

C.K. HANSEN MATH 380/413 : Probability and Statistics NAME :
10/14/25 Class Assignment #2 (15 points)

An experiment consists of drawing a card from a well-shuffled standard 52 card deck.

- a) Draw a Venn diagram of the sample space.

- b) Assign the appropriate probability to each simple event in the sample space.

- c) Identify the simple events (not the probability) associated with each the following events :

A: The card is red.

B: The card is a face card (jack, queen, king)

C: The card is a spade.

NOTE: You may answer the question by identifying the events on the Venn diagram drawn in a).

d) Find the following probabilities :

$$P(A) =$$

$$P(B) =$$

$$P(C) =$$

$$P(A \cup B) =$$

$$P(A \cap B) =$$

$$P(B \cap C) =$$

$$P(C^c \cup (A \cap B)) =$$

e) Which of the following event pairs are disjoint (mutually exclusive). Explain why or why not.

A , B

A, C

B, C

f) Which of the following event pairs are independent. Explain why or why not.

A , B

A, C

B, C