

# Assignment 5

Show all your work

Name: \_\_\_\_\_  
Number: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Score: \_\_\_\_/20

**Problem 1:** Answer each question to two decimal place accuracy when appropriate. If an exact answer is possible expressed as a fraction, you may leave your answer as a fraction.

- a. If James draws a single card from a deck of 52 cards, what is  $P(X \geq 10)$ ?

- b. Suppose a blue cubic die and a green cubic die are rolled, find  $P(X_b + X_g \leq 4)$ .

- c. When you flip a fair coin three times, what is the probability of getting only heads?

- d. If the chance of winning a Student Union Lottery Jackpot is 0.01%, find the chance of not winning the jackpot.

- e. A survey is conducted among students and faculty at Capilano University regarding the use of artificial intelligence for students. If a student is randomly selected, what is the probability that the student is for the use of artificial intelligence for students?

Capilano University Survey			
	For A1	Against A1	Total
Students	437	111	
Faculty	52	107	
Total			

Score: \_\_\_\_/5

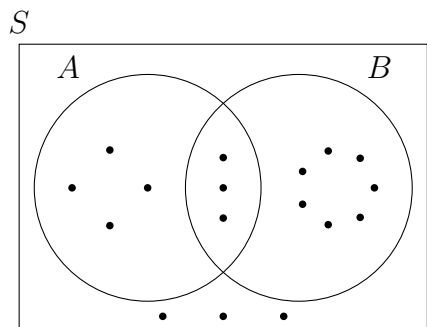
**Problem 2:** A pot contains 3 red balls and 4 teal balls. Hamlet draws two balls out of the pot without replacement. Draw a probability tree for drawing two balls without replacement. (2 points)

- a. Find the probability of getting 2 teal balls.

- b. Find the probability of getting no teal balls.

Score: \_\_\_\_/5

**Problem 3:** Dad drew a big rectangle representing a sample space containing Event A and Event B. Assume that the outcomes (as dots) were all equally likely, give a fraction for each probability question.



a.  $P(\bar{B})$

b.  $P(A \cap B)$

c.  $P(\bar{A} \cup B)$

d.  $P(B | A)$

e. Are  $A$  and  $B$  disjoint?

Score: /5

**Problem 4:** Assume that 10% of international visitors arriving at the Vancouver International Airport are sick with ARI (Acute respiratory infections). Suppose a test correctly identifies a visitor sick with ARI 96% of the time. Also assume that the test falsely identifies a healthy visitor as sick with ARI 9% of the time. If an international visitor tests positive, what is the probability that the visitor is not sick with ARI?

Draw a probability tree as part of your steps.

Score: /5