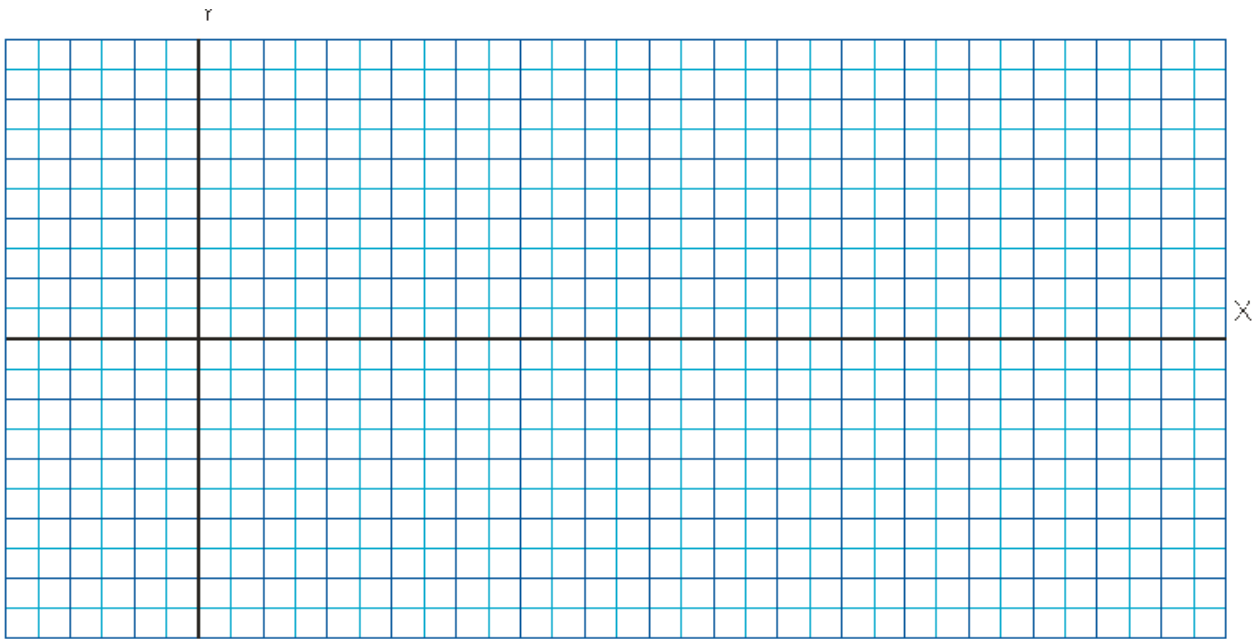


Interpreting Periodic Graphs

Data was collected for the rising and falling tides on the ocean. High tide was 6m above the ocean floor and occurred at 8am. 10hrs later at low tide, the height above the ocean floor was 2m. Graph 2 complete cycles of the tide, starting at high tide (8am).



