

Answers to your Phases of the Moon Lab Questions

Question: *How do I measure angles in the sky?*

Answer: You can use your hand **held at arms length** to measure angles. Your index finger is roughly 1° wide. If you clinch your fist, it is about 10° wide. If you spread your fingers apart, from the tip of your little finger to the tip of your thumb is around 20°

Question: *What am I supposed to do?*

Answer: Each time that you find the Moon, sketch how much of it you see in the circles on the next page. Be sure to do this accurately, especially noting which side is visible. Also, measure the angle and direction of the Moon from the Sun. **Be sure to record exactly what it is you measured!**

Question: *How often do I need to make these measurements?*

Answer: You should make observations every day that you have a clear sky until the Phases of The Moon Lab (week of February 17). You will use these observations to help you learn why the Moon goes through phases in the Phases of The Moon lab.

Question: *When and where will I be able to find the Moon?*

Answer: The 1st week of class is approaching the New Moon so it will be extremely difficult to see. The 2nd week of class is heading into the 1st Quarter Moon so it rises in the afternoon and sets at evening. Look for it in the east in the afternoon and west after sunset. The 3rd week of class is 1st Quarter to Full Moon so look for it in the western sky in the afternoon, rising near sunset by week's end. The 4th week of class is the Full to Last Quarter Moon so it after sunset. Look for it in the east in the evening or in the west just after sunrise. The week of the lab the Moon returns to the Last Quarter phase. Look for it in the southeast after sunrise

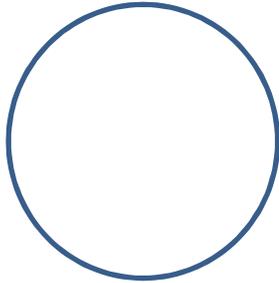
| Date | Moon Rise | Moon Set |
|--------|-----------|----------|
| Jan 21 | 04:12 AM | 02:15 PM |
| Jan 24 | 06:56 AM | 04:58 PM |
| Jan 28 | 09:16 AM | 08:50 PM |
| Jan 31 | 10:36 AM | 11:37 PM |
| Feb 4 | 12:49 PM | 02:34 AM |
| Feb 7 | 03:37 PM | 05:34 AM |
| Feb 11 | 08:26 PM | 08:31 AM |
| Feb 14 | 11:55 PM | 10:13 AM |

Rise and set times for the Moon and Sun are available on the Sunrise/Set - Moonrise/Moonset Times link on www.apsu.edu/physics/astronomy.

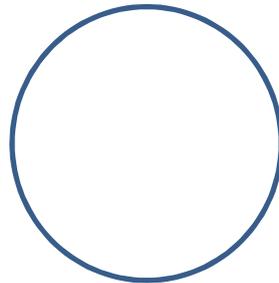
Question: *How do I measure the angle of the Moon from the Sun if the Sun is down (maybe you're out after sunset)?*

Answer: If the Sun has gone down, you will need to measure the angle from the Moon to the **western** horizon then add 15° for every hour after sunset. Example: Suppose you find the Moon is 20° above the **eastern** horizon at 10:47 pm. Then it is 160° from the **western** horizon (180° - 20°). If the Sun set at 7:17 PM then the angle of the Moon is 160° + (3.5 hr x 15° per hour) = 212.5° east of the Sun or 147.5° west of the Sun (360° minus 212.5°). You can do the calculations at a later time so what you need to measure is the angle of the moon **from the western horizon**, record the time and amount of illumination and exactly what it was you measured (i.e. Moon from E horizon or Moon from western horizon or Moon from Sun). Sunset times can be found at the Date and Time dot com website (it's the Sunrise/Sunset Moonrise/Moonset Times link on www.apsu.edu/physics/astronomy).

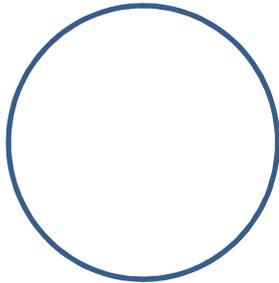
Date: _____ Time: _____
Angle of Moon from Sun: _____
Direction of Moon from Sun: (E or W)



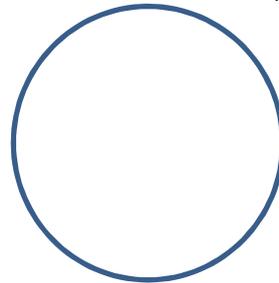
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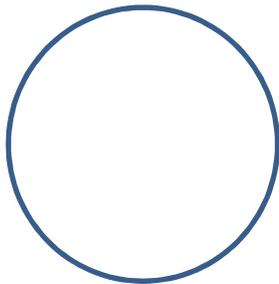
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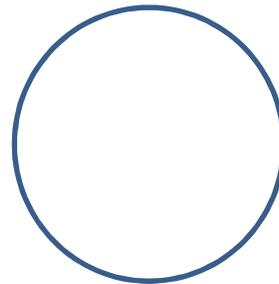
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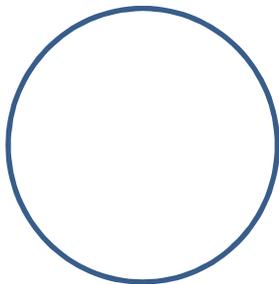
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