

Exercise 13.2

APPARENT PLANETARY MOTIONS

1. Logon to **Skylab2** and run the program "SKYMATION." Select a date and time that you want to observe the planets. Do not pick a date near new moon. Call for a "grid" and "plot stars" under Options. Get a printout of this chart.
2. Use a flexible ruler or cardboard strip and bend it to conform to the ecliptic between the vernal and autumnal equinoxes on the chart and measure this distance in cm. Make sure your measurement has hundredth place precision. Record your measurement on the answer page. Recall that the distance you have just measured is equivalent to an angle of 180° along the ecliptic.
3. Now divide 180° by the distance you have measured in step 2. This will be the chart scale in degrees per centimeter for measuring elongations along the ecliptic. Record the result on the answer page with a precision of at least four significant figures.
4. Draw a short line from the Moon to the closest point on the ecliptic and mark this point. Use your flexible ruler and bend it to conform to the shape of the ecliptic to measure the distance from the center of the Sun to the above point. Write the answer on the answer sheet. This is the elongation of the Moon in centimeters either east or west.
5. Multiply the above distance by the chart scale you have determined. This will be the elongation of the Moon in degrees east or west. Write the answer on the answer page.
6. What is the phase of the Moon corresponding to this elongation? Record your answer.
7. Follow the above procedure and determine the elongation of Venus. Record your answer:
8. How many degrees will the Moon move in its orbit in 8 days and in what direction? Record your answer.
9. Locate the point on the chart where the Moon will be in 8 days and label this point as **L8**.
10. Locate the new position of the Sun for 8 days later and label this point at **H8**.
11. Now determine the elongation of the Moon for 8 days later following the above procedure and record your answer on the answer page.
12. What is the phase of the Moon now, eight days later? Record your answer.

EXERCISE 13.2 ANSWER PAGE

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1. Date and ZT time of your chart:: Date_____ Time_____.
2. Distance along ecliptic between equinoxes: _____.
3. Elongation chart scale: _____.
4. Elongation of Moon in centimeters east or west: _____.
5. Elongation of Moon is degrees east or west: _____.
6. Phase of the Moon: _____.
7. Elongation of Venus: _____.
8. Distance in degrees that the Moon will move in its orbit: _____.
11. Elongation of the Moon eight days later: _____.
12. Phase of the Moon eight days later: _____.