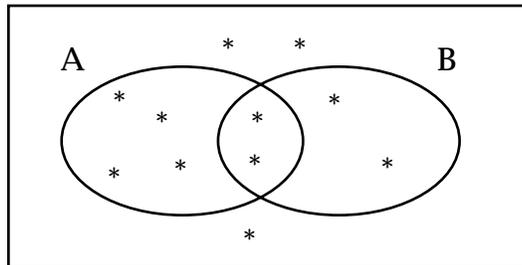


## Probability 42 Test

1) A Venn diagram for two events is shown below. Find the following probabilities.



- a)  $P(A)$       b)  $P(\sim A)$       c)  $P(A \text{ and } B)$       d)  $P(A \text{ or } B)$

2) A small town has two newspapers, the Journal and the Times. A survey found that 50% of the people read the Journal and 35% of the people read the Times. It was found that 10% read both papers. Answer the following questions.

- a) What percentage of the people read only the Journal?  
b) What percentage of the people read neither paper?

3) A card is drawn from a shuffled deck. Find the probability of drawing a jack or a black card.

4) You have a standard shuffled deck of cards. A poker hand (five cards) is dealt. Find the probabilities. (use the combination formula and write the answers in combination formula notation)

- a) Five clubs are dealt.  
b) Two hearts and three spades are dealt.

5) Four horses are in a race. Find the probability of selecting the horses which come first and second.

6) Find the probability of tossing six heads if eight coins are tossed. (hint: Use the binomial theorem)

7) You are given a standard shuffled deck. Draw one card. What is the probability that a face card is chosen given that it is a black card?

Find  $P(\text{face} \mid \text{black})$ . Use the conditional probability formula.

Answers: 1)a)  $6/11$ , b)  $5/11$ , c)  $2/11$ , d)  $8/11$ , 2)a) 40, b) 25, 3)  $7/13$ , 4)a)  ${}_{13}C_5/{}_{52}C_5$ , b)  $\{{}_{13}C_2 \times {}_{13}C_3\}/{}_{52}C_5$ , 5)  $1 \times 1 \times 2 \times 1/4! = 1/12$ , 6)  ${}_8C_6 \times (1/2)^8 = 7/64$ , 7)  $P(\text{face} \mid \text{black}) = P(\text{face and black})/P(\text{black}) = \{6/52\}/\{26/52\} = 3/13$ .