

## Tides Activities

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Phenomenon: [Hopewell Rocks Bay of Fundy](https://www.youtube.com/watch?v=EnDJ6_XpGfo)  
([https://www.youtube.com/watch?v=EnDJ6\\_XpGfo](https://www.youtube.com/watch?v=EnDJ6_XpGfo))

Activity 1 – Ocean Motion (virtual lab started last class)

Activity 2 - Modeling Tides

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Background Information - [Earth, Moon and the Sun](http://earthsky.org/earth/tides-and-the-pull-of-the-moon-and-sun)  
(<http://earthsky.org/earth/tides-and-the-pull-of-the-moon-and-sun>)



**Directions:** In the space below, draw a model showing how the interaction of the sun and moon cause **spring and neap tides**. Your model must include the following elements: (1) Earth, (2) moon, (3) Sun, and (4) Change in the “bulge” of water. If possible, include the terms **apogee** and **perigee** in your model.

## Activity 3 - Using Tidal Charts

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**Directions -** Using the [lunar calendar \(April 2019 Tide Schedule\)](https://www.timeanddate.com/moon/phases/) the dates and times for each phase of the moon during the month of April 2019. Find a suitable source for the information and write the results below.  
(<https://www.timeanddate.com/moon/phases/>)

Table 2: \_\_\_\_\_

	<i>Date</i>	<i>Eastern Standard Time</i>
<i>New Moon</i>		
<i>First Quarter</i>		
<i>Full Moon</i>		
<i>Last Quarter</i>		

Directions: Use the [tide chart for Gulf Harbor \(Milford, CT\) for April 2019](https://ct.us harbors.com/monthly-tides/connecticut-west/milford%20harbor/2018-10) to answer the following questions.

<https://ct.us harbors.com/monthly-tides/connecticut-west/milford%20harbor/2018-10>



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### Milford Harbor Tides - Apr/2019



41°13'N 73°3'W

7. Find the date and time for the highest high tide.

8. Find the date and time for the lowest low tide.

9. What is the term for the type of tide referred to in numbers 7-8? What phase of the moon is closest to the date(s) identified?

10. Which date has the smallest change between high and low tide?

11. What is the term for the type of tide referred to in number 10? What phase of the moon is closest to the date identified?

DATE	HIGH				LOW				☀️		☾
	AM	ft	PM	ft	AM	ft	PM	ft	RISE	SET	MOON
1 Mon	9:38	6.1	10:02	6.2	3:29	0.8	3:52	0.6	6:32	7:18	☾
2 Tue	10:23	6.2	10:43	6.5	4:14	0.5	4:33	0.4	6:31	7:20	☾
3 Wed	11:03	6.4	11:21	6.7	4:56	0.3	5:11	0.2	6:29	7:21	☾
4 Thu	11:42	6.5	11:56	6.8	5:35	0.1	5:47	0.1	6:27	7:22	☾
5 Fri			12:19	6.5	6:12	-0.0	6:23	0.1	6:26	7:23	☾
6 Sat	12:31	6.9	12:56	6.5	6:50	-0.1	6:59	0.2	6:24	7:24	☾
7 Sun	1:06	7.0	1:34	6.5	7:28	-0.2	7:36	0.3	6:23	7:25	☾
8 Mon	1:42	7.0	2:15	6.4	8:08	-0.1	8:16	0.4	6:21	7:26	☾
9 Tue	2:22	6.9	2:59	6.2	8:52	-0.0	9:00	0.6	6:19	7:27	☾
10 Wed	3:06	6.8	3:49	6.1	9:41	0.1	9:51	0.8	6:18	7:28	☾
11 Thu	3:58	6.7	4:45	5.9	10:37	0.3	10:50	0.9	6:16	7:29	☾
12 Fri	4:58	6.6	5:47	5.9	11:39	0.4	11:55	0.9	6:14	7:30	☾
13 Sat	6:05	6.5	6:52	6.1			12:44	0.4	6:13	7:31	☾
14 Sun	7:14	6.6	7:55	6.4	1:04	0.7	1:47	0.2	6:11	7:32	☾
15 Mon	8:19	6.8	8:54	6.8	2:10	0.4	2:47	-0.1	6:10	7:33	☾
16 Tue	9:20	7.0	9:49	7.2	3:11	-0.1	3:41	-0.3	6:08	7:35	☾
17 Wed	10:16	7.2	10:40	7.6	4:08	-0.5	4:33	-0.5	6:07	7:36	☾
18 Thu	11:08	7.3	11:29	7.8	5:01	-0.9	5:21	-0.6	6:05	7:37	☾
19 Fri	11:58	7.3			5:52	-1.0	6:08	-0.6	6:04	7:38	☾
20 Sat	12:16	7.9	12:46	7.2	6:40	-1.0	6:53	-0.4	6:02	7:39	☾
21 Sun	1:02	7.8	1:33	7.0	7:28	-0.9	7:39	-0.1	6:01	7:40	☾
22 Mon	1:48	7.6	2:21	6.7	8:15	-0.6	8:26	0.3	5:59	7:41	☾
23 Tue	2:34	7.2	3:10	6.4	9:03	-0.2	9:15	0.7	5:58	7:42	☾
24 Wed	3:23	6.8	4:01	6.1	9:53	0.2	10:07	1.0	5:56	7:43	☾
25 Thu	4:16	6.4	4:55	5.9	10:45	0.6	11:03	1.3	5:55	7:44	☾
26 Fri	5:12	6.0	5:52	5.8	11:40	0.9			5:54	7:45	☾
27 Sat	6:11	5.8	6:49	5.8	12:03	1.4	12:36	1.1	5:52	7:46	☾
28 Sun	7:11	5.8	7:44	5.9	1:03	1.4	1:31	1.1	5:51	7:47	☾
29 Mon	8:07	5.8	8:35	6.1	2:00	1.2	2:22	1.0	5:50	7:48	☾
30 Tue	8:59	5.9	9:22	6.4	2:52	1.0	3:08	0.8	5:48	7:50	☾

