Probability

1. A jar contains 4 blue, 6 green, 5 red and 1 yellow marble. If one marble is drawn at random from the jar, find the probability that the marble is:
   a) blue b) not blue c) red d) not red
   e) green f) red or green g) yellow h) blue or yellow

2. A letter is chosen at random from the word BANANA. Find the probability that the letter is:
   a) an A b) a consonant c) an N d) not a B
   e) an A or an N

3. If all of the letters of the ABOUT are arranged at random in a line, find the probability that the arrangement will:
   a) spell the word ABOUT b) have the A at either end and the O in the middle
   b) not spell the word ABOUT d) have three vowels together
   e) start and end with a vowel f) have two consonants side by side
   g) start and end with a consonant h) start with AB

4. A carton of one dozen eggs contains three that are rotten. If a set of two eggs is chosen at random from the carton, find the probability of selecting:
   a) two rotten eggs b) 1 rotten egg and 1 good egg
   c) two good eggs

5. A jar contains 6 blue, 5 green and 8 yellow marbles. If a set of three marbles is chosen at random from the jar, find the probability that your selection contains:
   a) 3 blue b) 3 marbles, not all blue c) 3 green
   d) 3 marbles, not all green e) 3 yellow f) 1 of each color
   g) no blue h) at least one blue i) no green
   j) no yellow k) at least 2 green

6. A 5-card hand is dealt from a standard deck of 52 cards. Find the probability that a 5-card hand contains:
   a) only black cards b) 4 aces c) no aces
   d) 4 cards of the same value e) no spades f) 3 clubs and 2 diamonds
   g) all diamonds h) 5 cards, all of the same suit
   i) all face cards j) 3 aces and 2 sevens

7. If a coin is tossed 3 times find the probability of tossing:
   a) exactly one head or exactly two heads
   b) exactly one head and exactly one tail
   c) at least one head or at least one tail
   d) at least two heads or no tails
   e) a head on the first toss or a tail on the last toss

8. A set of 2 cards is chosen from a standard deck of 52 cards. Find the probability that both cards are:
   a) black or red b) black or face card
   c) black or hearts d) black or aces

9. Marbles numbered from 1 to 15 are placed in a bag. If a set of three marbles is drawn from a bag, find the probability that:
   a) all three marbles are odd or all three show numbers greater than 6

b) all three marbles show numbers greater than 7 or all marbles show numbers less than 2

10. A coin is tossed and a die is rolled. Find the probability of obtaining:
    a) a tail and a 5
    b) a head and a number greater than 5
    c) a head and an even number
    d) a tail and a number less than 1

11. A contains 3 red, 5 yellow, 2 green and 6 blue marbles. If one marble is chosen at random and replaced, then a second marble is chosen at random, find the probability of obtaining:
    a) 2 red marbles
    b) 2 marbles of different colors
    c) 2 blue marbles
    d) a red and a yellow in either order
    e) 2 marbles of the same color
    f) a blue and a green marble in that order

12. Suppose that the probability that you will pass a math test is 9/10, pass a chem test is 3/7 and pass a social test is 4/5. If these events are independent, find the probability that you:
    a) pass all three
    b) pass only one
    c) pass at least two
    d) fail all

13. If two dice are rolled, find the probability of rolling:
    a) a sum of 6, given that doubles were rolled
    b) a sum of 10, given that doubles were not rolled

14. Two cards are drawn from a deck without replacement. Find the probability that:
    a) both are face cards
    b) both are aces
    c) two diamonds are drawn
    d) a king and a queen are drawn in any order
    e) the second card, given that the first card is a club
    f) the second card is red, given that the first card is a heart
    g) the second card is a face card, given that the first card is a queen
    h) the second card is a three, given the first card is not a three