

Math 2100 - Spring 2018

Lab 5 (last one!)

Names: _____

Organizing and picturing information

1. Roll one die 30 times and note the number rolled each time. Summarize your data in the following frequency table, then create a bar chart/histogram and a pie chart of your data.

Number rolled	Tally	Frequency	Relative frequency
1			
2			
3			
4			
5			
6			

Bar chart/histogram

Pie chart

2. Roll two dice 30 times and note the *average* of the two numbers rolled each time. Summarize your data in the following frequency table, then create a bar chart/histogram of your data.

Average of numbers rolled	Tally	Frequency	Relative frequency
1			
1.5			
2			
2.5			
3			
3.5			
4			
4.5			
5			
5.5			
6			

Bar chart

3. Compare the shapes of your two histograms/bar charts above. Can you explain why it makes sense that they would look the way they do?

Classical probability

1. There are two red balls and three yellow balls in a bag. You choose two balls at random (without replacement) from this bag.

(a) List all 20 simple events. (**Hint:** It is helpful to number balls of the same color.)

(b) What is the probability that you draw exactly one yellow ball?

(c) What is the probability that you draw at least one yellow ball?

(d) You look at the first ball drawn and it's yellow. What's the probability that the second ball drawn is also yellow?

2. Our book says that $P(A \cup B) = P(A) + P(B) - P(A \cap B)$. Explain, in plain English, what this means. Also, use a Venn diagram to explain why this equation is true.

3. Our book also says that $P(\overline{A}) = 1 - P(A)$. Explain, in plain English, what this means. Also, use a Venn diagram to explain why this equation is true.

Frequentist probability

1. What is the probability that a thumb tack dropped on a hard surface lands on its side? Toss one tack fifty times to approximate this probability. Are you surprised at your answer? (**Suggestion:** It is quicker to toss ten tacks five times.)

2. What is the probability that a penny spun on a hard surface lands tails up? Spin one penny fifty times to approximate this probability. Are you surprised at your answer? (**Suggestion:** It is quicker to spin, say, five pennies ten times.)