

8.1 I can determine the difference between Theoretical and Experimental Probability.

a. Define theoretical probability.

b. Define experimental probability.

A coin was tossed 45 times and heads came up 12 times.

c. Find the experimental probability of getting heads.

d. Find the theoretical probability of getting heads.

8.2 I can find the probability of any given real world scenario.

State whether the following would be inclusive or mutually exclusive. Then find the probabilities.

a. On the all-state soccer team, 7 of the 15 players from the North Region are seniors, and 4 of the 13 players from the South Region are seniors. What is the probability that a randomly selected student is a senior or a student from the North Region?

State whether the following would be independent or dependent. Then find the probabilities.

b. There are 3 miniature chocolate bars and 5 peanut butter cups in a candy dish. Judie chooses 2 of them at random. What is the probability that she chooses 2 miniature chocolate bars?

State whether the following would be independent or dependent. Then find the probabilities.

c. What is the probability that a die rolled twice lands on an even number?

State whether the following would be inclusive or mutually exclusive. Then find the probabilities.

d. A bowl contains 4 peaches and 5 apricots and Maxine randomly selects one fruit. What is the probability of picking a peach or an apricot?

State whether the following would be independent or dependent. Then find the probabilities.

e. What is the probability of getting heads each time if a coin is tossed 5 times?

State whether the following would be inclusive or mutually exclusive. Then find the probabilities.

f. A die is rolled once, Find $P(\text{even or prime})$.

State whether the following would be independent or dependent. Then find the probabilities.

g. Two cards are drawn from a standard deck of cards, find $P(\text{a heart and a queen})$.

State whether the following would be inclusive or mutually exclusive. Then find the probabilities.

h. A card is drawn from a deck of cards, find $P(\text{Spade} \cup \text{Club})$.

State whether the following would be inclusive or mutually exclusive. Then find the probabilities.

i. A card is drawn from a deck of cards, find $P(\text{Red} \cup \text{Face Card})$.

State whether the following would be independent or dependent. Then find the probabilities.

j. You are rolling a die twice, find $P(6 \cap \text{even})$.

State whether the following would be independent or dependent. Then find the probabilities.

k. You are drawing two cards, find $P(6 \cap \text{King})$.

State whether the following would be inclusive or mutually exclusive. Then find the probabilities.

l. One tile with each letter of the alphabet is placed in a bag, and one is drawn at random. What is the probability of selecting a vowel or a letter from the word equation?

State whether the following would be independent or dependent. Then find the probabilities.

m. Two cards are drawn from a standard deck of cards. What is the probability of drawing a face card then a 2?

8.3 I can apply my knowledge of the Fundamental Counting Principle, Permutations, and Combinations to solve real world scenarios.

State if the following is a permutation, combination or FCP.

a. A license plate is made up of 4 letters (except I and O) followed by 3 digits. How many possible license plates are there?

State if the following is a permutation, combination or FCP then find how many possibilities there are.

b. Selecting two of eight employees to attend a business seminar.

State if the following is a permutation, combination or FCP then find how many possibilities there are.

c. The winner, and first, second, and third runners-up in a contest with 10 finalists.

State if the following is a permutation, combination or FCP.

d. There are fourteen juniors and twenty-three seniors in the Service Club. The club wants to send four representatives to the State Conference. **Then find:**

1. How many different distinct committees can be formed using four students?

2. If the members of the club decide to send 2 juniors and 2 seniors, how many different groupings are possible?

State if the following is a permutation, combination or FCP.

e. Serial numbers for a product are to be made using three letters (using any letter of the alphabet) followed by two single-digit numbers. For example, JGR29 is one such serial number. **Then find:**

1. How many such serial numbers are possible if neither letters nor numbers can be repeated?

2. How many serial numbers are possible, without repeating, if both numbers must be even?

3. How many such serial numbers are possible if letters and numbers CAN repeat?