[1] A particular airline has 10:00 a.m. flights from San Francisco to New York, Atlanta, and Miami. The probabilities that each flight is full are 0.60, 0.40, and 0.50 respectively, and each flight is independent one another.

1. What is the probability that all flights are full?
2. What is the probability that only the New York flight is full?
3. What is the probability that exactly one flight is full?

[2] In a past presidential election, the actual voter turnout was 61%. In a survey, 1002 subjects were asked if they voted in the presidential election.

1. What would you think that the most appropriate distribution is to apply to the situation? Explain why.
2. Find the mean and standard deviation for the number of actual voters in groups of 1002 using your choice of the distribution in (a).
3. In the survey of 1002 people, 701 said that they voted in the last presidential election (based on data from ICR Research Group). Is this result consistent with the actual voter turnout, or is this result unlikely to occur with an actual voter turnout of 61%? Why or why not?
4. Based on these results, does it appear that accurate voting results can be obtained by asking voters how they acted?

[3] As reported by *Runner's World* magazine, the times of the finishers in the New York City 10-km run are normally distributed with a mean of 61 minutes and a standard deviation of 9 minutes.

1. What is the chance that finishers complete the run with the times between 50 and 70 minutes?
2. What is the chance that finishers complete the run with the times more than 75 minutes?
3. How fast do finishers have to complete the run among the top 5% finishers?

[4] In a clinical trial of Lipitor, a common drug used to lower cholesterol, 863 patients were given a treatment of 10-mg Atorvastatin tablets. Among them, 19 patients experienced flu symptoms and 844 patients did not (based on data from Pfizer, Inc.).

1. What would you think that the most appropriate distribution is to apply to the situation? Explain why.
2. Estimate the probability that a patient taking the drug will experience flu symptoms using your choice of distribution in (a).
3. Is this unusual for a patient taking the drug to experience flu symptoms in (b)? Explain.

Assume that the probability of flu symptoms for a person not receiving any treatment is known 0.019, and you want to know what the probability is when there are 19 who experience flu symptoms among 863 patients. Explain.

1. Under this condition, what would you think that the most appropriate distribution is to apply to the given situation? Explain
2. Is this unusual to find that among 863 patients, there are 19 who experience flu symptoms in d)? Explain.