

## Writing Lines of Best Fit

In this lesson students will graph a scatterplot for data, fit a line to the data, write an equation for the line, and then use this line to predict and interpret the data.

Situation 1:

Step 1. The data in the chart represents the distance a person is from a CBR at various times. Have students create a scatterplot for the data. Ask students if the data appears to be approximately linear. Using a ruler, have students draw a line that approximates the data.

Ask students to name three points (not necessarily data points) that are on the line.

Ask students to determine the slope of the line using their three points. (Using any two points should give the same slope, so all three calculations should lead to the same slope.)

Ask students to identify the y-intercept for this data.

Use the slope and the y-intercept to write the equation for the line.

X	Y
0	3
2	5.5
4	8
6	9.5
7	12
10	15
15	21

Step 2. Think about the answers to these questions:

- How can you tell the student is walking away from the CBR?
- What does the slope tell you about the walk away from the CBR?
- Notice that all the data points are not on the line of best fit. What does it mean when a data point is above the line of best fit? Below the line of best fit? On the line of best fit?
- Using the line of best fit determine the position of the student at 5 seconds. Where was the student at 20 seconds?
- Using the line of best determine when the students was at 39 feet from the CBR?
- What is the significance of the y-intercept in this real situation?

Situation 2:

Step 1. Draw a scatterplot for Adana's temperature chart. Draw a line of best fit. Select two points on the line of best fit. Write the slope of the line of best fit. Determine the y-intercept of the line of best fit.

x = degrees Celsius  
y = degrees Fahrenheit

X	Y
0	32
5	41
10	50
15	59

Step 2. Write an equation for the line of best fit.

Step 3. Use the line of best fit to

- A. Determine the meaning of slope in this real problem.
- B. Predict the Fahrenheit temperature when the Celsius temperature is 12 degrees. 30 degrees.
- C. Predict the Celsius temperature when the Fahrenheit temperature is 45 degrees. 80 degrees.
- D. If a data point is above the line of best fit, what does it mean?
- E. If a data point is below the line of best fit, what does it mean?

Situation 3:

Assign situation 3 for students to complete on their own. They should create a scatterplot, draw a line of best fit, locate two points on their line of best fit, find the slope of the line of best fit and the y-intercept, and write the equation for the line of best fit.

Students should interpret the real meaning of the y-intercept and the slope. Using the line of best fit, find the number of times Elina walked around the block on days 5 and 12.

Explain why the slope of this line of best fit is negative. On what day will Elina walk zero times around the block?

X	Y
0	30
1	28
2	27
6	22
10	15
15	7