Math 113: Classroom Activity 4   Name : _____
10 pts

**Materials Needed:**
       Poker Chips

Take a container of poker chips. The smaller side of the container is side A and the larger side is side B.

1.   Record the number of each color of chips for each side of the container.

Color	Red	White	Blue	Total
Side A				
Side B				

Situation 1: A side of the container is randomly selected and then one chip is randomly selected from that side of the container.

2.   Decide which tree diagram is appropriate for this situation and complete it. Label the branches of the tree diagram with fractions.
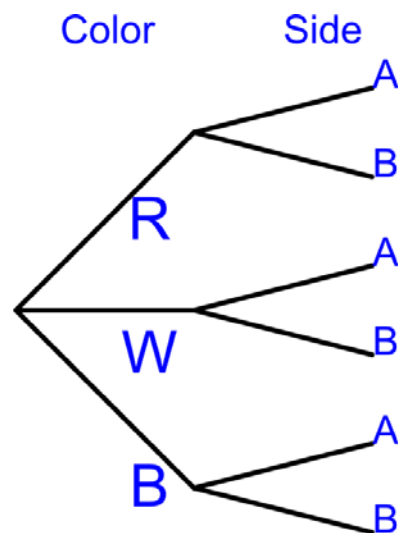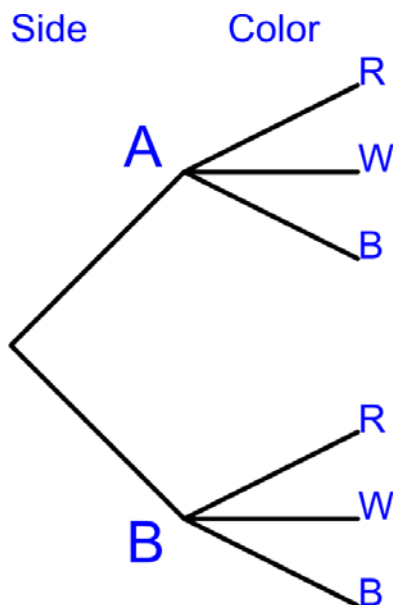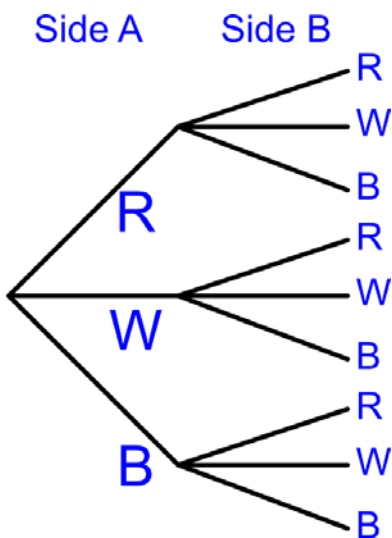
3.   Complete the joint probability table based on the tree diagram above. Give answers as decimals with four decimal places.

Color	Red	White	Blue	Total
Side A				
Side B				
Total				

4.   What is the probability that the chip selected is red?

5.   What is the probability that the chip selected is white?

6.   A red chip is selected. What is the probability that it came from side A?

7.   A blue chip is selected. What is the probability that it came from side B?

Situation 2: A chip is randomly selected from side A and placed into side B of the container. A chip is then randomly selected from side B.

