Class 2 – ChE310\_Sec1\_F2019 8.29.2019

**Group Activity:** With your group do the following and submit to Adam Carr on Slack for credit by 2:25pm. Consider the following equation for terminal velocity:



1. Write a script called ‘TermVelScript.m’ that computes the terminal velocity for the following

g = 9.81; m = 68.1; cd = 0.25; t = 4

1. Write a function called ‘TermVelFunc.m’ that accepts the time (t) as an input and gives the terminal velocity as the output (using the g, m, and cd parameters above)

**Review from First Day of Matlab Boot camp:**

1. Matlab environment (editor and command window) – up arrow to access previous commands
2. Script vs. function
3. Insert header and save file name
	1. Use of **clc** and **close all**
4. Entering variables
5. Simple math operators

**Second Day of Matlab Boot camp:**

1. Scalar, vector (row vs. column), matrix, string
	1. use of **‘** to transpose a vector or matrix
	2. Accessing elements in (m,n) array
2. Loading data
	1. ‘IowaStateFair.xlsx’
	* Attendance 2018 day 3?
	* Attendance 2019 day 5?
	1. **csvread**
	2. **dlmread**
	3. NEW as of 2019
		1. **readmatrix** (data)
		2. **readcell** (text)
3. Mathematical operations
	1. Add, subtract, multiply, divide
	2. Order of operations with ()
	3. Powers
	4. Element-by-element operations ( . )
4. Built in functions
	1. Logarithms **log** vs **log10**
	2. Rounding **round**, **ceil**, **floor**
	3. Others **sum**, **min**, **max**, **mean**, **sort**
	4. ‘IowaStateFair.xlsx’
	* Total attendance in each year?
	* Average daily attendance each yr?
* **xlsread** (CornDataHeaders.xlsx)
	+ Average height of corn?
	1. Create vectors **linspace**, **logspace**, (#**:**#**:**#) notation,
	2. Create vectors or matrices **ones**, **zeros**,
	3. Random number generator
		1. **rand**
		2. **randi**
1. Built in variables
	1. **pi** or **i**
2. Use of **input**
3. Use of **disp**
4. Use of **fprintf**
	1. See pg. 54 of text for good examples, table 3.1
5. Exporting data
	1. **csvwrite**
	2. **dlmwrite**
	3. **plot** (more on this in Class 3)
	4. NEW in 2019
		1. **writematrix**
6. Conditions and logical indexing [Class 3]
	1. More [reading](https://www.mathworks.com/help/matlab/matlab_prog/find-array-elements-that-meet-a-condition.html)
7. **End of class coding time**

**Dice Game**

* Together: Make an M-file that does the following
	+ Asks for users to guess the value of a dice throw (1 to 6)
	+ Use random to generate a ‘throw’
	+ Compare the throw value to guess value and
* Teams: Change your code to now play with a d20 dice.