

Lesson Title: How Long Does it Take?		Pre 6.9
Utah State Core Standard and Indicators Pre-algebra Standard 2 Process Standards 1-5		
Summary		
In this lesson, students collect data which relates the change in measurement of hard candy over time as they suck the candy. The lesson introduces students to a line of best fit and using the graphing calculator. Slope and y-intercept are also included.		
Enduring Understanding	Essential Questions	
Tracking data in the real world usually doesn't give us a perfectly consistent story. We use lines of best fit to track a general or average rate of growth.	How do you track and analyze real-world data?	
Skill Focus	Vocabulary Focus	
<ul style="list-style-type: none"> • Tracking data • Slope and line of best fit • Graphing linear equations 		
Assessment		
Materials: Circular or rectangular candy for each student (Jolly Ranchers, mints), timer, worksheets, graphing calculators, centimeter rulers		
Launch		
Explore		
<ul style="list-style-type: none"> • Why do we use graphs to interpret numeric data? • What is a line of best fit? Why do we use a line of best fit? • What determines the slope of a line on a graph? What does that slope represent? • What does the y-intercept tell us about our data? 		
Summarize		
Apply		

Directions:

Students will create a linear graph by measuring the width, length, or diagonal of a rectangular piece of candy or the diameter of a circular piece of candy as they suck on the candy and record data after 1 minute, 2 minutes, and so on.

1. Give each student a piece of candy, a centimeter ruler, and a worksheet.
2. Have students open their candy and measure its thickness and record it on the table on their worksheet.
3. Students will now begin to suck on their candy for 30 seconds. After 30 seconds have passed have the students take their candy out and measure again. Repeat this process for 3 to 4 minutes.
4. Lead the class in choosing an appropriate scale for the data, labeling the axes, and plotting the data. At this time you could review independent and dependent variables, positive and negative correlations, and discuss lines of best fit.
5. Complete the activity as presented on the student's worksheet.

Pre 6.9

How Long Does It Take?
(Recording Sheet)

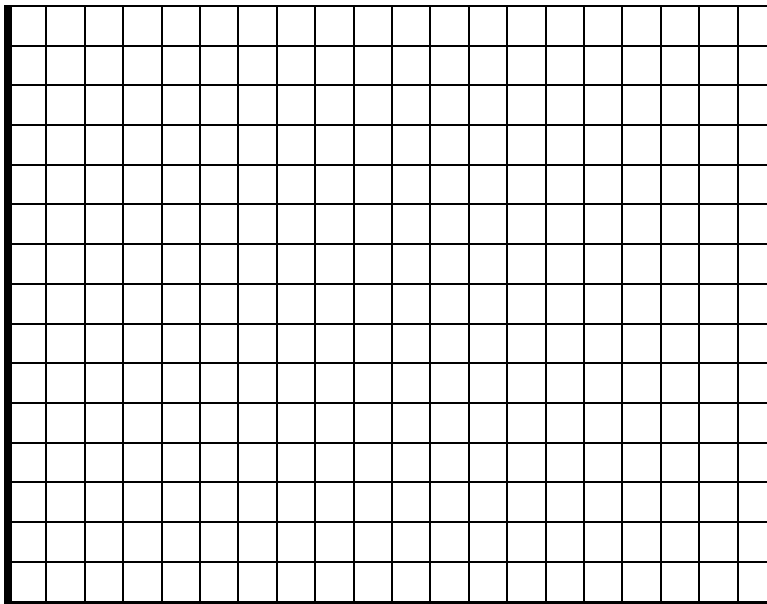
Name _____ Date _____ Period ____

1. Record your data from measuring your candy on the table below.

<i>Time (seconds) Candy in your mouth</i>	<i>Measurement of the Candy (mm)</i>
0	
30	
60	
90	

2. Make a scatter plot of the data you collected measuring your candy and label the axes appropriately.

_____ (Title)



- 3. Which variable is independent and why?
- 4. Which variable is dependent and why?
- 5. What type of correlation does the scatter plot show and why?

6. Explain why you think the plotted points of your data do not form a straight line?

7. Estimate and draw a line which “fits” the plotted points the best for the candy. Draw this on the scatter plot above. This is called the *line of best fit*.

8. Find an equation for your line of best fit. (Do this by hand.)
Remember m is slope and b is the y -intercept.

$$m = \underline{\hspace{2cm}} \qquad b = \underline{\hspace{2cm}}$$

$$y = \underline{\hspace{4cm}}$$

9. What does the slope represent?

10. What does the y -intercept represent?

11. Repeat question 2 using the graphing calculator to plot your data.

What about your window?

- a. The x -axis will contain the minutes
Enter an appropriate range for this data.
Lowest (x min) _____
Highest (x max) _____
Increments (x scl) _____
- b. The y -axis will contain your measurements
Enter an appropriate range for this data.
Lowest (y min) _____
Highest (y max) _____
Increments (y scl) _____

12. Label the axes with the quantity and units and sketch the results from question