8.   Label the following tree diagram with the appropriate probabilities based on your container. Use fractions for the probabilities.
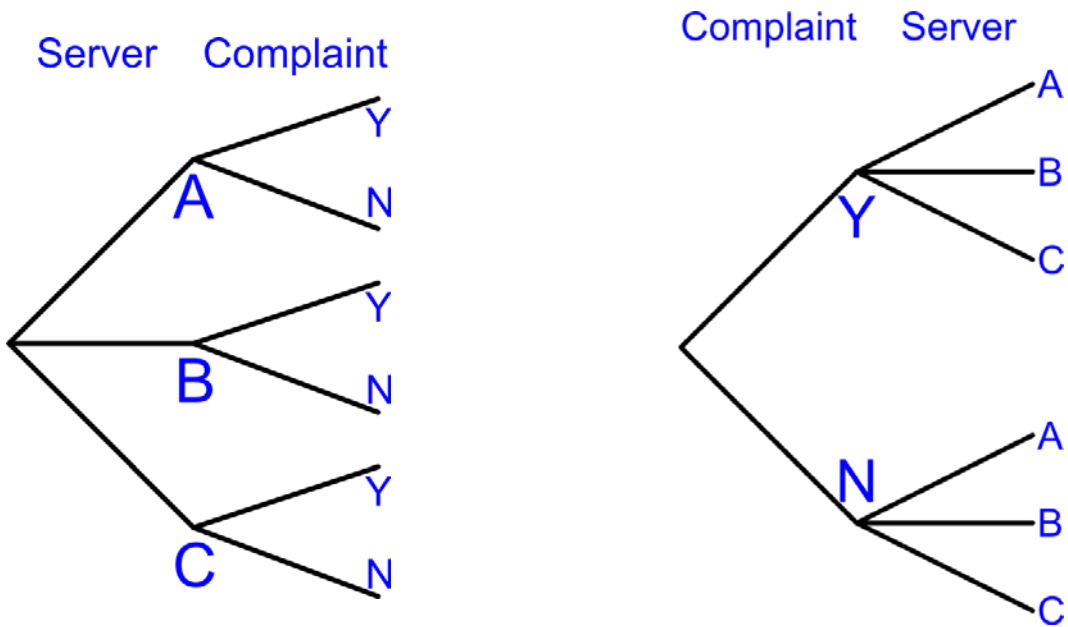
9. Use the tree diagram to complete the joint probability distribution. Write your probabilities as decimals with four decimal places.

		Side B			
		Red	White	Blue	Total
Side A	Red				
	White				
	Blue				
	Total				

10. What is the probability that the selected chip from side B is white?

11. What is the probability that the selected chip from side B is blue?

12. A red chip is selected from side B. What is the probability that a white chip was moved from side A to side B?

13. A white chip is selected from side B. What is the probability that a blue chip was moved from side A to side B?

Situation 3: Amos, Bertie, and Chloe are servers for Damon's Dinner Dive. Amos serves 40% of the customers and receives complaints from 3% of his customers. Bertie serves 35% of the customers and receives complaints from 4% of her customers. Chloe serves 25% of the customers and receives complaints from 6% of her customers.

14. Decide which tree diagram is appropriate for this situation and complete it. Use decimals to label the tree diagram.

Server   Complaint

A
  Y
  N

B
  Y
  N

C
  Y
  N

Complaint   Server

Y
  A
  B
  C

N
  A
  B
  C

15. Complete the joint probability distribution from the tree diagram. Use decimals, do not round answers (they come out nicely).

		Complaint		
		Yes	No	Total
Server	Amos			
	Bertie			
	Chloe			
	Total			

16. What percent of the customers complain about a server?

17. A customer complains about a server. What is the probability that the server was Chloe?

Situation 4: A bag of candy has the following flavor distribution. 20% grape, 40% orange, and 30% cherry. The rest are lemon flavored. Assume that the bag has enough candy in it that the distribution is not affected by sampling without replacement.

18.   Create a probability distribution for the flavor of the candy.

Flavor	Grape	Orange	Cherry	Lemon	Total
Probability					

19.   A single candy is randomly selected from the bag.

   a.   What is the probability that it is lemon?

   b.   What is the probability that it is grape or orange?

   c.   What is the probability that it is not cherry?

20.   Three candies are randomly selected from the bag.

   a.   What is the probability that all three are grape?

   b.   What is the probability that none are cherry?

   c.   What is the probability that at least one is orange?

   d.   What is the probability that the third candy is the first one that is lemon?

   e.   What is the probability that all three are different flavors (hint, there are four ways this could happen)?