

Dr. Katiraie Math 115A Notes For Section 2.2 (Graphs, Picturing Growth)

Making a graph

Day ()	1	2	3	4
Cars Sold ()	3	6	5	2

Draw Picture

Key concept—A scatterplot is a graph consisting of _____ points, with each _____ corresponding to a data point

Key concept—To make a line graph we begin with a scatterplot and _____ the _____ points with straight line _____.

Copy down the example

- ▶ **Example:** The running speed of ants varies with the ambient temperature. Here are data collected at various temperatures:

First make a scatterplot of the data showing the speed as the function and the temperature as the independent variable, then make a line graph using these data.

Temperature (degrees Celsius)	Speed (centimeters per second)
25.6	2.62
27.5	3.03
30.4	3.56
33.0	4.17

Using your graphing calculator

- Step 1
- Step 2
- Step 3
- Step 4
- Step 5
- Step 6
- Step 7
- Step 8
- Step 9

We join the points with line segments to get the line graph.

Now you try using your graphing calculator input the following data (which indicates the height of a sunflower as a function of its age).

Age (days)	Height (cm)
5	17.43
35	100.88
41	128.68
61	209.84
70	231.23

Interpreting graphs: Look at how the data _____ maximums and _____

- ▶ Example: The line graph in Figure 2.18 shows the yearly gross income in thousands of dollars for a small business from 2002 through 2011. Explain what this graph says about the rate of growth of yearly income.

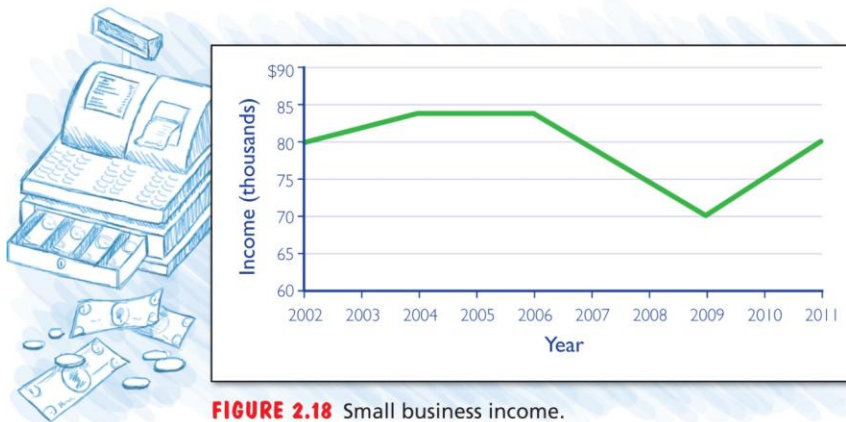


FIGURE 2.18 Small business income.

Key concept-smoothed line graphs are made from a _____ by joining data points smoothly with _____ instead of line segments.

Try an example yourself

- ▶ Example: The graph of the amount of toxic waste remaining as a function of time is decreasing at a decreasing rate. Sketch an appropriate graph for the amount of toxic waste remaining as a function of time.

In practical settings, the growth rate has a familiar meaning.

- ▶ **Example:** The graph in Figure 2.24 shows a population that increases from a time and then begins to decrease. The growth rate in this context is the rate of population growth. The growth rate is positive in Year0. It remains positive until we reach Year3, where the growth rate is 0. Beyond Year3 the growth rate gets negative through Year5.

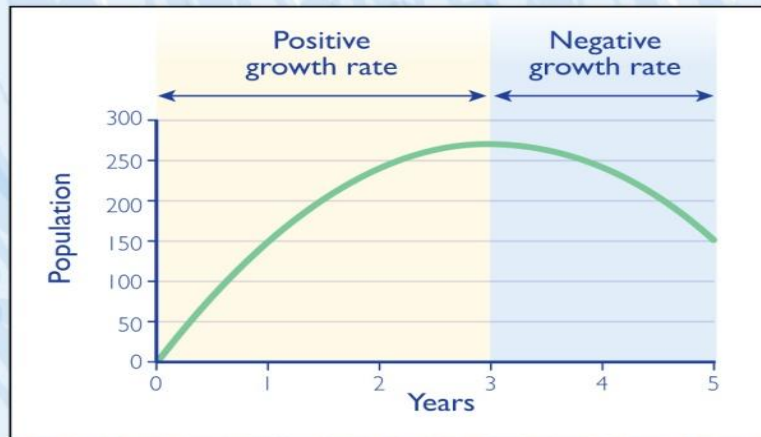


FIGURE 2.24 A population graph.