\_\_\_\_\_\_\_



**LAST QUARTER PHASE**



Draw how the moon appears from earth here**🡪**

Place the moon in this diagram for the 3rd Quarter phase:

