Discrete Probability Pre-assessment chapter 15   Name:_____

Part A: Fill in the blank
Fill in each blank with the correct word from the box below.

| sample space   classical probability   empirical probability |
| conditional probability   independent   mutually exclusive   permutation   combination |

1. A _____ is an ordered arrangement of objects.

2. The set of all possible outcomes of a probability experiment is the _____.

3. _____ is based on observations obtained from probability experiments.

4. Two events are _____ if the occurrence of one of the events does not affect the probability of the occurrence of the other event.

5. Two events A and B are _____ if A and B cannot occur at the same time.

Part B: Short answer

6. In a probability experiment, you toss three coins. Identify the sample space for this experiment.

7. You roll a six-sided die. Find the P (rolling a 3).

8. You roll a six-sided die. Find the P (rolling a number less than 5).

9. You select a king from a standard deck, don't replace it, and then select a queen from the deck. Are these events independent or dependent?

10. You toss a coin and get heads and then roll a six-sided die and obtain a 6. Are these events independent or dependent?

11. A coin is tossed and a die is rolled. Find the probability of getting a head and then rolling a 6.

12. Two cards are selected, without replacement, from a standard deck. Find the probability of selecting a king and then selecting a queen.

13. Decide if the following events are mutually exclusive. A: A student is 20 years old. B: A student has blue eyes.

14. Decide if the following events are mutually exclusive. A: You pass Discrete   B: You fail Discrete.

15. You select a card from a standard deck. Find the probability that the card is a 4 or an ace.

16. You select a card from a standard deck. Find the probability that the card is a 4 and an heart.

17. You roll a die. Find the probability of rolling a number less than three or rolling an odd number.

18. You want to pick 4 people from the senior class to be President, Vice-President, Secretary, and Treasurer. Would this require using the permutation or the combination formula?

19. You want to pick 4 of your friends to go to a movie on Friday. Would this require using the permutation or the combination formula?

20. You own 10 shirts, 15 pants, and 25 pairs of shoes. How many different outfits are available if you must wear a shirt, pants, and shoes?

21. A dog race has 10 entries. Assuming that there are no ties, in how many different orders can the dogs finish?

22. In a certain state, each license plate number consists of two letters followed by a four-digit number. How many license plates can be formed?

23. In a state lottery, you must select 5 numbers out of 40 correctly to win the top prize. How many ways can 5 numbers be chosen from 40 numbers?

Part C: Long answer
24. Explain the difference between independent and dependent events. Give a new example of each.

25. Explain the difference between a permutation and a combination. Give a new example of each.