



Do not need to answer.

- d) What kinds of surface features do you see on the Moon?
- e) Label each phase of the Moon correctly and explain briefly the positions of the Sun, Earth, and the Moon during each phase.

- b) On the same graph, plot the Moon phase using a bold line. Moon phases are assigned values that range from zero (new Moon) to four (full Moon).

Part C: Tides and Lunar Phases

1. Investigate the relationship between tides and phases of the Moon.
 - a) On a sheet of graph paper, plot the high tides for each city and each day in January shown in Table 1 below. To prepare the graph, look at the data to find the range of values. This will help you determine the scales for the vertical axis (tide height) and horizontal axis (date).

2. Repeat this process for low tides.
3. Answer the following questions in your Geo log:
 - a) What relationships exist between high tides and phases of the Moon?
 - b) What relationships exist between low tides and phases of the Moon?
 - c) Summarize your ideas about how the Moon affects the tides. Record your ideas in your Geo log.

Use the table for the question on the next page.

Table 1: Heights of High and Low Tides in Five Coastal Locations During January 2009 (All heights are in feet.)

Date	Moon Phase	Moon Phase	Kings Point, New York		Fort Pulaski, Georgia		Portland, Maine		Duck, North Carolina		New London, Connecticut	
			High	Low	High	Low	High	Low	High	Low	High	Low
1/04/09	First Quarter	2	5.9	-0.5	6.6	0.5	8.5	0.6	2.7	-0.5	1.9	-0.1
1/07/09	Waxing Gibbous	3	9.6	1.1	7.4	0.4	9.9	0.6	4.1	0.1	3.9	0.4
1/11/09	Full Moon	4	9.3	-1.5	8.5	-1.5	12.3	-1.5	4.7	-1.4	4.4	-0.8
1/15/09	Waning Gibbous	3	8.0	-0.6	7.1	-0.7	10.0	-1.5	3.5	-0.7	2.8	-0.3
1/18/09	Last Quarter	2	7.8	0.7	6.6	0.2	9.3	0.5	3.1	-0.2	2.6	0.1
1/21/09	Waning Crescent	1	9.1	0.8	6.4	0.7	9.7	1.5	4.0	1.1	3.5	0.8
1/25/09	New Moon	0	7.5	-0.5	7.0	0.1	9.5	0.2	3.8	0.0	2.7	0.8
1/31/09	Waxing Crescent	1	7.8	-0.3	6.7	-0.1	9.7	0.3	3.2	0.1	3.4	0.1

Moons and Tides

How many hours does it take earth to make a full rotation? _____

How many days does it take the moon to orbit around the Earth?

How many low tides and high tides are there in 24 hours? _____

How far apart (in time) are the low and high tides? _____

- * On graph paper, plot the high tides for each city and each day in January (look at the range of values to determine the scale). Use different colors for each city.

On the same graph plot the moon phase using a dark, bold line.

~~0 (zero) = new Moon; 4 = full moon~~ Draw the moon phase.

- * Repeat this process for low tides (using same city colors) but dashed line.

1. What relationships exist between high tides and phases of the moon?

2. What relationships exist between low tides and phases of the moon?

