

HOMEWORK #9 (due start of class February 10)

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LEARNING GOALS:

1. Continue recording observations in your journal.
2. Measure the heights of mountains on the Moon.

TO RECEIVE FULL CREDIT:

1. If you submit multiple pages, staple them together.
 2. To receive any credit on these problems, you must **show how** you derived your answer by writing all the logical steps that led you to it.
 3. All sentence responses must be **typewritten and in complete sentences**. You may handwrite any arithmetic. Use good English grammar.
 4. **If you work more than three hours on this assignment, you should stop, record your work here, and contact Dr. McCarthy.**
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1. Keep observing the sky (day & night) and record notes, pictures, and measurements in your journal. Dr. McCarthy has posted a new link, describing journal content and requirements, on our Web site. Stay up-to-date! On a typical day, you should be spending ~1-2 hours observing and recording.

You will turn in your journal on Monday (Feb 10) for initial critique and grading.

2. Below you will measure the heights of mountains on the Moon as Galileo did.

Using his improved telescope design, Galileo was able to see spots of light in the otherwise dark portion of the Moon. He interpreted these spots as mountain peaks which caught the rays of the sun even though the sun did not illuminate the Moon's surface at the base of the mountain. He measured the distance of the bright spot from the terminator (L) as a fraction of the Moon's diameter. (D) Then he used geometry to determine the height (h) of the mountain as a fraction of the Moon's diameter, with the formula:
 $h \sim (L/D)^2 \times D$. (Reference citation: Todd Timberlake)

Determine the height of the mountain indicated by the white line near the letter "e" by the terminator of the Moon as shown below. As we discussed in class, use a ruler to determine the ratio L/D from the picture. Use the above formula to calculate the mountain's height (h). The radius of the Moon is 1738 km.

