

## FEBRUARY 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.

### 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 January and February are:

|        |              |                         |              |                         |              |
|--------|--------------|-------------------------|--------------|-------------------------|--------------|
| Phase: | New          | 1 <sup>st</sup> Quarter | Snow Moon    | 3 <sup>rd</sup> Quarter | New          |
| Date:  | 1/29 7:35 AM | 2/5 3:02 AM             | 2/12 8:53 AM | 2/20 12:32 PM           | 2/27 7:44 AM |

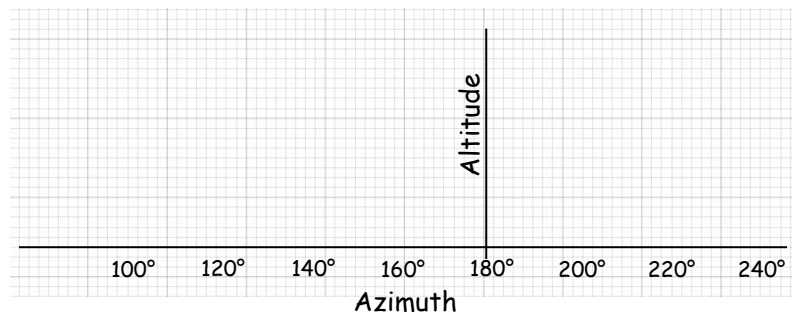
See pp. 350 - 353 in the *Field Guide* for an explanation and the dates of the phases of the Moon through 2017. Pasachoff's *Eclipses and Moon Phases through 2027* are available on Canvas.

**OBSERVATIONS:** Each night from 2/3 through 2/12 (observing between 6 & 10 pm), observe the Moon at around the same time every night ... within  $\frac{1}{2}$  an hour if possible, 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, as it's often visible through clouds
- 🌐 Turn directly away from Polaris to face south (azimuth =  $180 \pm$  measurement using fists). or use your phone to determine south ... wave it around to calibrate the compass.
- 🌐 If it's impossible for you to make an observation (it's cloudy or snowing), note that in your log.
- 🌐 Report the ACTUAL time you observe and what you actually see ... if you have a conflict or forget, just state that. Stuff happens ... don't make up data or get it from your phone!!

**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 ... graph paper available in the lab). You must also write a few paragraphs 1) *describing how you observed* (where, when, with whom and how you made your measurements), 2) *a general description of what you saw*, and 3) *how your observations confirm or contradict the theory* of the Moon's motion around the Earth we have explored in class. Given the position of the Moon and its phase, can you tell what time it is?

**DUE ON FRIDAY, FEBRUARY 21, 2025**



# MOON LOG

AND (PARTNERS)

| DATE | TIME    | LOCATION | PHASE           | SKETCH OF THE MOON  | ALTITUDE<br><i>That you actually measure!!</i> | AZIMUTH<br><i>That you actually measure!!</i> |
|------|---------|----------|-----------------|---|--|---|
| 2/2  | 7:00 PM | SLU      | WAXING CRESCENT |  | Fists: 3.5                                     | Fists: 6                                      |
|      |         |          |                 |   | Degrees: 35                                    | Degrees: 180 + 60 = 240                       |
| 2/3  |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/4  |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/5  |         |          | FIRST QUARTER   |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees: 180°                                 |
| 2/6  |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/7  |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/8  |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/9  |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/10 |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/11 |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/12 |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/13 |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |
| 2/14 |         |          |                 |   | Fists:   | Fists:  |
|      |         |          |                 |   | Degrees:                                       | Degrees:                                      |

Moon in eastern sky, subtract measured azimuth from 180°.

Moon rises after 7 pm on February 13 & 14, so only groups observing after 7 pm should use these.