

# Reading Graphs (Carefully)

by Sophia



## WHAT'S COVERED

In this lesson, you will investigate the different kinds of information that can be extracted from graphs. Specifically, this lesson will cover:

### 1. Information Related to a Graph

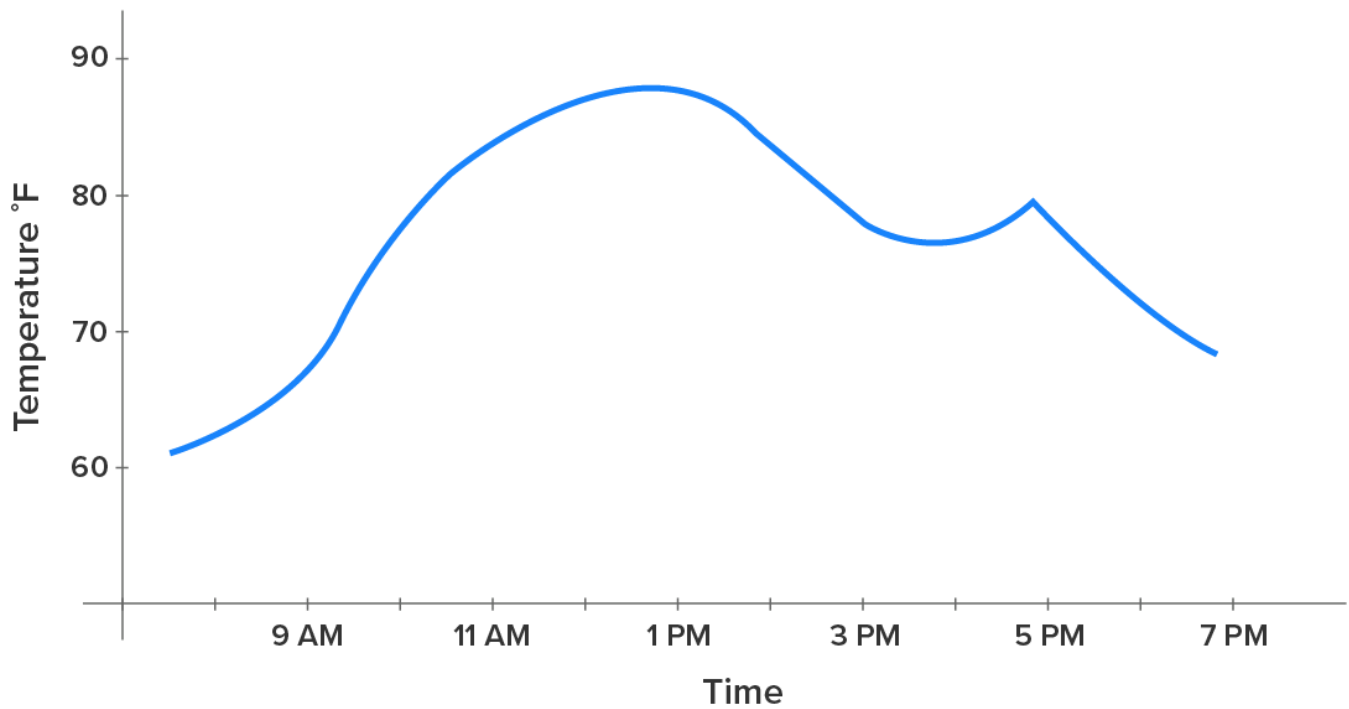
#### 1a. Using Specific Points on a Graph

#### 1b. Using the Shape of a Graph

### 2. Applications of Graphs to Real-Life Situations

## 1. Information Related to a Graph

Consider the graph below, which shows the temperature throughout the day.



### 1a. Using Specific Points on a Graph

Using the graph above, we can extract the following information by examining points on the graph:

- At 9 AM, the temperature is roughly  $65^{\circ}\text{F}$ .
- The high temperature of the day was recorded at 12:30 PM and was about  $87^{\circ}\text{F}$ .

### 1b. Using the Shape of a Graph

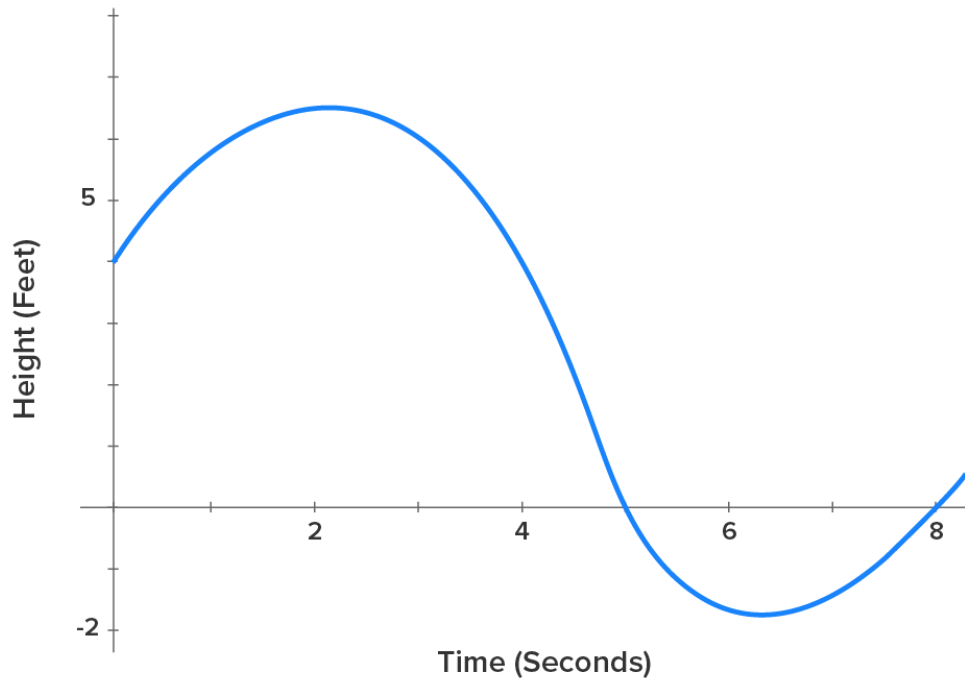
Using the same graph, we can extract the following information by observing the shape of the graph.

