



Teacher Notes  
**Lunar Madness**  
 Exploration

**GEOMES Topic:** Earth and the Universe – Lunar Madness

<b>Lab setup:</b>	none	<u>easy</u>	moderate	difficult
<b>Reasoning level:</b>	easy	<u>moderate</u>	difficult	
<b>Time required:</b>	<u>20-40 minutes</u>	40-60 minutes	60-90 minutes	
<b>Process skills:</b>	<u>measuring</u>	<u>comparing</u>	<u>utilizing models</u>	
	<u>interpreting data</u>	<u>questioning</u>	<u>hypothesizing</u>	
	<u>observing</u>	<u>predicting</u>		

**Objectives:** Students will use observation and measuring skills to determine the pattern of lunar phases and make a hypothesis of their cause.

**National Science Education Standards:**

Content Standard: Earth and Space Science - Origin & evolution of the earth system  
 Unifying Concepts & Processes: Evidence, models, & explanations; Systems, orders, & organization; Change constancy & measurement  
 Science as Inquiry: Abilities necessary to do scientific inquiry

**Materials:** black construction paper (1 per student group)      rulers  
 one quarter for each student group      white or yellow color pencils

**Teaching Strategies:**

You may need to instruct students on how to geometrically construct their calendar grids. Emphasize that the moon needs to be drawn as accurately as possible to portray the moon's appearance. Alert students to the fact that the moon will be in different parts of the sky, at different parts of the day or night, it might not even be visible. The boundary between the lit and dark portions of the moon will rarely ever appear as a line perpendicular to the horizon.

**Sample Data:**

Most daily newspapers, and internet sites will give the moon's phases in the weather section. Do not disclose your source of sample data to students until after the project is finished.

**Sample Responses to Go Figure:**

1. Student responses will vary from student to student, and from observational period to observational period. From day to day, the moon's lit portion will either be increasing or decreasing. They may notice that the phases will begin to repeat.
2. Student responses will vary from student to student, and from observational period to observational period. From day to day the moon's position will change, as will its time to rise and set. It will be in a different part of the sky if you attempt to observe at the same time nightly.
3. The student's predictions should appear similar to their previous calendar grid. The next 7 days should simply be a continual progression of the lunar phases.

4. A normal calendar is a simplified representation of the lunar phases at an exact position in the night sky. A normal calendar will also not show that the moon's appearance will vary depending on what time of day the observation is made.
5. Answers should vary on this question since this is the exploratory phase of learning. The moon's appearance does change due to these reasons: motion of the moon around the earth, the earth's rotation, and the moon/earth system's position around the sun.