Lesson Title:	Statistics: Scatter Plots
Subject Area:	Math
Grade Level:	8th
Duration:	2 Days
Format (#students/group):	Partner and Individual
Overview:	Scatter plots is a single chapter covered in 8th grade. Students will complete the 6 day unit prior to the assessment project. Lesson 1 Interpret Scatter Plots; Lesson 2 Construct Scatter Plots Lesson 3 Construct Scatter Plots; Lesson 4 Clustering and Outliers Lesson 5 Patterns Association; Lesson 6 Line of Best Fit **Day 1 Assessment Project Day 1: Parachute Drop** **Day 2 Assessment Project Day 2: Scatter Plot Construction and Analysis** This assessment will have students construct a parachute device using bags, napkins, trash bags, etc. and measure the surface area of the parachute and time to drop from one story. As an extension, the drop could include an egg and the students would try to keep the egg from breaking. Students will then use the knowledge attained throughout the chapter to construct an appropriately labeled and scaled graph while identifying key concepts of scatter plots, such as clusters and outliers, association, and line of best fit.
Educational Standards:	8.SP.A.1- Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear or nonlinear association, and line of best fit. 8.SP.A.2- Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that would suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
Unit Question:	Real world data is messy. How can you make sense of it
Focus Question/ Purpose:	How are scatter plots better than words or tables for making sense out of real-world data? How does the surface area of a parachute effect the time it takes to fall a specific distance?
Desired Outcomes:	Students will design and test a parachute and collect data. Students will construct a scatterplot identifying key characteristics of the graph.
Activity Details/ Instructions:	**Day 1** In groups (or partners), students will be given 20 minutes to create a parachute that will be dropped from a second floor. No parameters will be set besides the time constraint. Each group will choose their material and cut a shape for parachute. Shapes limitations are: square, rectangle, parallelogram, triangle, trapezoid, ellipse, and circle. Once shape is cut, groups will calculate the surface area and record in the hourly data collection chart. Groups will then design and attach a parachute to a ping pong ball.

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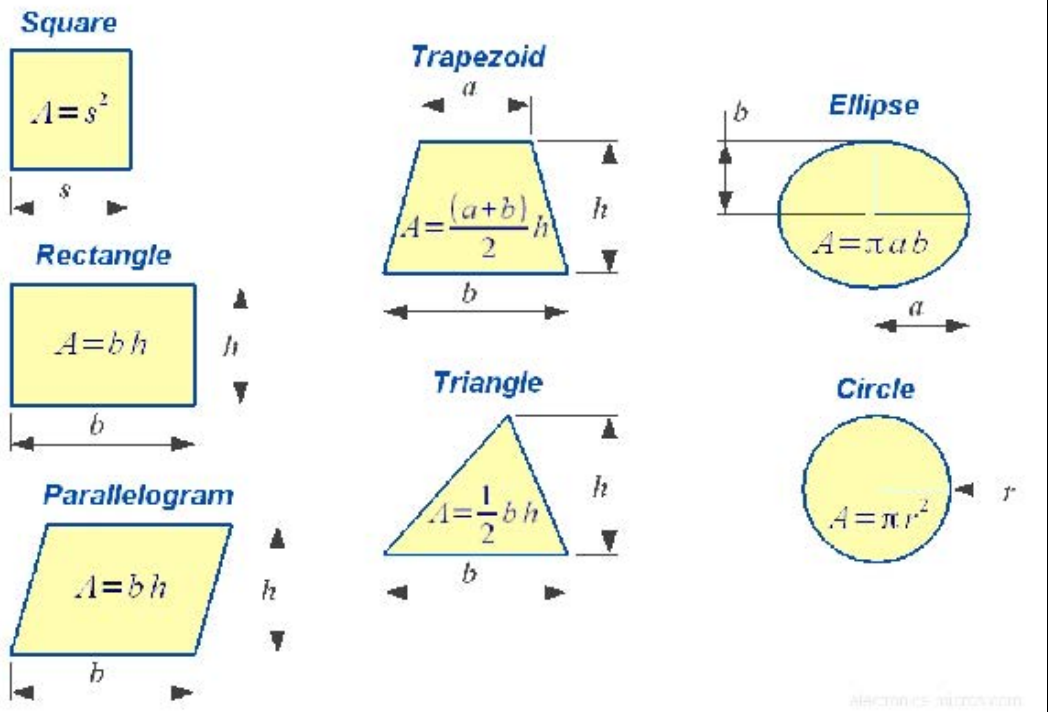
	All groups measure the surface area of their parachute and record for future use. All will drop the construction from an elevated area (gym balcony, classroom window, etc.). Each group will record the travel time of the device to the gym floor and record accordingly. Upon completion of all drops, discussion of the innovation and design successes/failures, connection between what the surface areas had on the results, and real life uses of similar concepts will take place to complete the first day of the assessment. Formulas for surface area calculation: 
	Assessment Scatter Plot Task **(Individual): Day 2** Individually, students will each receive a copy of the data recorded from Day 1. Each will receive a graph paper and will construct a scatter plot from the given data. Students will be assessed on the following graph components: • Appropriately labeled and scaled graph • Coordinates graphed correctly • Clusters identified • Outliers identified • Positive or Negative Association identified • A line of best fit correctly inserted onto graph • Two (2) true written statements based off the graph
Safety:	
Potential Cost:	

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Supplies (source):	Bags of various sizes string, ping pong balls, stopwatch, tape, scissors, hole punch, rulers, calculators, graph paper, writing materials (highlighters, pencils, colored pencils). Most materials are found in classrooms and makes this project cost efficient.
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Date:	Fall 2014
Key Words:	STEM, Scatter Plots, Graphing
Other Resources:	