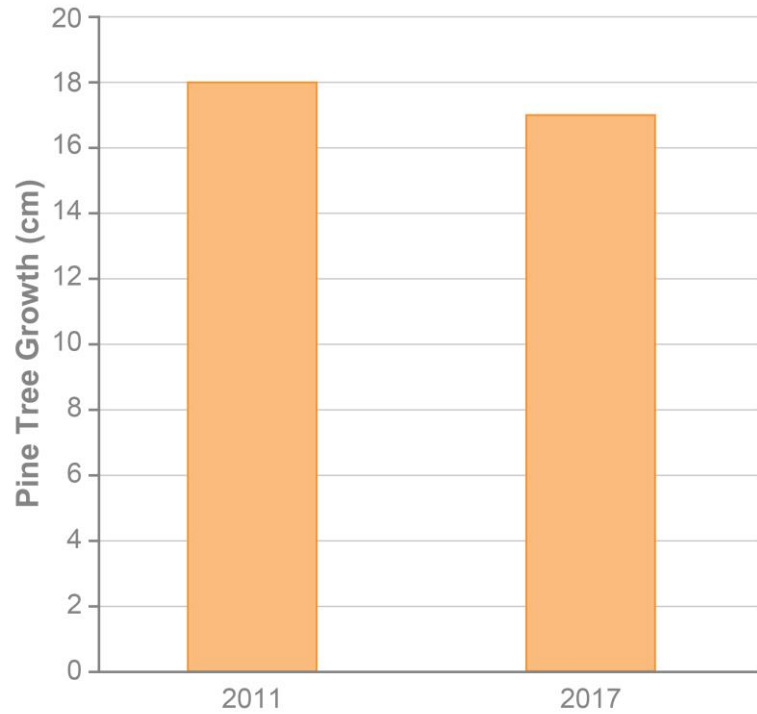


Make sure the student's work accomplishes the following.	Points Possible	Points Earned
The data is entered accurately, and the table includes titles and labels.	20	
The bar chart is accurate and contains titles and units. The <i>x</i> -axis is "Year" and the <i>y</i> -axis is "Pine Tree Growth (cm)." See sample in scoring guide (below).	30	
Averages for the chart were calculated correctly.	20	
Accurate paragraph with answers to analysis questions is included and matches the graph data (with justifications). See sample answers in scoring guide (below).	30	
Total	100	

Scoring Guide

Sample Graphs:

Average Growth Rates for Pine Trees in Normal Rainfall and Drought Years



Rubric (continued)

Paragraph:

Student should submit a paragraph that includes the following:

- a. Describe the growth rate for both years. (10pts)

The average growth rate was smaller for the year with less water than the year with normal rainfall. In 2011, the year with normal rainfall, the average growth rate was about 17.9 cm while for 2017, the year with about half as much rain, the average growth rate was 16.8 cm. This is a difference of a little more than 1 cm, on average.

- b. Assuming that the difference in growth rate is significant, what does this mean about pine tree growth? (5pts)

The rainfall may have an effect on the growth rate of pine trees, as there was less growth observed in the year with less rainfall.

- c. What other factors might affect the growth rate of pine trees? (5pts)

Competition, density of pine trees, other available resources, age of the pine tree, and sunlight might affect the growth rate of pine trees.

- d. Describe another set of data you would look at to analyze the growth rate of pine trees. (10pts)

I would track the growth of pine trees in another forest over two years. I would measure the rainfall and the growth each year. Then, I would compare the growth rates for each year to see if more rainfall equals more growth, as it did in this experiment.