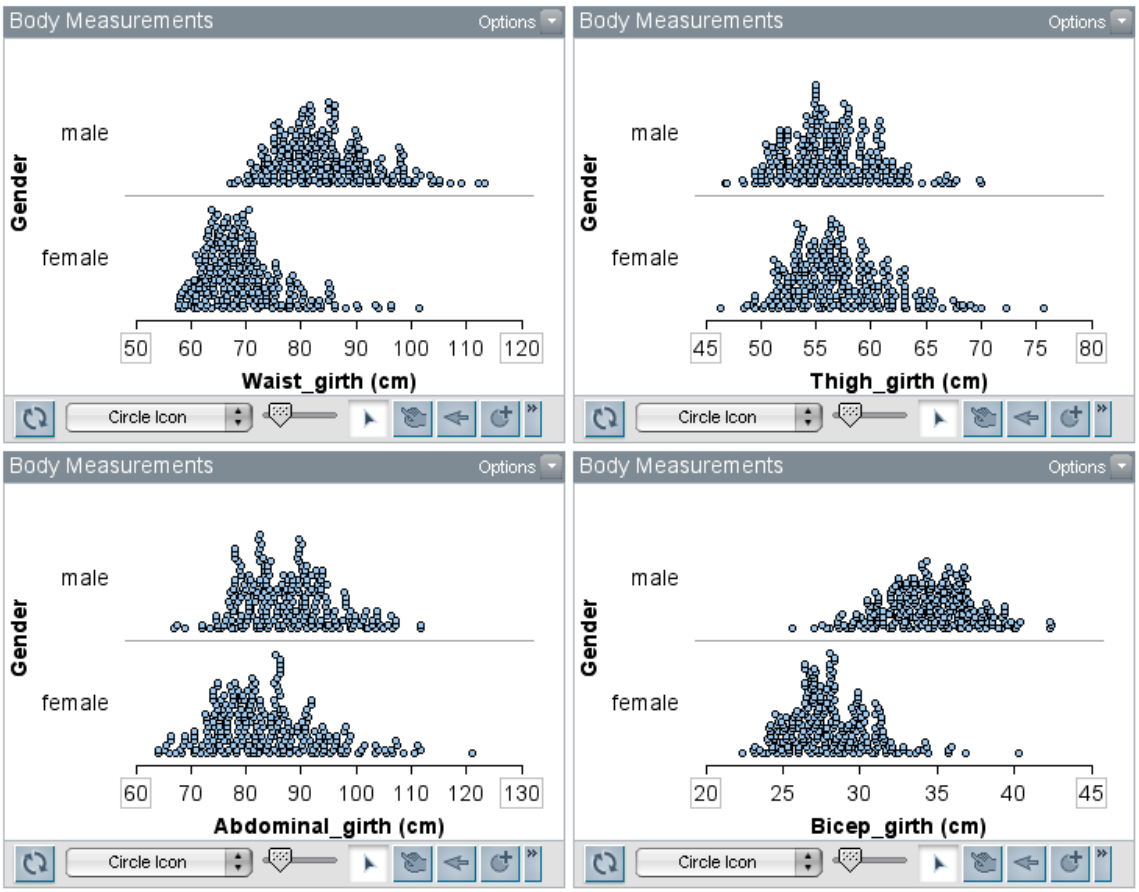
Unit 2 Module 7 Lab Assignment

Name: _____

Learning Goal: For the distribution of a quantitative variable, describe the overall pattern (shape, center, and spread) and striking deviations from the pattern.

Specific Learning Objective: Use the mean and standard deviation to create intervals of typical measurements.

1) Here are the distributions for data we have on waist girth, thigh girth, abdominal girth and bicep girth measurements for 247 men and 260 women who exercise regularly.



a) For which of the four variables would you argue that that men tend to be larger than women? Why?

b) For which of the four variables would you argue that that men tend to be about the same size as women? Why?

c) Here are the means and SDs for each variable in centimeters. For three of the four variables males have a larger mean. **But using a single number (the mean) to represent the distribution does not take into account the variability in the data.** So we will calculate intervals of typical measurements for men and for women (mean ± SD) and look at the overlap (or lack of overlap) to compare the distributions.

	Waist girth		Thigh girth		Abdominal girth		Bicep girth	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Males	84.5	8.8	56.5	4.3	87.7	8.4	34.4	3.0
Females	69.8	7.6	57.2	4.6	83.7	9.9	28.1	2.7

Typical **waist** girth males: Typical **waist** girth females:

Substantial overlap in typical waist measurements? (Circle one: yes, no)

Typical **thigh** girth males: Typical **thigh** girth females:

Substantial overlap in typical thigh measurements? (Circle one: yes, no)

Typical **abdominal** girth males: Typical **abdominal** girth females:

Substantial overlap in typical abdominal measurements? (Circle: yes, no)

Typical **bicep** girth males: Typical **bicep** girth females:

Substantial overlap in typical bicep measurements? (Circle: yes, no)

d) Do the intervals you calculated in (c) support your answers to (a) and (b)? Explain.

2) Do men tend to have a larger shoulder girth than women?

Open the *Body Measurements.txt* data file and complete (a)-(c) below to investigate this question. Cut and paste your StatCrunch outputs (histograms and table of numerical summaries) into a Word document and staple it to this lab.

a) Make side-by-side histograms with the same scale to compare shoulder girths for men and women. Cut and paste your graphs into a Word document and staple it to this lab.

Tips: In the StatCrunch histogram window, scroll down and, under **For multiple graphs**, set **Rows per page** to 2 to see side-by-side histograms. Hit **Compute**. To set the same scales for easier visual comparison, when viewing the histograms, click on the three small lines on the lower left of the histogram and adjust the x-axis of each graph

b) Use StatCrunch to make a table of numerical summaries for men and women. Your table should include the mean and standard deviation for both sexes. Cut and paste your tables into the Word document with your histograms.

c) Use the data to answer the question, "Do men tend to have a larger shoulder girth than women?" Include in your answer a comparison of intervals of typical values using mean and standard deviation.