- The temperature appears to have risen most sharply at 9 AM.
- The temperature dropped after 1 PM, but then rose slightly around 3:30 PM, then started falling again at 5 PM.
- At 5 PM, the graph started falling sharply and suddenly. It's possible that a cold front came through, it started raining, or a storm came through.

## 2. Applications of Graphs to Real-Life Situations



Consider this graph, which shows the height of a diver after jumping off the diving board.



How high was the diving board?

+

4 feet (the starting point)

How long after jumping did the diver strike the water?

+

5 seconds (the first x-intercept)

How far underwater did the diver go?

+

About 1.5 feet (the lowest y-value)

When did the diver resurface?

+

8 seconds

After jumping off the diving board, at what times was the diver descending?

+

Between 2 and 6.5 seconds

### How long was the diver underwater?

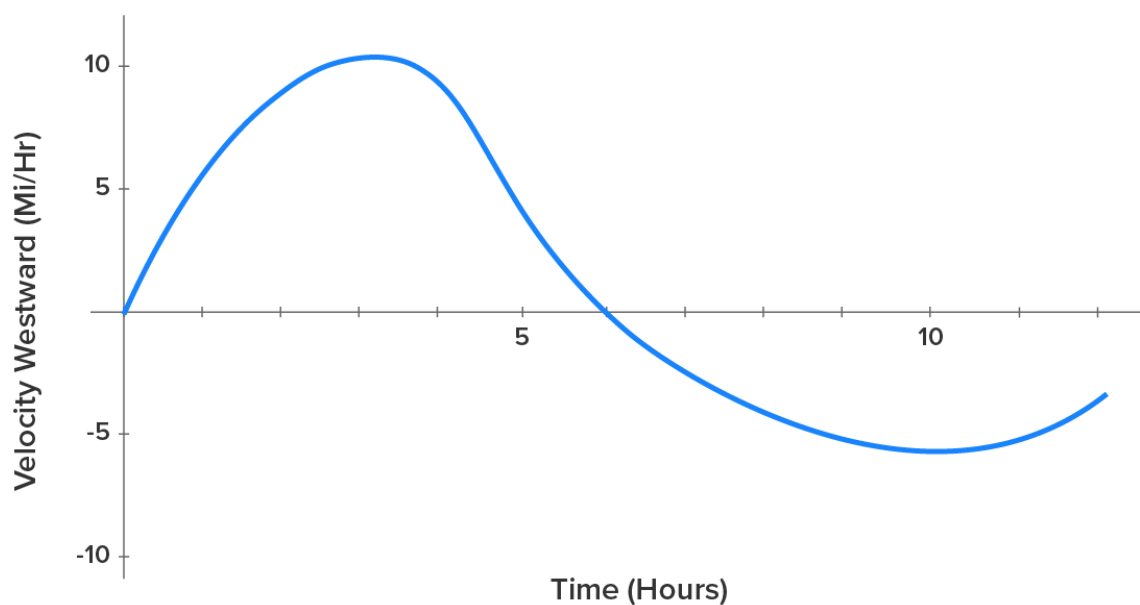
+

The diver entered the water after 5 seconds and surfaced again after 8 seconds, so this means that the diver was underwater for 3 seconds.



TRY IT

The graph below shows the velocity (heading west) of a boat heading away from St. Thomas (to the west).



### When is the boat travelling fastest?

+

Around 3 hours, when the graph is at its peak. It looks like the velocity is about 10 mi/hr.

### What does a negative velocity mean?

+

In this case, since a positive velocity means the boat is heading west, a negative velocity means the boat is heading east.

### When is the boat furthest from St. Thomas?



After 6 hours, the velocity transitions from positive to negative, which means that the boat was at its furthest point west before heading east again.



#### SUMMARY

In this lesson, you learned that graphs are very useful since they are a visual representation of a situation. They can be created quite easily using technology, so it is important to consider many aspects of the graph. You learned how to extract **information related to a graph** by **using specific points on a graph** and **using the shape of a graph**. You also explored several **applications of graphs to real-life situations** to apply your knowledge of the different kinds of information that can be extracted from graphs.

SOURCE: THIS WORK IS ADAPTED FROM CHAPTER 0 OF *CONTEMPORARY CALCULUS* BY DALE HOFFMAN.