

Stretched to the Limit

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The activity is used to teach data collection, representation and analysis, and provides an opportunity to practice interpreting various graphical representations. This unit was designed to be a reinforcement activity for concepts already taught, but could easily be used to introduce concepts for the first time. Because this unit explores a human body relationship, it would be appropriate to integrate the activity with the health teacher and extend the discussions to body image.

Grade(s): 8, 9, 10

Class time required: 3-4 days

Materials: measuring tape, graph paper (1/4" or cm), handouts (provided)

Objectives: Construct and interpret tables and graphs from collected data.

Standard: #6—students demonstrate understanding of an ability to use data analysis, probability, and statistics.

Technology: calculators

Word in italics are Word Files

- I. Copy the following handouts and collate (and staple) **in the order given** to be handed to each student: *Getting Started*, *Stem-and-Leaf Plots*, *Frequency Chart*, *Histogram*, *Circle Graph*, *Scatter Plot*, *Graph Paper*, and *Line of Best Fit*. These packets will be handed in at the end of the activity.
- II. Begin the activity by reading the *Getting Started* handout.
- III. Divide students into groups for data collection. Each group needs a measuring tape or yardstick (instructions for activity is also on student sheet). **Note:** you may want to have girls measure the girls. Have students fill out the table on their worksheet for each member in their group. When all groups are done, have the students share their data on the board or overhead. Each student needs to copy down the class information in their tables. Have the students make conjectures about the correlation between height and arm span.

- IV. Have students use the *Stem-and-Leaf* handout to create stem-and leaf-plots for the height data and the arm span data. They will then construct both box-and-whisker plots using the same number line (students come up with their own scale). Students then answer the questions at the end of the handout.
- V. Using the *Frequency Chart, Histogram, and Circle Graph* handouts, have students organize their height and arm span data in the frequency charts given. They will then construct a histogram and a circle graph for both sets of data. Students will then answer the questions at the end of the handout.
- VI. Students are given graph paper (1/4 inch or cm. paper works well) and a copy of the *Scatter Plot* handout. Allow students to discuss among themselves the bulleted questions at the beginning of the handout. Students then plot the data collected and answer the questions that follow.
- VII. Using their scatter plots, students will use the *Line of Best Fit* handout to construct the line of best fit for their scatter plot. Students then answer the questions on the handout.
- VIII. Students hand in packets when all graphs and questions are completed. Grading for the entire packet can be on a simple point system.
- IX. *Unit Assessment* and *Unit Assessment Key* are included.