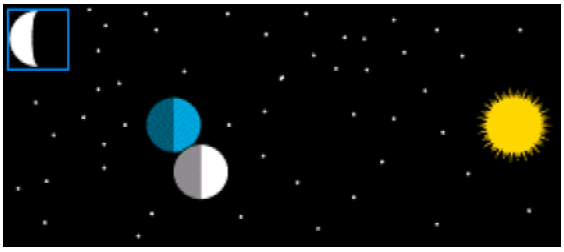
Phases of the Moon

Contributed by Jill Gough

Name

Date



During every month, the moon seems to "change" its shape and size from a slim crescent to a full circle. When the moon is almost on a line between the earth and sun, its dark side is turned toward the earth. The moon's cycle is a continuous process, there are eight distinct, traditionally recognized stages.

1. Identify the eight traditionally recognized stages of the moon's cycle.

2. From "The Earth and Moon", http://inkido.indiana.edu/a100/earthmoon2.... , find the approximate period of the moon's cycle.

3. Extract the fraction of the moon showing from the United States Naval Observatory, http://aa.usno.navy.mil/AA/data/docs/MoonFraction.... for the days of the year.

4. Set up a scatter plot of the fraction of the Moon showing in January versus the day of the year.

5. From the data or the graph, determine the amplitude and the vertical translation.

6. Find the cosine function that fits this data. Identify the phase shift for this function.

7. Find the sine function that fits this data. Identify the phase shift for this function.

8. Edit the data to graph the fraction of the moon showing in January and February versus the day of the year.

9. How well do your functions fit this extended data?

10. Determine which day of the year corresponds to today's date. Predict the phase of tonight's moon. Check the accuracy of your prediction using Today's Moon Phase, http://www.ezpics.com/gh/PredictMoonPh... .