Name: _____ Date: _____ Class: _____

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.

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

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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.