**Note: Use SPSS to solve the following questions. For every question Write the SPSS commands and then copy and paste the output page here (*or in* *some cases the screen shot of the data view that shows the output*).**

**Question 1:**

If the probability of finding a defective product of a company’s total products is given as 1 out of hundred, with a sample size of 200 chosen, Assuming Poisson distribution, what is the probability that

1. At least 2 are defective

1. At most 3 are defective

1. More than 2 but less than 4 items are defective

1. Exactly 3 are defective.

**Question 2:** The probability of producing a perfect drill is .95. If 5 drills are chosen at random, Assuming Binomial distribution, what's the probability that:

1. exactly 3 are perfect?

1. exactly 4 are perfect?

1. 3 or more are perfect?

1. between 2 and 4 are perfect?

**Question 3**: Suppose the time it takes a nine-year old to eat a donut is between 0.5 and 4 minutes, inclusive. Let X = the time, in minutes, it takes a nine-year old child to eat a donut. Then X~ U (0.5, 4).

1. The probability that a randomly selected nine-year old child eats a donut in at least two minutes is \_\_\_\_\_\_\_.

1. The probability that a randomly selected nine-year old child eats a donut in maximum three minutes is \_\_\_\_\_\_\_.
2. The probability that a randomly selected nine-year old child eats a donut in between 1 and 3 minutes is \_\_\_\_\_\_\_.

**Question 4**: (In this problem first find the probability by using SPSS and then calculate the number of trees manually by using the probabilities.)

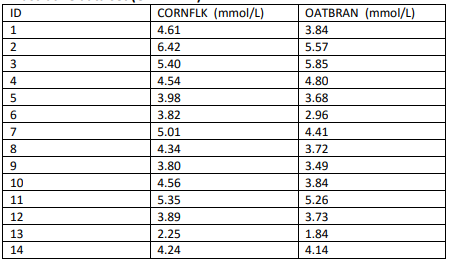
A certain variety of pine tree has a mean trunk diameter of 150 cm, and a standard deviation of 30 cm which is normally distributed. A certain section of a forest has 500 of these trees. Find Approximately

1. how many of these trees have a diameter smaller than 120

1. how many of these trees have a diameter greater than 160

1. how many of these trees have a diameter between 130 and 160.
2. how many of these trees have a diameter between 120 and 140.

**Question 5**: A cross-over trial investigated whether eating oat bran changes serum cholesterol levels. Fourteen (14) individuals were randomly assigned a diet that included either oat bran or corn flakes. After two weeks on the initial diet, serum cholesterol were measured and the participants were then “crossed-over” to the alternate diet. After two-weeks on the second diet, cholesterol levels were once again recorded. Data appear below. The variable CORNFLK in the table represents cholesterol level (mmol/L) of the participant on the corn flake diet. The variable OATBRAN represents the participant’s cholesterol on the oat bran diet.



Use t-test to test the a hypothesis that there is no significance difference between the cholesterol levels.