

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