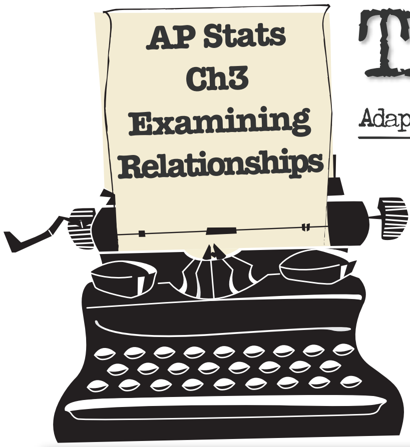

The Case of the Missing m&ms

Adapted from Yates, Moore, Starnes – "The Practice of Statistics, 3E" Activity 3A

On his desk in the math department, Mr.M keeps a large jar full of m&m's for use in his Statistics classes. Over the past few days, several m&m's have gone missing. Eager to catch the culprit, Mr.M notes that the only people who have access to his desk are the other math teachers at the school. Mr.M sends out an email asking whether or not his colleagues have been making unauthorized withdrawals from the jar, but no one confesses to the crime.

The next day, Mr.M catches a break--he finds a clear handprint on the cookie jar (unfortunately for our suspect, that whole "melts in your mouth, not in your hand" thing isn't really accurate). Mr.M is calling on you, the AP Statisticians, to help identify the prime suspect in "The Case of the Missing m&m's."

There are 10 individuals of varying heights in the math department--we'll also consider our principal in this investigation. To identify the prime suspect, we must determine the relationship between handspan and height.

- ☑ Form a group of 4 statisticians and get a ruler and meterstick from your teacher.
- ☑ Measure the height (to nearest cm) and handspan (to nearest half-cm) of each member of your group. Note: handspan is the maximum distance from the tip of the thumb to the tip of the pinkie finger on a person's fully stretched hand. Height should be measured without shoes.
- ☑ Send a representative from your group to the board to record the ordered pairs from your group on the table. Note these ordered pairs on the data table to the left.
- ☑ Construct a scatterplot of the data below. Label the horizontal x-axis "Handspan (cm)" and the vertical y-axis "Height (cm)". Plot each point from the class on the scatterplot.
- ☑ Discuss what the graph tells you about the relationship between handspan and height. Note the strength, direction, and form of the relationship in a sentence or two.
- ☑ Can you estimate height from handspan? If so, what equation seems to "best fit" the data we have collected?
- ☑ Obtain a copy of the handprint found at the scene as well as a photo lineup of the math department. Which math teacher does your group believe is the prime suspect? Justify your answer with appropriate statistical evidence and write your conclusion on the back of this page.

HandSpan(cm)	Height(cm)

The Usual Suspects:

Name: Ms. Arnold
Height: 162.56 cm
Predicted Handspan:

Name: Mr. Bunting
Height: 180.34 cm
Predicted Handspan:

Name: Ms. Dykhoff
Height: 167 cm
Predicted Handspan:

Principal: Mr. Douglas
Height: 172.72 cm
Predicted Handspan:

Name: Mr. Huls
Height: 187.96 cm
Predicted Handspan:

Name: Mrs. Liberty
Height: 160.02 cm
Predicted Handspan:

Name: Mr. Liberty
Height: 167.7 cm
Predicted Handspan:

Name: Ms. Miller
Height: 182.88 cm
Predicted Handspan:

Name: Mr. Molesky
Height: 167.5 cm
Victim of this terrible crime

Name: Mr. Pearson
Height: 175.26 cm
Predicted Handspan:

Name: Mr. Thompson
Height: 187 cm
Predicted Handspan: