# BEAVER MOON WATCH

The Moon is such a familiar object that we are inclined not to see it. Due to the Moon's motion around the Earth relative to the Sun, the fraction of the Moon's surface that we see illuminated by the Sun (the phase of the Moon) changes in a definite and predictable pattern. Since the phase is determined by the Moon's position relative to the Sun and Earth, and the time of day is the Sun's position with respect to an observer on the Earth, the different phases of the Moon appear overhead at different times of day. This project is to help you experience and see for yourself, the changing appearance of the Moon and also, the different times of day the the various phases are visible.

## THE PROJECT

You and your partner are to observe the Moon each day for two weeks, starting with the new moon. The dates and times for the phases in October and November are:

| Phase: | New ● | 1st Quarter ◐ | Beaver Moon ○ | 3rd Quarter ◑ | New ● |
|---|---|---|---|---|---|
| Date: | 11/9 2:02 AM | 11/17 6:47 AM | 11/24 9:53 AM | 12/1 1:08 AM | 12/8 7:51 PM |

See pp. 350 - 353 in the *Field Guide* for an explanation and the dates of the phases of the Moon through 2018. Pasachoff's Eclipses and Moon Phases through 2027 are available on Canvas.

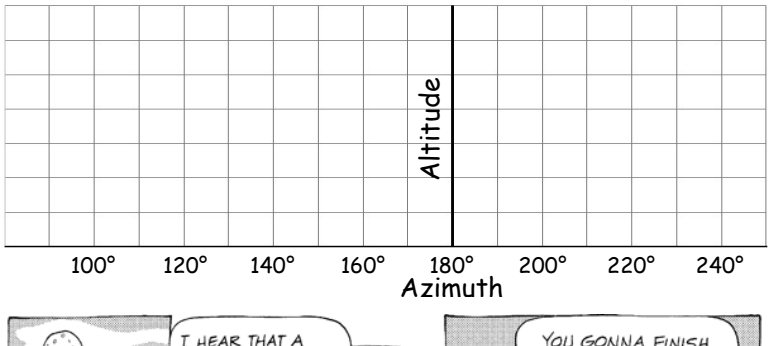
**OBSERVATIONS: Each night from 11/14 through 11/24, observe the Moon at around 6 pm (It's important to observe at *same time* every night!!), note its phase and *measure its azimuth and altitude using your fists at arm's length*.**

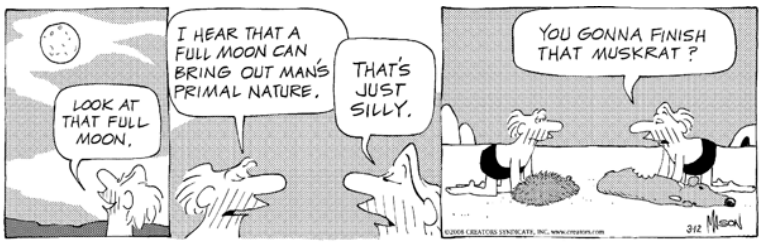
- If it is cloudy, go out and LOOK for the Moon, anyway as it's often visible through clouds
- Turn directly away from Polaris to face south (azimuth = 180 ± measurement using fists).
- If it's impossible for you to make an observation (it's cloudy or raining, you have a conflict, you forgot), note that in your log … don't use your phone or imagination … honesty matters!!

**SUMMARY AND ANALYSIS:** At the end of the project, plot the Moon's attitude and azimuth on the different days ON A **GRAPH PAPER** DIAGRAM (with axes as shown but ***not on this sheet***. There is graph paper available in the lab). You must also write a report on ***how you observed*** (where, when, with whom, and how you made your measure-ments), ***what you observed,*** and ***how it confirms or contradicts the theory*** of the Moon's motion around Earth we have explored in class. Given the position of the Moon and its phase, can you tell what time it is?

## DUE ON MONDAY, DECEMBER 7, 2026



# Moon Log

## _____ and (partners) _____

| Date | Time | Location | Phase | Sketch of the Moon | Altitude<br>That you actually measure!! | Azimuth<br>That you actually measure!! |
|---|---|---|---|---|---|---|
| 11/13 | 6:00 PM | SLU | Waxing Crescent | Negative image  | Fists: 1<br>Degrees: 10 | Fists: 3<br>Degrees: 180 + 30 = 210 |
| 11/14 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/15 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/16 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/17 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/18 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/19 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/20 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/21 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/22 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/23 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |
| 11/24 | | | | | Fists:<br>Degrees: | Fists:<br>Degrees: |

Moon in western sky, add fists x 10 to 180°.

Moon in eastern sky, subtract fists x 10 from 180°.