1. The odds in favor of event $E$ is given as $3:17$. Find
   (a) (2 points) $P(E)$

   (a) __________

   (b) (2 points) $P(\overline{E})$

   (b) __________

2. (2 points) The odds of winning a fair game is given as $1:4$. How much does a player have to bet in order to have a net gain of $\$30$?

   2. __________

3. (2 points) The probability that LA Lakers win the NBA championship this year is $0.12$. Find the odds against the LA Lakers winning the NBA championship this year.

   3. __________

4. (2 points) The odds of winning a game is given as $1:4$. What is the probability of winning the game?

   4. __________
5. Suppose you tossed a coin 500 times and recorded 175 tails and 325 heads.

(a) (2 points) Find the probability of tossing this coin and record a tail in reduced fraction.

(b) (2 points) Find the odds in favor of recording a tail when tossing this coin. Express your answer in colon notation.

6. Consider a full deck of playing cards,

(a) (2 points) Find the odds in favor of drawing an ace. Express your answer in colon notation.

(b) (2 points) Find the odds in favor of drawing a face card. Express your answer in colon notation.

(c) (2 points) Find the odds in favor of drawing a red card. Express your answer in colon notation.

(d) (2 points) Find the odds in favor of drawing an ace or a face card. Express your answer in colon notation.

(e) (2 points) Find the odds in favor of drawing an red ace or a red face card. Express your answer in colon notation.
7. You are dealt three cards without replacement from a shuffled deck of 52 playing cards.

(a) (2 points) Find the probability of getting three red cards.

(b) (2 points) Find the probability of getting three black cards.

(c) (2 points) Find the probability of getting three cards with the same color.

(d) (2 points) Find the probability of getting three cards such that they are not all the same color.

(e) (2 points) Find the probability of getting at least one face card.

8. In the game of Texas hold ’em, a player is dealt two cards (called hole cards) from a shuffled standard deck of 52 playing cards in which the order of these cards that are dealt does not matter.

(a) (2 points) Find the number of hole cards combination that is possible?

(b) (2 points) How many combinations are there in which both cards are aces?
(c) (2 points) Find the probability that a hand consists of two aces.

(d) (2 points) Find the probability of getting at least one ace.

9. A company has hired 10 new employees, 7 men and 3 women. The company must assign 5 of them to the morning shift, 3 of them to the swing shift, and the rest of them to the graveyard shift.

(a) (2 points) Find the number of ways that this can be done.

(b) (2 points) Find the probability that at least one man is assigned to the swing shift? Answer in reduced fraction only.

(c) (2 points) Find the probability that at least one woman is assigned to the swing shift? Answer in reduced fraction only.

(d) (2 points) Find the probability that at least one woman is assigned to the morning shift? Answer in reduced fraction.