Using and Interpreting a Mathematical Model

Let's use a model to make some predictions.

12.1 Using a Mathematical Model

In an earlier activity, you found the equation of a line to represent the association between latitude and temperature. This is a *mathematical model*.

1. Use your model to predict the average high temperature in September for the following cities that were not included in the original data set:
   a. Detroit (Lat: 42.33 degrees north)
   b. Albuquerque (Lat: 35.09 degrees north)
   c. Nome (Lat: 64.50 degrees north)
   d. Your own location (if available)
2. Draw points that represent the predicted temperatures for each city on the scatter plot.
3. The actual average high temperature in September in these cities were:
   - Detroit: 74 degrees Fahrenheit
   - Albuquerque: 82 degrees Fahrenheit
   - Nome: 49 degrees Fahrenheit
   - Your own location (if available):

   How well does your model predict the temperature? Compare the predicted and actual temperatures.

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4. If you added the actual temperatures for these 4 cities to the scatter plot, would you move your line?

5. Are there any outliers in the data? What might be the explanation?

12.2 Interpreting a Mathematical Model

Refer to your equation for the line that models the association between latitude and temperature of the cities.

1. What does the slope mean in the context of this situation?

2. Find the vertical and horizontal intercepts and interpret them in the context of the situation.

3. What is the model not good at predicting? Explain your reasoning.