DATA ANALYSIS:

Is the width of the palm significantly different between females and males?

Reading:

Data Analysis Science Literacy Skills

Key Skills Covered:

Designing a simple experiment
Calculating means and standard deviations
Presenting data in a graph

PREDICTION:

In this activity, you will determine if there is a significant difference between the width of the palm in females and males. Based on your personal knowledge of variation in the size of men and women, predict the outcome of this experiment. Explain your prediction.

I think _____

because_____

_____

_____

PROCEDURE:

To determine if the width of the palm varies between females and males you will work in pairs to measure and record individual data, then the class will compile all the data. It is imperative that each palm be measured in exactly the same way. The first task is for the class to come to a consensus on the appropriate materials and methods to use for the experiment.

Materials:

Methods:

Data Tables:

Female palms

x (mm)	$(x - \bar{x})$	$(x - \bar{x})^2$
$(\sum x)$=		$\sum(x - \bar{x})^2 =$
$(\sum x)$/n =		$n - 1$ =
		$\frac{\sum(x - \bar{x})^2}{n-1}$ =
		$\sqrt{\frac{\sum(x - \bar{x})^2}{n-1}}$ =

Male palms

x (mm)	$(x - \bar{x})$	$(x - \bar{x})^2$
$(\sum x)$=		$\sum(x - \bar{x})^2 =$
$(\sum x)$/n =		$n - 1$ =
		$\frac{\sum(x - \bar{x})^2}{n-1}$ =
		$\sqrt{\frac{\sum(x - \bar{x})^2}{n-1}}$ =

Equations: Mean: $\bar{x} = (\sum x) / n$ Standard deviation: $s = \sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$

1. Determine mean and standard deviation for females and males.

Female mean ($\bar{x}$) _____ **Male mean** ($\bar{x}$) _____

Female standard deviation (s) _____ **Male standard deviation** (s) _____

2. **Graphing**. Determine what type of graph you will use to compare the mean of the palm width between males and females. (Graph: _____) Your graph should include error bars that represent the standard deviation.

3. If the error bars overlap, it is an indication that the data (female and male palm widths) are not different between the two groups compared. If the error bars do not overlap, it is an indication that the means are significantly different between the two groups. For your experiment, was there a difference in the width of the palm for females and males?