

## Questions

Does Moon's visual appearance change? Can you detect the sky's motion?

## Materials Needed

For this activity, you will need the following materials:

- a dark observing location (the darker the better)
- a comfortable chair
- a pencil (do not use ink)
- the ability to read and follow directions

## Points To Remember

Don't rely on what you may already know or think you may already know about topics addressed in these activities. You must develop a reliance on observations rather than preconceived knowledge, which may have been incorrectly learned. With few exceptions, your observations will tell you everything you need to know. Not being able to rely on prior knowledge or the perception of prior knowledge will probably be very frustrating for you, but it is necessary for learning how to make accurate observations and how to rely on them.

The same advice about terminology in previous shadow activities applies in this activity as well.

## 1 Preparation

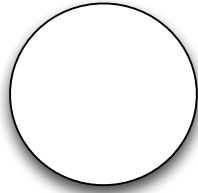
In class, you were given a stick. After doing the first two shadow activities, you should now know how to establish the north, south, east, and west directions at your personal observing site. You must do this before doing the rest of this activity. Establishing these directions is rather time consuming and obviously cannot be done at night.

## 2 Inquiry

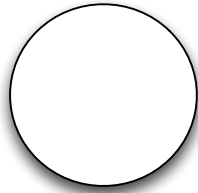
### 2.1 Moon's Visual Appearance

Beginning tonight, go outside shortly after sunset and locate Moon in the sky. You may not see Moon right after sunset, so you may need to hang out until you do see it. Observe its visual appearance very carefully. Draw a simple sketch showing what you see. **Do not attempt to explain anything that you see. Just draw what you see.** Use one circle and

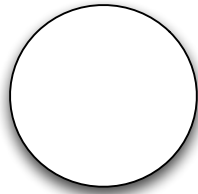
one block for each observation (one observation per night). Repeat this at least four more times (for a total of five times) over the next two weeks **at the same time each night**. Record any changes you observe in Moon's visual appearance or position in the sky each night during these two weeks.



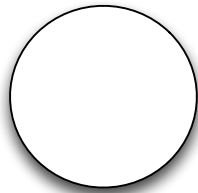
<b>Date, Time, Observations</b>
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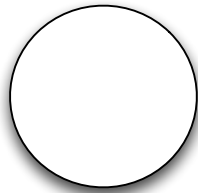
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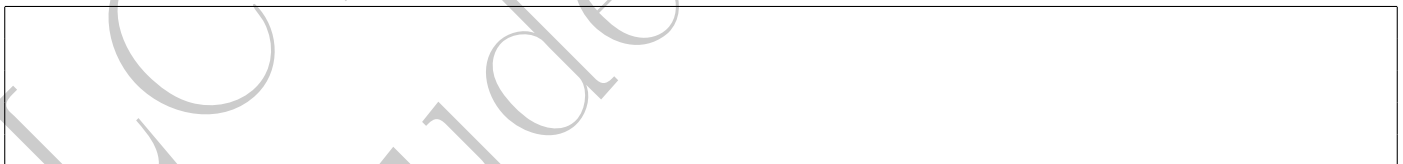
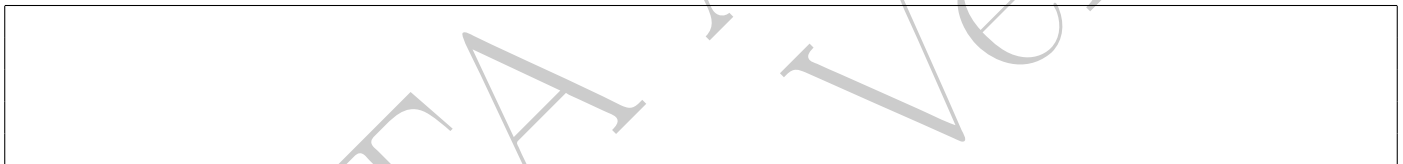


## 2.2 Observing Stars

Go outside after dark, and sit in a chair facing north, south, east, or west. and observe any star conveniently placed near your horizon. There may be trees in the way, but this is not a problem for this activity. In fact, observing a star through tree branches will actually help you! Pick any star in the direction you are facing, and simply watch it for no more than 30 minutes. **It is very important that you not move while you are observing the star.** Describe what you observe. Pay particular attention to any observed motion the star exhibits. In the first blank space below, sketch a horizontal line to represent your horizon. Draw and label a small tick mark at the center of the line to indicate which direction you're facing for this observation. Draw two dots to represent the star at the beginning of your observing session and the end of your observing session. Put an arrow on each dot to indicate the direction of each star's apparent movement relative to the horizon. **There is no such thing as a curved arrow!**

Repeat this activity three more times, facing a remaining direction each time. Pick any convenient star near the horizon, preferably near a treetop or tree branch or even a distant building, and simply observe it for no more than 30 minutes. Make sketches for your observations in the other boxes.

**Do not attempt to explain anything that you see.**



## 3 Inquiry

What, if any, aspects of Moon's visual appearance changed from night to night? Be as specific as you can, but do not use words you do not understand.

Were there clouds in the sky while you were observing Moon? If so, then explain how clouds may have affected your observations.

Suppose someone in your family tells you that your lunar observations are completely accounted for by clouds. Explain how you could test this hypothesis.

Describe how a star near the horizon appeared to move when you were facing east. If the star did not appear to move, explicitly state so.

Describe how a star near the horizon appeared to move when you were facing west. If the star did not appear to move, explicitly state so.

Describe how a star near the horizon appeared to move when you were facing north. If the star did not appear to move, explicitly state so.

Describe how a star near the horizon appeared to move when you were facing south. If the star did not appear to move, explicitly state so.

Consider the star you observed while facing east. What would you predict about its subsequent motion during the rest of the night?

Consider the star you observed while facing north. What would you predict about its subsequent motion during the rest of the night?

LCTTA Activity  
Student Version