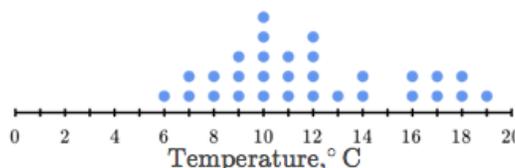


(40 pts) Approx. 3 days

The second part of our unit is about data once again, and focuses on calculating and understanding some basic descriptive statistics: mean and standard deviation! Your job is to collect data in a few ways, display it using a dotplot, and then use a computer to calculate both the average and standard deviation. Microsoft Excel is a good computer program to use for those calculations, and Google Sheets works well too! This part of the unit will wrap up with the building of your very own “Fling Machine” and the collection of some data about how consistent your machine is.

1. Start by watching a few presentations. Watch the *Statistics Calculations* and the *What is Variability?* presentations. Take a full page of notes on the ideas presented. Make sure you include specific notes on measures of center (mean) and measures of variability (standard deviation).
2. Use a dial caliper to measure the maximum widths of 20 wooden cubes. Write down these numbers in your engineering notebook and make a dotplot of your measurements. A dotplot is a graph with individual dots to represent each data point like the graph to the right. You also need to find the mean (average) and standard deviation of your data. You should add your data to the class spreadsheet and use it to calculate these values.
3. Next, complete the *Variability Statistics Assignment*. You can (and should) use Microsoft Excel or Google Sheets to do your calculations. Have Mr. Benshoof confirm your assignment when it’s complete.
4. Next, build your Fling Machine!
 - a. Using the materials provide by Mr. Benshoof, build a machine or device that can fly through the air as far as possible. It might be thrown, flung, or shot through the air flying as far as possible down our hallway.
 - b. Once you’ve built your machine, fling it down the hall 20 times. Measure the distance in feet of every attempt. Record your measurements in your engineering notebook.
 - c. Complete a statistical analysis of your data! Your analysis should include a dotplot, an average distance, the standard deviation of the distance, and a few sentences describing the consistency of your machine!
5. Take the Unit 3 Quiz on Measurement & Statistics **by October 11.**



Part 2: Tasks	5 points	4-3 points	2-1-0 points
Notes on Statistics & Variability	+ You took a full page of notes on <i>Statistics Calculations & What is Variability?</i>	- Notes are missing important parts	- No notes - Notes are significantly lacking
Collect Measurements	+You collected 20 cube-width measurements and recorded their values in your notebook + You entered your data in the class spreadsheet and calculated the mean and standard deviation	- You collected fewer than 20 data points - You did not share your data - You did not calculate your statistics	- You collected fewer than 10 data points - You did not record your measurements in your notebook
	10 points	9-5 points	4-0 points
Variability Statistics Assignment	+ You completed the <i>Variability Statistics Assignment</i> + You had Mr. Benshoof check work	- You did not complete all of the assignment	- Your assignment is missing
Fling Machine Challenge & Data	+ Build your Fling Machine following the parameters above. + Fling it 20 times and record the distances. + Write your statistical analysis in your engineering notebook	- You did not fling your machine a total of 20 times - You did not complete your statistical analysis	- You did not build your fling machine - No record of any fling machine work is in your notebook
Take Unit 3 Quiz	+ You took the Unit 3 Quiz on the website by the Quiz Due Date + Grade is based on number correct	N/A	(0 pts) You did not take the Unit 3 Quiz

