Math 123-01
Summer 2025
Dr. Lily Yen

Quiz 5

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ___/10

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 Mei draws a single card from a deck of 52 cards, what is the probability that she does not draw a spade?

$\frac{39}{52} = \boxed{\frac{3}{4}}$

b. When you flip a fair coin twice, what is the probability of getting only one head?

HT and TH so $\frac{2}{4} = \boxed{\frac{1}{2}}$

c. When Katharina rolls two cubic dice, what is the probability of getting a total of 5?

$1+4 = 2+3 = 3+2 = 4+1$ so $\frac{4}{36} = \boxed{\frac{1}{9}}$

Score: /3

Problem 2: The morning after Halloween, Dad constructed a spinner with six equal sectors, each labelled with a different snack: Aero, HiChew, Mars Bar, Chips, Juice, Twix, for Hamlet and Samlet. Assume that the pointer never lies on a border, answer the following questions.

a. Find the probability of getting a Twix or a Mars Bar after one spin.

$$P(T \cup M) = \frac{1}{6} + \frac{1}{6} = \frac{1}{3}$$

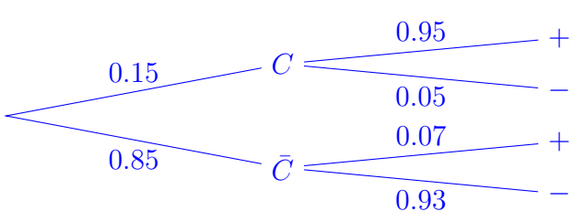
b. Find the probability of getting no HiChew after three spins.

$$P(H' \cap H' \cap H') = \frac{5}{6} \times \frac{5}{6} \times \frac{5}{6} = \frac{125}{216} \approx 57.87\,\%$$

Score: /3

Problem 3: Assume that 15 % of international visitors arriving at the Vancouver International Airport are sick with the latest variant of Covid. Suppose a Covid test correctly identifies a visitor sick with Covid 95 % of the time. Also assume that the test falsely identifies a healthy visitor as sick with Covid 7 % of the time. If an international visitor tests negative, what is the probability that the visitor is actually sick with Covid?

Draw a probability tree as part of your steps.



$$P(C \mid -) = \frac{P(C \cap -)}{P(-)} = \frac{0.15 \times 0.05}{0.85 \times 0.93 + 0.15 \times 0.05} = \frac{5}{532} \approx 0.94\,\%.$$

Score: /4