**Finding Probabilities of Compound Events** 

**Let’s Review:**

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ experiment is an action, or trial through which specific results (counts, measurements, or responses) are obtained.

The result of a single trial in a probability experiment is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the set of all possible outcomes of a probability experiment.

An \_\_\_\_\_\_\_\_\_\_\_ is a subset of a sample space.

For example: A probability experiment consists of tossing a coin and rolling a six-sided die. Determine the number of outcomes and identify the sample space.

**Group Work**

Please read each question carefully. You will need to draw a tree diagram, list the sample space and answer the probabilities for each question.

Question #1

Two marbles are selected without replacement from a bag that contains one red, one blue, one green and one orange marble.

1. Use the counting principle to determine the number of points in the sample space.
2. Construct a tree diagram and list the sample space.
3. Determine the probability that one orange marble is selected.
4. Determine the probability that a green marble followed by a red marble is selected.
5. Determine the probability that a blue and orange marble are selected.

Question #2

At a restaurant, each lunch special consists of a sandwich, beverage and a dessert. The sandwich choices are ham (H) and roast beef (R). The beverages choices are soda (S), tea (T) or lemonade (L) and the desserts are a pie (P) or brownie (B).

1. Use the counting principle to determine the number of different lunch specials offered by the restaurant.
2. Construct a tree diagram and list the sample space.
3. If a customer randomly selects one of the lunch specials, determine the probability that both a ham sandwich and brownie are selected.
4. If a customer randomly selects one of the lunch specials, determine the probability the neither tea nor pie is selected.
5. If a customer randomly selects one of the lunch specials, determine the probability that the person chooses pie as their dessert.

Question #3

A hat contains four marbles: 1 yellow, 1 blue, 1 green and 1 purple. Two marbles are selected at random with replacement.

1. Determine the number of points in the sample space.
2. Construct a tree diagram and list the sample space.
3. Determine the probability of selecting exactly one purple marble.
4. Determine the probability of selecting at least 1 marble that is not purple.
5. Determine the probability of selecting no green marbles.

Question #4

Now that you have completed all of the questions, look back at Question 1 and 3, what differences do you see in these questions? How are their tree diagrams affected by this difference?

Question #5

What do you think are the benefits of drawing tree diagrams? What do you think some of the disadvantages could be to drawing tree diagrams?