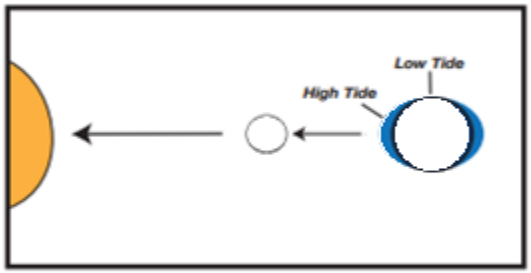
NAME _____HR__ /49

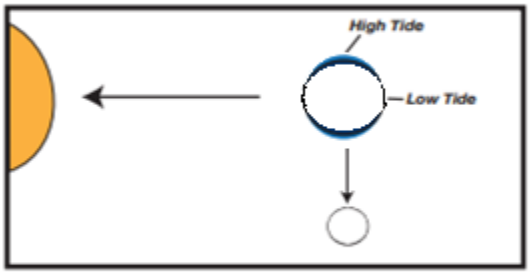
How do Tides Work?

Tides are the rise and fall of the ocean due to the gravitational pull of the sun and the moon. The orientation of the sun and the moon has an effect on the height of the tide; for example, if the sun and moon are pulling in the same direction their combined pull will have a greater effect than if they were pulling in different directions.

How do tides happen?



A Spring Tide is when the sun and moon pull together in the same direction. Spring tides have very high and very low tides.

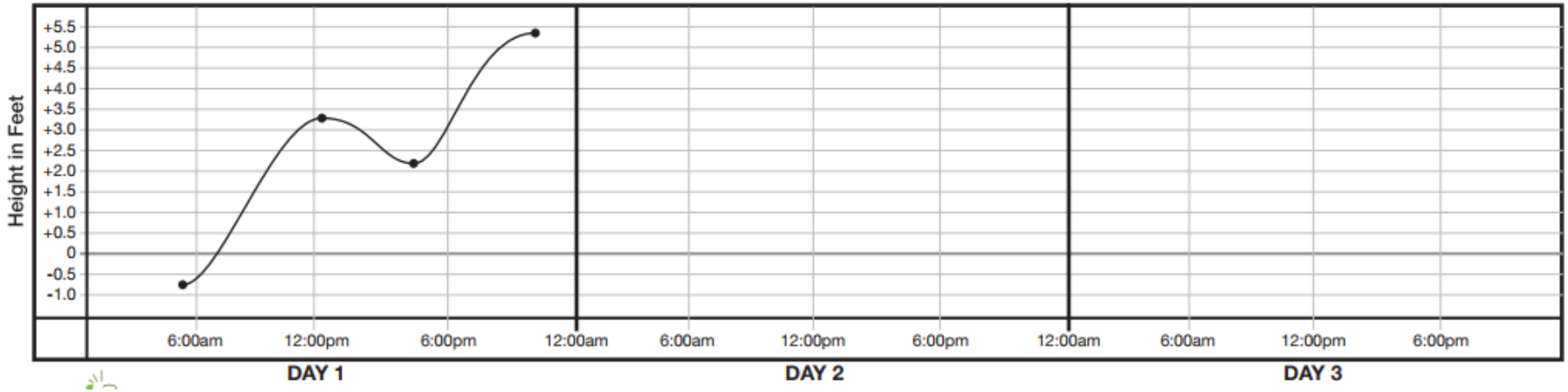


A Neap Tide is when the sun and moon pull in different directions. Neap tides have less extreme high and low tides.

Activity: Graph Changes in the Tides

DAY	HIGH TIDE 1	HIGH TIDE 2	LOW TIDE 1	LOW TIDE 2
1	+3.3 12:13pm	+5.4 10:28pm	-0.7 5:23am	+2.2 4:15pm
2	+3.3 12:55pm	+5.4 11:04pm	-0.8 6:00am	+2.3 4:54pm
3	+3.4 1:39pm	+5.3 11:43pm	-0.9 6:39am	+2.4 5:37pm

In the table to the left are sample data collected from Monterey, California that measures the tide levels for each high and low tide over three days. The points for day 1 have already been plotted for you. Plot the points representing each high and low tide for days 2 and 3 in the appropriate place below. Then complete the curved line from day 1, connecting it to the points you plotted for days 2 and 3.



1. Based on the previous graph, high tides happen how many times per day?
2. Based on the previous graph, low tides happen how many times per day?
3. How many minutes later did the high tide 1 occur from day 1 to day 2?
4. What type of tide is shown in the above graphing exercise?