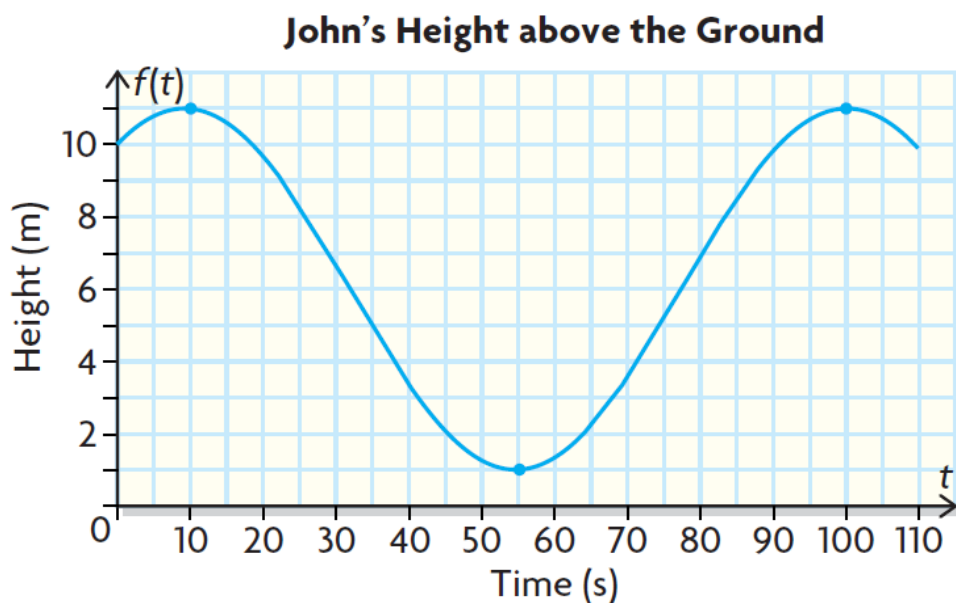
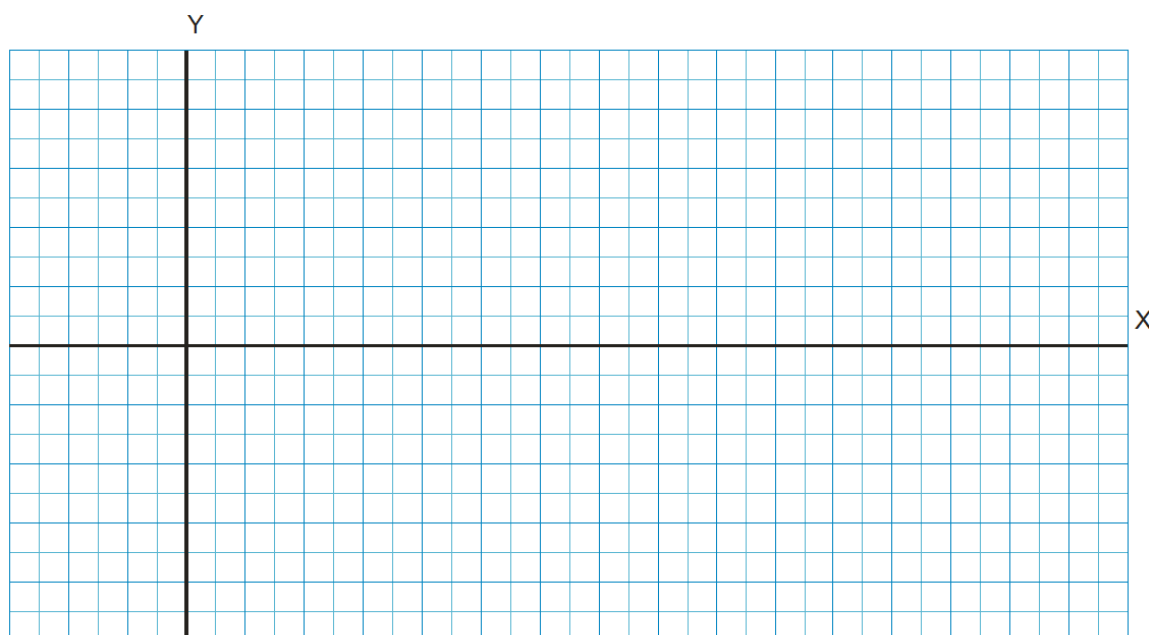
- What is the depth of the water at 3pm on the first day?
- For how many hours is the water level below 3m on the first day?
- What is the water level at 8am on the second day?

Challenge

What is the equation that models the tidal height?

Example 1

A group of students is tracking a friend, John, who is riding a Ferris wheel. They know that John reaches the maximum height of 11m at 10 s and then reaches the minimum height of 1m at 55 s.



Reflecting

- A. If it took John 60 s instead of 90 s to complete one revolution, how would the sinusoidal function change? State the value and type of transformation associated with this change.
- B. If the radius of the Ferris wheel remained the same but the axle of the wheel was 1 m higher, how would the sinusoidal function change? State the value and type of transformation associated with this change.
- C. If both characteristics from parts A and B were changed, what would be the equation of the sinusoidal function describing John's height above the ground in terms of time?

Practice

page 348-9 #1,3 - 6

page 357 #3, 4

page 376 #20