**Twizzlers Linear Regression Pre-Activity & Worksheet**

**Procedure**

1. Obtain a Twizzler from your teacher.
2. Use a ruler to measure the Twizzler length in centimeters (cm). Record in the data table below.
3. Take a small bite out of the Twizzler.
4. Measure the new length of the Twizzler in cm and record below.
5. Continue steps 3-4 until the Twizzler is gone.
6. Answer the analysis questions on the next page.

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| **Bite Number** | **Licorice Candy Length (cm)** |
| **0** |  |
| **1** |  |
| **2** |  |
| **3** |  |
| **4** |  |
| **5** |  |
| **6** |  |
| **7** |  |
| **8** |  |
| **9** |  |
| **10** |  |
| **11** |  |
| **12** |  |
| **13** |  |
| **14** |  |
| **15** |  |

**Analysis Questions**

1. What is the independent variable? (We will graph this on the x-axis.)
2. What is the dependent variable? (We will graph this on the y-axis.)
3. Did the length of the Twizzler bite change between bite 1 and bite 2?
4. Did the length of the Twizzler bite change between bite 3 and bite 4?
5. Would you expect all bites to be the same length? Why or why not?
6. **On a piece of graph paper**, create a scatter plot.   
   Put bite number on the x-axis and Twizzler length on the y-axis.
7. Does the relationship appear to be linear? Why?
8. Is the relationship increasing or decreasing? How do you know?
9. Whether the relationship appears to be linear or not, perform a linear regression of the form y = mx + b. Write the regression equation below.
10. The value of b represents the y-intercept of the regression equation.   
    What is your b value? Be sure to include units!
11. What does the y-intercept tell you in this situation?
12. What would you expect the y-intercept of your graph to be? What variables could account for this difference in the expected y-intercept and the actual y-intercept of your regression equation?
13. The value of m represents the slope (or rate of change) of the regression equation.   
    What is your m value? Be sure to include units!
14. Use the regression equation to predict the number of bites it would take you to eat 5 cm of licorice.
15. Use the regression equation to determine the amount of licorice you could eat in 7 bites.