5.	Force that attracts all objects with mass towards one another	A	Tidal range
6.	Difference between high tide and low tide	B	Tide
7.	Pulls on the water in oceans twice as much as the sun	C	Neap tide
8.	When high tides are lower and low tides are higher than normal	D	Moon
9.	Movement in which water in a lake or ocean rises and falls	E	Spring tide
10.	When the high tides are higher and low tides are lower than normal	F	gravity

11. Draw the shape of the water around Earth for each diagram and color in blue (4 pts)
12. Draw force arrows showing how the water is pulled (2 arrows on each picture- 8 pt total)
13. Properly shade the moon in each picture (4 pts)

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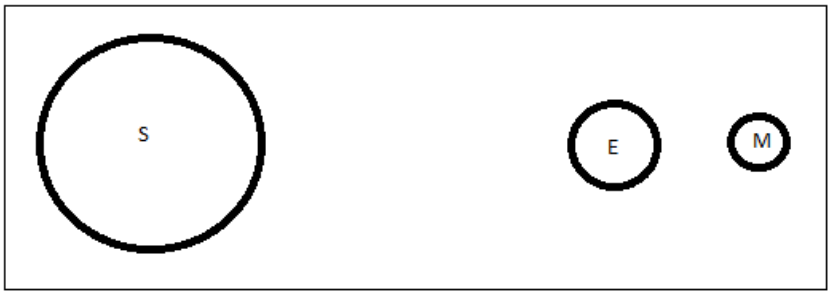
<td> 
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<td>14. What type of tide?</td>
<td>15. What type of tide?</td>
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<td>16. Which lunar phase?</td>
<td>17. Which lunar phase?</td>
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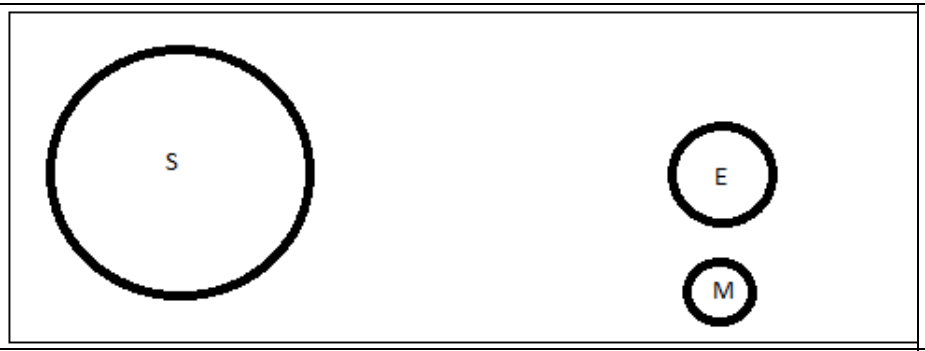
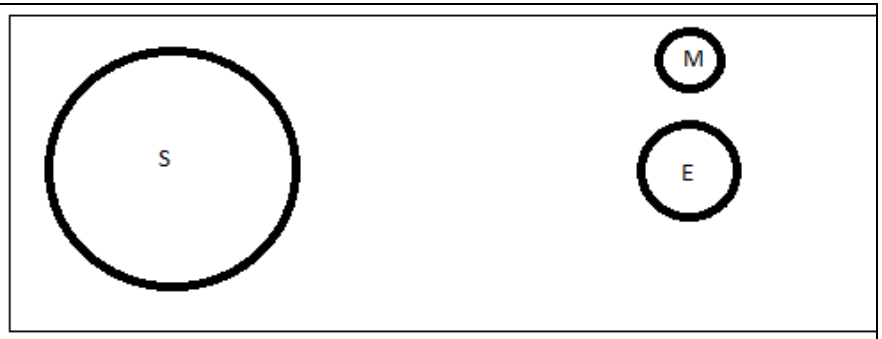
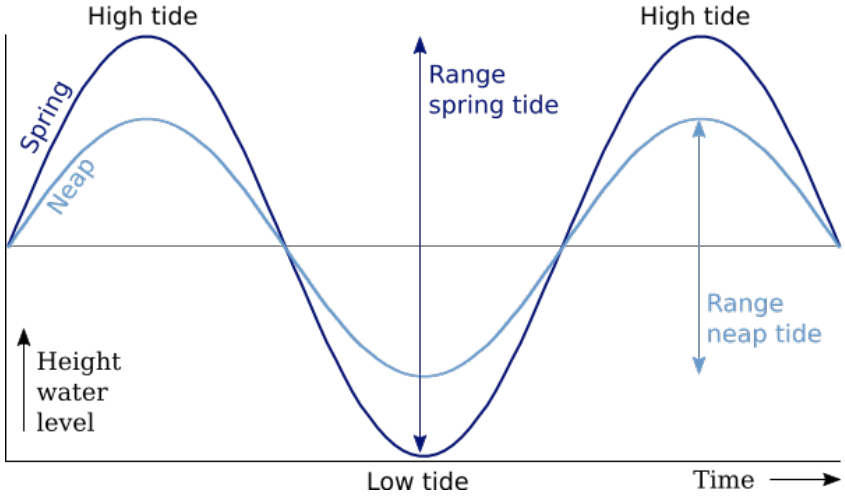
	
18. What type of tide?	19. What type of tide?
20. Which lunar phase?	21. Which lunar phase?

22. What causes the water opposite of the moon to also have a bulge?
23. Why are low tides low?



24. According to the graph, which type of tide has a greater tidal range?
25. Why do spring tides have higher high tides?