1. 70% of the US population are troubled by the economy. You randomly sample 20 people. Let X be the number in your sample who are troubled by the economy.

2. Suppose that warranty records show that the probability that a new car needs a warranty repair in the first 90 days is .05. In a sample of 10 new cars, what is the probability that in the first 90 days

3. A general statement is made that an error occurs in 10% of all retail transactions. We wish to evaluate the truthfulness of this figure for a particular retail store, say store A. Twenty transactions of this store are randomly obtained.

4. Trucks arrive at a weighing station at a constant rate of 6 per hour between midnight and 6 AM.

5. A rare disease occurs once for every 50,000,000 patients. In a group of 25,000,000 people, find the probability that

   at least one person has the rare disease. least one person has the rare disease.

6. The probability a student passes a written test for a private pilot's license is 75%. The student can retake the test until passing.

7. Cargo ships arrive at a loading dock at a rate of 2 per day. The dock has the capability of handling 3 arrivals per day. How many days per month (assume 30 days in a month) would you expect the dock being unable to handle all arriving ships? (Hint: first find the probability that more than 3 ships arrive and then use that probability to find the expected number of days in a month too many ships arrive.)

8. I refill my 12 gallon tank in my car when there are 2 gallons left. The amount of gas in a car's tank follows a Uniform Distribution where the minimum is 2 and the maximum is 12 gallons.

9. A concrete company orders cement by bulk. When the supply of cement gets to 3 tons, the company will order 20 tons which is assume to be delivered immediately. Assume the amount of cement in stock follows a Uniform distribution.

10. The waiting time until the next major accident at an oil refinery follows an exponential distribution, with the expected waiting time equal to 10 years. Let X = the waiting time until the next accident.

11. Annual rainfall in a Bay Area city follows a normal distribution with $\mu=20$ inches and $\sigma=5$.

12. The age of a grove of walnut trees follow a Normal Distribution with $\mu=50$ years and $\sigma=15$ years.

13. Circumference of newborns heads follows a normal distribution.