

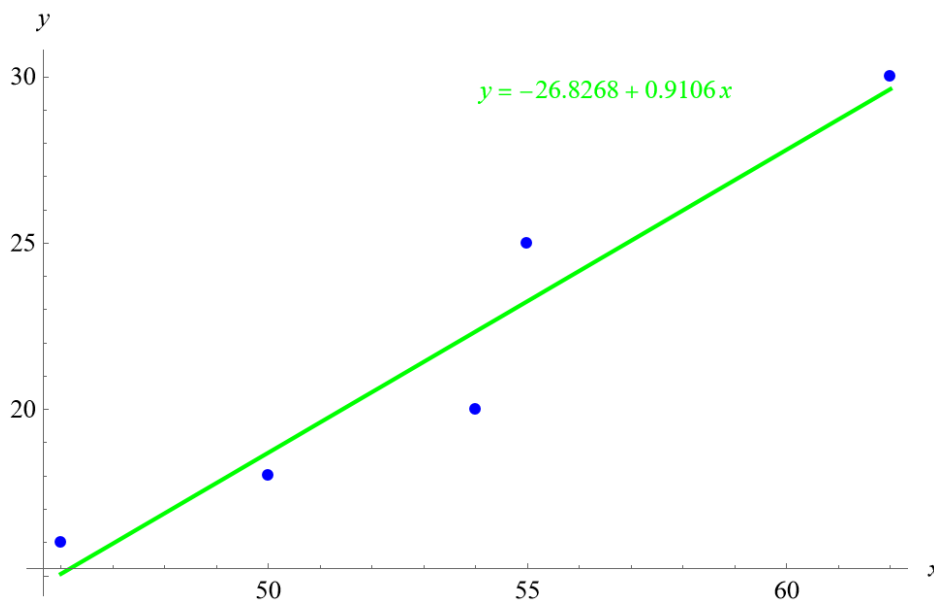
Exercise 13

For the following data, draw a scatter plot. If we wanted to know when the temperature would reach 28 °F, would the answer involve interpolation or extrapolation? Eyeball the line and estimate the answer.

Temperature, °F	16	18	20	25	30
Time, seconds	46	50	54	55	62

Solution

Graph the following points on a coordinate system: (46, 16), (50, 18), (54, 20), (55, 25), and (62, 30).



Mathematica's FindFit function is used to determine the line best fit to represent the data. Since 28 lies inside the range of the data we have ($16 \leq y \leq 30$), this is interpolation. Set the output equal to 28 and solve for x , the time.

$$28 = -26.8268 + 0.9106x$$

$$54.8268 = 0.9106x$$

$$x = \frac{54.8268}{0.9106} \approx 60.21$$

According to the model, the temperature becomes 28 °F at about 60 seconds.

[**TYPO: The answer at the back of the book should be in seconds, not Fahrenheit.**]