MATH115A   Dr. Katiraie   Practice Problems for Sections 5.3 and 5.4

1. We have a box with six green marbles, five blue marbles, and seven red marbles. We choose three marbles from the box at random without looking. What is the probability that they will all be blue?

2. You draw three cards from a full deck. What is the probability that they will all be clubs?

3. We have a box with six green marbles, five blue marbles, and seven red marbles. We choose three marbles from the box at random without looking. What is the probability that none of them will be blue?

4. You draw three cards from a full deck. What is the probability that they will all be face cards (jacks, queens, or kings)?

5. You draw five cards from a full deck. What is the probability that you have at least one king?

6. A dinner order at the Unknown Café consists of a salad with dressing, an entrée, and three side dishes. The menu offers a salad with your choice of ranch, bleu cheese, thousand island, Italian, French, or Caesar dressing. For entrées, you have the choice of a hamburger, cheese burger, fried chicken, pot roast, pork chops, or halibut. Side dishes are French fries, corn on the cob, mashed potatoes, baked potato, steamed rice, wild rice, or mixed fruit. How many possible dinner orders are available?

7. We want to select a committee of six members from a group of nine women and seven men. The order of selection is irrelevant. How many committees can we make consisting of four women and two men?

8. You toss a coin and then roll a die. What is the probability that you get a head followed by a 4?

9. Suppose you toss a pair of dice. What is the probability that the total number of dots appearing is 6?

10. Suppose you toss a pair of die. What is the probability that the total number of dots appearing is not 6?

11. Suppose you choose two cards from a thoroughly shuffled deck. If you put the first card back in the deck before you draw the second, what is the probability that the first card is an ace and the second card is a king?

12. Suppose you choose two cards from a thoroughly shuffled deck. If you do not put the first card back in the deck before you draw the second, what is the probability that the first card is club and the second card is a spade?

13. Suppose a certain traffic light shows a red light for 50 seconds, a green light for 40 seconds, and a yellow light for 5 seconds. Each day you look at this light at a randomly chosen instant. What is the probability that you see a green light five days in a row? Give your answer as a percent to the nearest tenth of a percent.

14. Suppose the inside bottom of a box is painted with three colors: 1/3 of the bottom area is blue, 1/6 is red, and 1/2 is yellow. You toss a tiny pebble into the box without aiming and note the color on which the pebble lands. Then you toss another tiny pebble into the box without aiming and note the color on which that pebble lands. What is the probability that one of the pebbles lands on the color red and the other pebble lands on the color yellow?

15. A _____ of items is an arrangement of the items in a certain order.

16. A _____ of a group of items is a selection from that group in which order is not taken into account.

17. When putting numbers and letters on a license plate, order makes a difference.

18. There are seven candidates running for the presidential and vice-presidential nomination. How many different ways are there of selecting presidential and vice-presidential candidates from the field?

19. An ice cream parlor sells ten different flavors. If you'd like a bowl with three scoops (each a different flavor), how many choices do you have?

20. A candy jar has twelve pieces of candy in it. If you want to select two pieces, how many choices do you have?

21. Suppose there is a group of nine people from which we will make a committee. In how many ways could a four-person committee be selected?

22. Seven horses are running in a race. In how many ways can we have first-, second-, and third-place finishers, assuming there are no ties?

Answer Key

1. 0.012
2. 0.013
3. 0.35
4. 0.010
5. 34.1%
6. 1260
7. 2646 committees
8. 1/12
9. 5/36
10. 31/36
11. 1/169
12. 13/204
13. 1.3%
14. 1/6
15. permutation
16. combination
17. True
18. 42
19. 120
20. 66
21. 126
22. 210