Math 300 **Fall 2024**

Lab Assignment #12

This lab is due at 12:30 PM on Monday, 10/14 and is worth 10 points. This part may be done individually, or in a group of 2, 3, or 4 people.

1) Suppose that 40% of CRC students live in Sacramento, 35% live in Elk Grove, and the rest live elsewhere. Suppose further that 80% of the Sacramento students live with one or more parents, 60% of the Elk Grove students live with one or more parents, and 55% of the elsewhere students live with one or more parents.

a) If a CRC student is chosen at random, what is the probability that they live with one or more parents? Write answer with at least 3 significant digits.

b) If a student living with one or more parents is selected at random, what is the probability that they live in Sacramento?

c) If a student not living with parents is chosen at random, what is the probability that they live in Elk Grove?

2) Two cards are chosen from a deck of cards, without replacement. What is the probability that…
a) they are both hearts?
b) the first is a heart and the second is a diamond?
c) one is a heart and the other is a diamond? (Not the same as part (b).)
d) the second is a heart, given that the first is a heart?
e) the second is a heart, given that the first is a diamond?
Note: fractions are handy for this problem.

3) Data are collected for every student at East Valley Community College. The average number of hours worked per week and number of units taken are measured for each student. See table:

		# of units	
Hours worked	5 or less	6 to 10	11 or more
less than 20	312	605	920
20-40	1410	2102	2011
more than 40	892	1242	685

The numbers indicate how many students fall into each category. For example, there are 312 students who take 5 units or less and work less than 20 hours per week.

A student at EVCC is chosen at random. What is the probability that the student ...
a) works more than 40 hours per week?

b) takes 11 or more units?

c) works more than 40 hours per week AND takes 11 or more units?

d) works more than 40 hours per week OR takes 11 or more units?

e) A student who takes 5 or less units is chosen at random. What is the probability that the student works more than 40 hours per week?

f) A student who works 20-40 hours per week is chosen at random. What is the probability that the student takes 11 or more units?