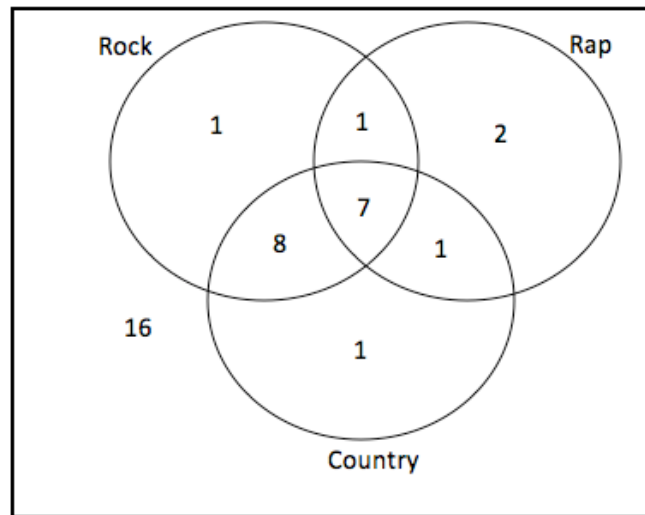


4. Use the Venn diagram below to answer question (a) – (c).
- How many total people are represented in the diagram?
 - How many people like country?
 - If one person is chosen at random, what is the probability that:
 - They will like rap music?
 - They will like rap or country music?
 - They will not like rock nor country?
 - They will like rock given that they like country?
 - They will not like country given that they like rock?
 - They will not like rap given that they do not like country?



- A box contains 7 large red marbles, 5 large yellow marbles, 3 small red marbles, and 5 small yellow marbles. If a marble is drawn at random, what is the probability that it is yellow, given that it is one of the large marbles?
- Carrie is a kicker on her rugby team. She estimates that her chances of scoring on a penalty kick during a game are 75% when there is no wind, but only 60% on a windy day. If the weather forecast gives a 55% probability of windy weather today, what is the probability of Carrie scoring on a penalty kick in a match this afternoon?
- A bag contains three white marbles, five green marbles, and two red marbles. What is the probability of randomly picking both red marbles in the first two tries? Assume that the first marble picked is not put back into the bag.
HL OPTION: How probable is it that she picks the two red marbles in her AT MOST her first THREE trials?

8. A survey at a school asked students if they were ill with a cold or the flu during the last month. The results were as follows. None of the students had both a cold and the flu. Use these results to estimate the probability that:
- a randomly selected student had a cold in the last month
 - a randomly selected female student was healthy last month
 - a randomly selected student who had the flu last month is male
 - a randomly selected male student had either a cold or the flu last month

	Cold	Flu	Healthy
Females	32	18	47
Males	25	19	38

9. If the probability of the Rangers defeating the Eagles in a hockey game is $\frac{3}{7}$, what is the probability that the Rangers will:
- win two consecutive games against the Eagles?
 - win two out of three games against the Eagles?
 - win 4 games before the Eagles win 4 games?



Higher Level Questions for More Complex Concepts in Probability. Determine the probability of the event described in each exercise. Unless stated otherwise, assume all items of chance are fair.

1. And finally, here is the Monty Hall Problem → The Monty Hall Problem gets its name from the TV game show, Let's Make A Deal, hosted by Monty Hall 1. The scenario is such: you are given the opportunity to select one closed door of three, behind one of which there is a prize. The other two doors hide “goats” (or some other such “non-prize”), or nothing at all. Once you have made your selection, Monty Hall will open one of the remaining doors, revealing that it does not contain the prize 2. He then asks you if you would like to switch your selection to the other unopened door, or stay with your original choice. (Here is a video of an episode of “Let’s Make a Deal → https://www.youtube.com/watch?v=sZCpXz9tk_o)

Here is the problem: Does it matter if you switch? (Helpful link → <http://www.montyhallproblem.com/>)

Your challenge → design a “simple” experiment wherein you test the hypothesis that switching does not matter and run your experiment to see if your hypothesis is true or not.