

## Lab #2

September 14, 2015  
MATH 141.200

Name: \_\_\_\_\_

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The is due at the start of class on **September 21**. Type your name in the first page of the spreadsheet. Be sure to work each problem on a separate spreadsheet. Don't forget to e-mail me your spreadsheet.

This lab is to examines modeling an experiment and looking at the probabilities associated with the outcomes based on the data collected.

**Note: The commands work for the Libre office spreadsheet. They might have to be adjusted for the Microsoft Excel program.** Use a spreadsheet help files for an explanation of the syntax of a command.

Here are some useful commands/info for a spreadsheet.

**Randbetween(bottom,top)** will randomly choose n integer between the bottom and top(inclusive).

To regenerate a new result in Libre office press **shift + ctrl + F9**. In excel this command will generate a new random number every time you press enter.

**countif(range,criteria)** will count all the cells that meet the criteria in the specified range.

**countif(range,10)** will count all the times the number 10 is found in the range.

**countif(range,A2)** will count all the times the value located in cell A2 is found in the range.

**countif(range,"<10")** will count all the times where the number less than 10 is found in the range.

**countif(range,"<=10")** will count all the times where the number less than or equal to 10 is found in the range.

**sum(range)** will add the numbers in the cells in the specified range.

**Changing the number of decimal digits.** To change the number of decimal digits shown, click on the cell (you want to change) and then click on **Format** and then **Cells**. Select the tab **Numbers**. Find the option "Decimal places" and change it to the desired amount. (usually more than 2 places.)

Problem 1: The experiment is to simulate rolling an 8 sided die the specified number of times. Give your relative frequency to **at least 4 decimal digits**.

Number of Rolls	20							
Sample Space	1	2	3	4	5	6	7	8
frequency								
relative freq								

Repeat the experiment two more times with 20 rolls. Do this by having the spreadsheet regenerate random numbers. (See the information for the command randbetween to see how this is done.)

Number of Rolls	20							
Sample Space	1	2	3	4	5	6	7	8
frequency								
relative freq								

Number of Rolls	20							
Sample Space	1	2	3	4	5	6	7	8
frequency								
relative freq								

Notice that with each repetition of 20 rolls, the probability of the outcomes has the potential to vary greatly.

Problem 2. Now repeat the experiment the number of times as requested in the table. Put your work on a new page of the spreadsheet.

Number of Rolls	500							
Sample Space	1	2	3	4	5	6	7	8
frequency								
relative freq								

Are the relative frequencies for your simulation close to the actual probabilities for rolling an 8 sided die?

Problem 3: Simulate the following experiment.

A box contains 9 yellow balls and 4 green balls. The experiment is to draw a ball from the box and write down the color drawn. The ball is then replaced into the box. Repeat the experiment the number of times as indicated in the tables. Hint: Think about numbering the balls or the outcome of the experiment.

Number of Draws	300	
Sample Space	G	Y
frequency		
relative freq		