Name _____ Date_____

Activity 5: The Moon's Orbit

Guiding Question: Why don't we see lunar and solar eclipses more often?

Key Words: ***lunar eclipse, orbital plane, solar eclipse***

Get Started:

1. Read the introduction and Guiding Question to Activity 5, "The Moon's Orbit," in your Student Book.

Do the Activity:

Part A: Completing the Orbit:

1. Read Procedure Steps 1-5 in your Student Book. *Watch the LABsent video (found here: https://labaids.s3.us-east-2.amazonaws.com/labsent-videos/3e+Space+Activity+5+v2.mp4) to see the procedure step being done.* Each time the video says to record, you may want to pause the video to give you ample time to complete your observations.

Procedure Step 2: Place the blue stick in position #1, and add the Moon to the top of the stick. Which moon phase do you think you would see from Earth? Record your ideas in the space provided.

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Procedure Step 5: Move the Moon ball from stick to stick, making sure to observe the height of the Moon compared with Earth and the Sun. What is the Moon's phase at each position? Record your observations in the space provided.

Position #1: _____ *Position #2:* _____

Position #3: _____ *Position #4:* _____

Position #5: _____ *Position #6:* _____

Position #7: _____ *Position #8:* _____

Procedure Step 6: Move the Moon ball to the stick in the position it needs to be in for there to be a full moon. Would there be a lunar eclipse? Explain.

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Part B: The Orbital Plane:

2. Read Procedure Steps 7-14 in your Student Book. *Watch the LABsent video (found here: https://labaids.s3.us-east-2.amazonaws.com/labsent-videos/3e+Space+Act.+5+Part+B.mp4) to see the procedure step being done.* Each time the video says to record, you may want to pause the video to give you ample time to complete your observations.

Procedure Step 12: Looking at where you added the sunlight and where Earth is located, where do you think the different phases of the Moon would occur?

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3. Look at Visual Aid 5.1, "Orbital Plane," which is attached to this packet, to see what the Moon's orbital plane looks like.

Analysis:

1. The Moon takes about 29 days to orbit Earth. In this activity, there were eight positions the Moon could be in.

a. How many days would it take for the Moon to get from position #2 to position #4 in its orbit?

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b. What phases would the Moon go through as it traveled from position #2 to position #4?

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2. In Step 9, you created a two-dimensional drawing of the Moon's orbit. What information about the Moon's orbit is missing from the two-dimensional drawing?

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3. There are two points during the Moon's orbit around Earth when the Moon, Earth, and Sun are all in the same plane. In your model, this is represented when the Moon is on the green stick such that the Moon, Earth, and Sun are all at the same height.

a. If the Moon is on the green stick in position #6, in what phase is the Moon? Draw what that phase looks like, and explain why it looks that way.

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b. If the Moon is on the green stick in position #1, in what phase is the Moon? Explain what people on Earth would observe.

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c. When the green stick is in position #1, what color stick should be in position #5? Explain.

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4. **Reflection**: How have your ideas about the reason for the phases of the Moon changed since you began this unit?

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VISUAL AID 5.1

ORBITAL PLANE