Lab 1

Question: Which is larger, M&M’s or Skittles?

Purpose: In this lab you will use basic measuring procedures to determine which delicious candy is larger. You will use the statistics we have covered in class, average, standard deviation, and t-test. You will also graph your data and write a conclusion.

Procedure:

1. Come up with a hypothesis (2 points)
   1. This should be a statement saying which is larger and why you think that
2. Variables (3 points):
   1. Independent
   2. Dependent
   3. Control (variables that are kept the same for each independent variable and trial)
3. Measure 5 M&M’s and 5 Skittles and record your data into charts (10 points)
   1. Mass will be measured with an electronic scale. Make sure you zero the scale between trials

Day 1

* 1. Volume will be measured by placing 20ml of water in a graduated cylinder. Drop each candy in and look at the difference. Do not leave your candy in too long or it will dissolve and mess up your data.
  2. Circumference should be measured with a string. Wrap it around the candy and then use a ruler to measure.

1. Find the average, standard deviation, and perform a t-test to determine if there is a difference. (15 points)
2. Graph the data (10 points)

Day 2

* 1. Be sure to include all the parts of a graph including error bars

1. Write a conclusion with three parts (5 points)
   1. State whether your hypothesis should be supported or rejected based on the data

Your lab report needs to be typed. It should include all of the sections from above with headings. Graphs and charts should be electronic. Submit the lab electronically on Edmodo.

Make sure you look at the IB lab format for the raw data, processed data, and processed data presentation sections. This will have detailed information of things to include. These sections are the focus of the lab so they are worth the most points.

**How to include sample calculations:**

Processed Data

Standard Deviation

Insert 🡪 Equation 🡪Insert new equation 🡪 Build equation in the following order

1. Radical (first option)
2. Fraction (first option)
3. Fill in denominator
4. Large operator (first option)
5. Select just the small box
6. Script first option
7. Fill in (X-M) in the large box
8. Put “2” in the small box

For ***one*** standard deviation calculation you fill in the formula

STD =

STD =

STD = your value

**T-test**

Build this one yourself

The absolute value lines are under “bracket”

Insert your numbers for one t-test