

You are lost on an island, and you have created the diagrams on the next page. Use those diagrams to answer questions 1-10. Numbers 11-15 (separated by lines) do not relate to your diagrams.

1. What is your island's latitude?  
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
  2. What is your island's longitude?  
0-15W 15-30W 30-45W 45-60W 60-75W 75-90W 90-105W 105-120W 120-135W  
135-150W 150-165W 165-180W  
0-15E 15-30E 30-45E 45-60E 60-75E 75-90E 90-105E 105-120E 120-135E  
135-150E 150-165E 165-180E
  3. Which way will you need to travel in order to get to Essex the fastest? Eastward Westward
  4. Do you have prevailing winds that blow in that direction?  
Yes No
  5. Which solstice is coming next? Summer Winter
  6. What is the current altitude (angle) of sunlight at noon?  
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
  7. What is the present moon phase?  
Full New Waxing (1<sup>st</sup>)Quarter Waning (3<sup>rd</sup>) Quarter  
Waxing gibbous Waning Gibbous Waxing Crescent Waning Crescent
  8. Approximately how many weeks will you have to wait until there is a spring tide?  
0 ½ 1 1½ 2 2½ 3 3½ 4
  9. By monitoring the tides over a period of several weeks, you've noticed that high and low tides are shifted **3 hours forward** by the friction of the rotating Earth. What is the approximate time of high tide, today?  
3AM/PM 6AM/PM 9AM/PM 12AM/PM
  10. You think there is a lunar eclipse some time during the next month. If you're right, in how many weeks will the eclipse occur?  
0 ½ 1 1½ 2 2½ 3 3½ 4
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For questions 11 and 12, suppose your latitude is 60° and the current altitude of sunlight at noon is 10°.

11. What is the approximate current tilt of the Earth's axis (in degrees toward the sun, for the Northern Hemisphere)?  
0 +5 +10 +15 +20 +25 -5 -10 -15 -20 -25
12. How many hours of daylight will you have today? Make a thin, dark line on the timeline.  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

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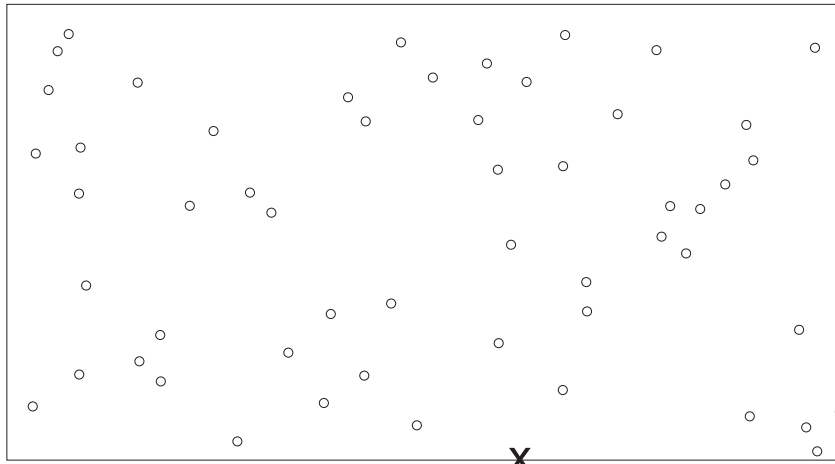
13. Suppose the tilt of the North Pole (relative to the sun) is -18° and the next solstice will be the summer solstice. Make a thin, dark line on the timeline in the position of the correct date.  
1/1 2/1 3/1 4/1 5/1 6/1 7/1 8/1 9/1 10/1 11/1 12/1 1/1

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14. If the date is March 10<sup>th</sup>, what is the current season?  
Winter Spring Summer Fall

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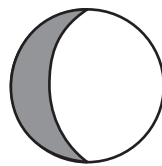
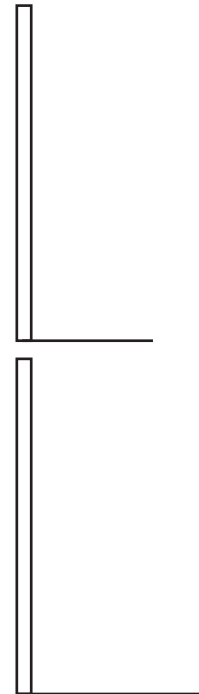
15. At a latitude of 35°N, are the winters particularly wet or dry?  
Wet Dry Neither



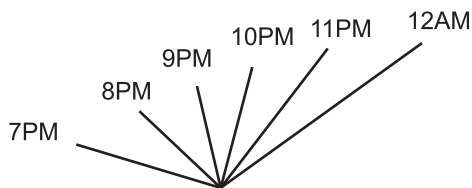
The night sky. The "x" represents the position of your eye ball.

Shadow cast by a vertical stick at noon today

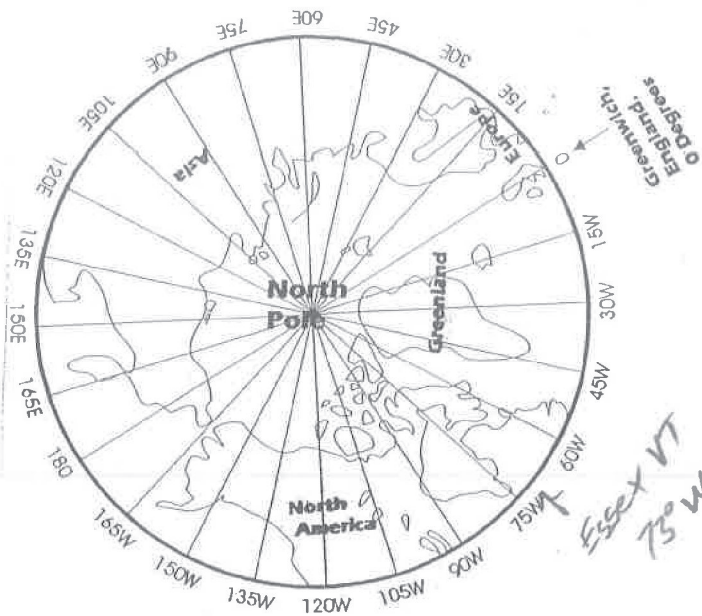
Shadow cast by the same stick at noon a few days ago



The Moon, Today



Shadows cast by a vertical stick (Times in Essex are shown)



Time Versus Axial Tilt

