

Name(s) _____ Section Day/Time _____

OBSERVING PROJECT
PARTNER ELECTION

Fill in either Part 1 or Part 2.

Part 1. SOLO OBSERVER

I will do the observing project by myself. I will not copy someone else's paper or show my results to someone else so that they can copy them.

[sign] _____ Date _____

Part 2. AGREEMENT TO DO PROJECT TOGETHER

By signing below, we agree to do our observing project together. We agree that:

- 1) We will both do a substantial amount of work on the project.
- 2) We will both take responsibility to have the project checked every week.
- 3) We will both take responsibility to turn the project in on time.
- 4) We agree to receive the same grade on the project.

[sign] _____ Date _____

[sign] _____ Date _____

PROJECT 2: THE MOON

- Rules:** 1) Do the project by yourself or with one other person. If you want to work with a partner, sign the agreement form.
2) Bring your project to class every week to be stamped and checked.
NO STAMPS, NO CREDIT
3) Turn in your completed project on or before the due date: **Nov. 9.**

Purpose: In this activity, you will observe the waxing of the Moon as the Moon moves away from the Sun.

Hypothesis

- Q1.** If you observe the Moon once an hour during one evening, does the Moon move to the east, move to the west, or stay at about the same spot in the sky? Why?
- Q2.** If you observe the Moon at the same time each night, from night to night does the Moon move to the east, move to the west, or stay at about the same spot in the sky? Why?

Week 1: Hour-to-hour observation

1. Find an observing location with a fairly clear view to the south. It must be a convenient location that you can easily return to. You must make all your observations from exactly the same spot. Draw the buildings and trees you see in the diagram on the next page. Draw the scene you would see in a photograph.
2. Observe the Moon one evening this weekend. Observe the Moon at 5 pm, 6 pm, 7 pm and 8 pm (if safe). Use common sense. **DO NOT GO OUTSIDE ALONE AT NIGHT IN A DANGEROUS AREA.** Draw the Moon on your diagram every hour, showing its phase. Mark the time.
3. Record the time and the phase of the Moon in the table on the bottom of the next page.
4. If the Moon has disappeared, write "Moon not visible" in the table. **DO NOT REPORT SEEING THE MOON WHEN YOU DIDN'T.**
5. **DO NOT ERASE ANYTHING.** Just draw what you see.
6. Start Week #2 observations the **following day.**

Week II: Day-to-day observation

1. Start doing Week II observations the **very next day**, so you will be sure to see the Moon before it disappears from the evening sky.

Every evening for one week, observe the Moon just once at 4 pm. You can switch to a different location if you want, but make all your observations this week from the exact same spot. If 4 pm is not a good time for you, pick a time that works for you, just be sure to make your observations at the **same time** every evening.

If you can't see the Moon, write "Moon not visible" and explain why. Do **not** report seeing the Moon when you didn't; your paper will be marked down. If it is cloudy, come back the following evening. You're not expected to see the Moon every evening.

2. Draw a new diagram on the next page. Draw the foreground buildings and power poles again. Add the Moon to your drawing each evening, showing the correct phase of the Moon. (Use the same drawing each evening; don't do a new drawing for each night; just add the Moon each night.)

If the Moon moves out of the diagram, enlarge the diagram by taping on additional paper.

Darken the part of the Moon you *can't* see. Number your Moon. `

- 3 Estimate the angle between the Sun and the Moon (if it's before sunset). Extend your arms and point one arm at the Sun and the other at the Moon. Estimate the angle between your arms. (A right angle is 90° . Half of a right angle is 45° . A third of a right angle is 30° . If your arms are pointing in opposite directions, the angle is 180° .)
4. If your schedule doesn't allow you to observe the Moon before sunset, pay attention to the stars. Draw the star Fomalhaut on your diagram and any other bright star or planet you see near the Moon. Notice carefully where the Moon is compared with Fomalhaut. Measure the angle between the Moon and Fomalhaut instead of the sun-moon angle.
4. Record the date and time of your observation as well as the angle in the table on the bottom of the next page. Identify the name of the phase.
5. DO NOT ERASE ANYTHING. Just draw what you see.

WEEK II: Day-to-day observation.

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#	Date	Time	Moon-Sun Angle	Phase
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Wrap-up

Q3. Do you agree with what you wrote in Question 1 about the motion of the Moon during one evening? If not, what is your new hypothesis?

Q4. Complete the following sentence:

The farther the Moon is from the Sun in the sky, the _____ the phase of the Moon.

Q5. Do you agree with what you wrote in Question 2 about the motion of the Moon relative to the Sun? If not, what is your new hypothesis?

Q6. Two students are having a disagreement.

Student 1: *I think the Moon moves around the Earth to the east. From night to night I see the Moon farther to the east at the same time of day.*

Student 2: *I think the Moon moves around the Earth to the west. I've watched it follow the Sun across the sky to the west. Therefore, the Moon is moving to the west.*

Which student do you agree with, and why?

Q7. *Based on your own observations, what have you learned about the Moon? (Your answer should state **something specific** you have learned, not what you have learned *about*): This question is worth 10 points.*

In this activity, I have learned that: