*Adapted to from an activity by Mary Mortlock.*

*Original student activity can be found on MathNspired.com >Statistics >Describing Bivariate Data.*

Our goal with this activity is to investigate the relationship between the size of a person’s hand and how many Tootsie PopsTM that person can pick up. If our model is good enough, we can predict the number of Tootsie PopsTM someone can pick up based on his or her hand span.

1. Some people have a larger and/or stronger dominant hand. You must decide as a class, which hand will each person use: the left, the right, the dominant hand, or the weak hand?
2. Will students get a “practice grab” or just one chance?
3. Hand span refers to the distance between the tip of your thumb and the tip of your pinkie. You must agree as a class, how will you measure hand span: with all five fingers outstretched, or with the middle three fingers tucked in?
4. What units will you use to measure hand span: inches, centimeters, or something else?
5. Why are these questions important? What would happen if everyone used his or her own system for conducting this study?
6. We want to use hand span to predict the number of Tootsie PopsTM a person can pick up. Which is the explanatory (predictor) variable, and which is the response variable?
7. Draw a sketch of what you think the graph of our data will look like. Be sure to label your axes.

 

1. Each person should measure his or her hand span according to the rules the class agreed upon.

 Handspan\_\_\_\_\_\_\_\_\_\_\_ Number of Tootsie Pops TM ­\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Enter your data in the quick poll.

1. I will send you a document with the data from the class. Insert a Data & Statistics page, and make a scatterplot of the data.

Algebra 1

Add a moveable line. Press **menu >Analyze >Add Movable Line**. Move the line to get the “best” fit.

1. What is the meaning of the y-intercept in this context?
2. What is the meaning of the slope in this context?
3. Do they make sense?

Algebra 2

Show the Linear Regression. Press **menu >Analyze >Regression >Show Linear**.

1. Predict the number of Tootsie PopsTM picked up by someone with a hand span of 22 cm.
2. Predict the number of Tootsie PopsTM picked up by someone with a hand span of 27 cm.
3. Which prediction do you feel is more reliable, and why?

Statistics

Turn on the Diagnostics. Press **menu >Settings**. Check the box next to Diagnostics.

1. Interpret r2.

Show the residual plot. Press **menu >Analyze >Residuals >Show Residual Plot**.

1. Identify and discuss any outliers or influential points.
2. Discuss sources of error in the data collection.