Name: _____

Math 123
Fall 2018
Dr. Lily Yen

Test 2
Show all your work

Number: _____

Signature: _____

Score: ___/40

Problem 1: Answer each question to two decimal place accuracy when appropriate. Write out steps for each.

a. Convert the fraction *two fifths* into a percent.

b. Find 120% of 40.

c. What fraction of 360 is 30? Simplify to lowest terms.

d. 5 is 2% of what number?

e. When you pay a 75-dollar cell phone monthly package, how much in total do you need to pay? Hint: We have a 5% GST and 7% PST.

f. If there is a 1 in 5000 chance that you will fall on the way to the bus stop today, what is the probability you will NOT fall on the way to the bus stop today?

g. The chance that the Canucks will win the Stanley Cup this year is 0.013. Find the odds against the Canucks?

h. The residents of a small town and the surrounding area are divided over the proposed construction of a shooting range in town, as shown in the table. A reporter randomly selects a person to interview from a group of residents. If the person selected supports the construction of the shooting range, what is the probability that the person lives in the surrounding area?

|	Support shooting range	Oppose shooting range
Live in town	7252	6316
Live in surrounding area	518	461

i. When you toss a six-sided die, what is the probability of getting at least 3?

j. When you draw a single card from a deck of 52 poker cards, what is the probability of getting a black card ?

k. Assume that A and B are events. If $P(A \cap B) = 0.15$, $P(A) = 0.30$, and $P(B) = 0.55$, find $P(A \cup B)$.

Score: /11

Problem 2: Each dot in the Venn diagram represents an equally likely event in the sample space S. Suppose one of them is randomly selected. Find each probability below.
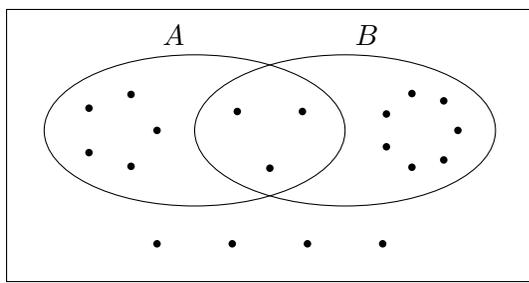
b. $P(A \cup B)$

c. $P(A \mid B')$

d. Find the odds for event A.

a. $P(A')$

Score: /4

Problem 3: Determine a sample space for the experiment: Toss two coins and roll one die.

a. Find the probability that you get at least one head with an even number on the die.

b. Express the event as a set: the die shows less than 3 while the coins show different results.

Score: /4

Problem 4: The table relates the amount of time consumers engage in online shopping per month with their annual income. Find the probability that a randomly selected consumer spends 3–9 hours per month shopping online OR has an annual income between 40 000–60 000 dollars.

Annual income	10 h or more	3 h–9 h	0 h–2 h	Total
Above $60 000	188	179	129	496
$40 000–$60 000	147	216	160	523
Below $40 000	129	188	253	570
Total	464	583	542	1589

Score: /2

Problem 5: Assume that 4% of Vancouverites use marijuana, and that the road test correctly identifies a driver under the influence 98% of the time. Also assume that the test identifies a nonuser as a marijuana user 3% of the time. If a driver tests negative, what is the probability that the driver is actually under the influence of marijuana ?

Score: /4

Problem 6: Solve for the indicated variable.

a. Solve for t in $A = P(1 + rt)$

b. Solve for n in $A = P(1 + r/m)^n$

Score: /5

Problem 7: Baby Nathanael was born in May this year. During the summer, his parents won a lottery worth over ten million dollars. Suppose they would like to put aside part of their winnings for Nathanael's university education in a guaranteed investment certificate (GIC) at 3% compounded quarterly. They would like to have at least $\$80\,000$ from the entire GIC (interest plus principal) by the time Nathanael is ready for university in September the year he turns eighteen. How much should they have invested in this GIC for him before September of this year?

Score: /3

Problem 8: Suppose you purchase a used motorcycle for \$3000 and have agreed to pay off the motorbike in 12 monthly payments of \$305 each.

   a. Find the total amount of interest charged in this motorbike loan.

   b. Assume the payments are computed using the add-on interest method, find the annual interest rate applied.

Score: /3

Problem 9: Your Capilano Credit Union credit card charges 18%. Your unpaid balance at the beginning of last month was \$400. Since then, you purchased a plane ticket to Toronto for \$800 and sent in a payment of \$1000.

   a. Using the unpaid balance method, find your credit card bill this month.

   b. Find your finance charge next month.

Score: /4