Advanced Algebra

Unit 8: Probability – **Assignment #18Venn Diagrams and Tree Diagrams**

1. At a particular school there are 20 teachers. Three of them teach math, 5 teach science, and 3 teach computer science. It turns out that there is one teacher who teaches all three classes and one teacher who teaches both science and computer science but not math. Draw a Venn diagram to illustrate the situation and determine how many of the 20 teachers teach courses other than math, science, or computer science.
(*Hint:* You will need 3 circles to build this diagram.)

2. Three friends try out for sports teams at their high school. Gladys tries out for the lacrosse team and has a 40% chance of success (making the team). Becky tries out for the synchronized swim team and has a 30% chance of success. Serita tries out for the tennis team and has a 25% chance of success. Use the tree diagram to find each probability.
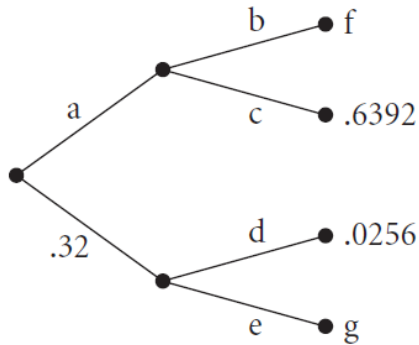
a. What is the probability that all three girls will make their teams?

b. What is the probability that none of the girls will be successful?

c. What is the probability that exactly one of the girls will be successful?

Serita

Becky

Gladys

S

F

S = success
F = failure
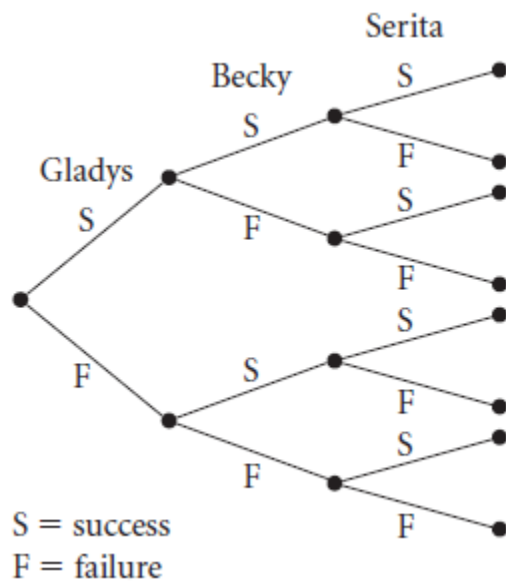
3. Find the probability of the missing pieces and of each path in the tree diagram below. Keep in mind that the sum of the probabilities for each branch must add to 100%.

4. Refer to the Venn diagram, which gives probabilities related to the two events "plays the piano" and "plays the violin." These probabilities apply to the students at Riverway Middle School, which has 800 students.

a. What is the probability that a randomly chosen student at Riverway plays the piano?

b. What is the probability that a randomly chosen student at Riverway plays neither the piano nor the violin?
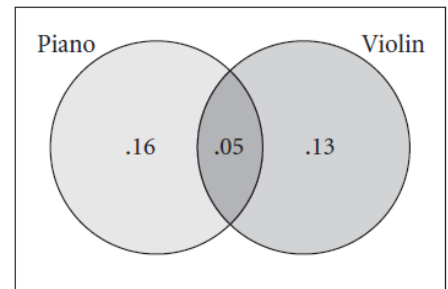
c. How many students at Riverway play both instruments?

d. How many students play the piano or the violin, but not both instruments?

5. Mr. Selvaag teaches three Geometry classes. Each class has 30 students. His first class has 12 sophomores, his second class has 18 sophomores, and his third class has 9 sophomores. He will randomly choose one student from each class to participate in a competition. Make a tree diagram to find each probability.

a. What is the probability that Mr. S. chooses three sophomores?

b. What is the probability that Mr. S. chooses at least one sophomore?