Math 123-02
Spring 2026
Dr. Lily Yen

Assignment 5
Show all your work

Problem 1: Take one cubic die (D6) and one fair coin.

a. Make a table for the sample space of rolling the die and flipping the coin simultaneously.

H1	H2	H3	H4	H5	H6
T1	T2	T3	T4	T5	T6

b. Let X be the random variable for an outcome of rolling the die. Let Y be the random variable for an outcome of flipping the coin. Find $P((X > 4) \cap (Y = T))$.

H1	H2	H3	H4	H5	H6
T1	T2	T3	T4	**T5**	**T6**

So $P((X > 4) \cap (Y = T)) = \frac{2}{12} = \frac{1}{6} \approx 16.7\%$

c. Find the probability of getting an even number on the die and Heads on the coin.

H1	**H2**	H3	**H4**	H5	**H6**
T1	T2	T3	T4	T5	T6

So $\frac{3}{12} = \frac{1}{4} = 25\%$.

Score: ___/4

Problem 2: 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.
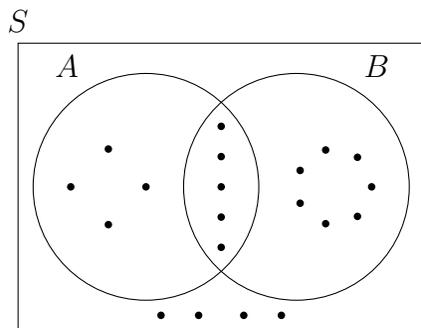
a. $P(\bar{B}) = \frac{4+4}{4+5+7+4} = \frac{8}{20} =$

2/5

b. $P(A \cap B) = \frac{5}{20} =$

1/4

c. $P(\bar{A} \cup B) = \frac{5+7+4}{20} = \frac{16}{20} =$

4/5

d. $P(A \mid B) = \frac{5}{5+7} = \frac{5}{12} =$

5/12

e. Are A and B mutually exclusive?

No

f. Are A and B independent? $P(A) = \frac{9}{20} \neq \frac{5}{12} = P(A \mid B)$, so

No

Score: ___/6

/10