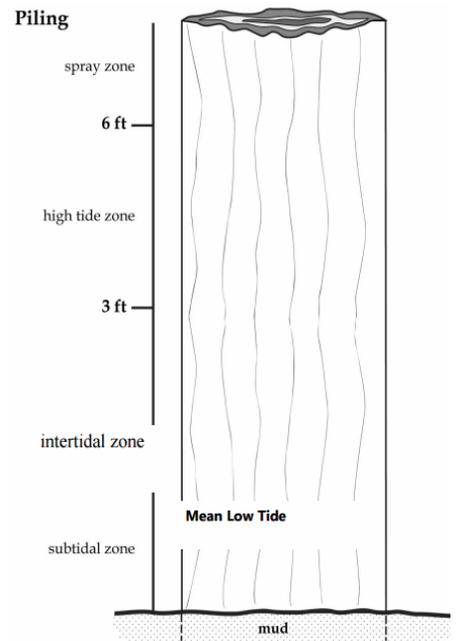
12. Low tide is a great time to see a number of organisms in the intertidal zone. What are three possible dates during the month of November that we could go to the beach if we arrive around 9:00 am and depart around 12:00pm?

13. Draft (or draught) is a characteristic of a boat that is the vertical distance between the waterline and the bottom of the hull (called the keel). You are going on a scientific research expedition and your research vessel has a 7.4 foot draft. What days and times would be the best to venture out on your expedition?



## Dock Piling Model

1. Use the image of the dock piling as a template for a life size model on butcher (poster) paper. Pilings are easy places to show the vertical changes in sea level caused by tides and thus demonstrate intertidal habitats.
2. Use “sticky notes” to indicate the top of the mud into which the piling is driven and a low tide and high tide mark about 6 feet apart.
3. Review the critter cards and determine as a group where you think the animals would live on a piling.
4. Once you are confident you have placed them correctly then tape/glue them down.



**Directions:** In the following table, list the animals which may live in each zone from the cards given to each group.

Table 3: \_\_\_\_\_

<i>Spray Zone</i>	<i>High Tide Zone</i>	<i>Intertidal Zone</i>	<i>Subtidal Zone</i>

15. As a group, brainstorm biotic/abiotic factors and physical forces facing animals living in these areas and describe what special adaptations allow them to survive. Consider making T-charts.