**Task 1:**

**Problem 1**

You survey households in your area to find the average rent they are paying. Find the standard deviation from the following data:$1550, $1700, $900, $850, $1000, $950.

**Solution:**

Mean = 1550+1700+900+850+1000+950 / 6

Mean = 1158.33

S.D = )

=

S.D = 335.93

**Problem 2**

Find the variance for the following set of data representing trees in California (heights in feet):

3, 21, 98, 203, 17, 9

**Solution:**

Mean = 3+21+98+203+17+9

Mean = 58.5

Variance = )

=

Variance = 5183.25

**Problem 3**

In a class on 100 students, 80 students passed in all subjects, 10 failed in one subject, 7 failed in two subjects and 3 failed in three subjects. Find the probability distribution of the variable for number of subjects a student from the given class has failed in.

**Solution:**

In a class on 100 students, 80 students passed in all subjects,

**Solution:**

Probability of Failing in 0 subjects  = 80/100

Probability of Failing in 1 subjects  = 10/100

Probability of Failing in 2 subjects  = 7/100

Probability of Failing in 3 subjects  = 3/100

Expected number of subjects in which failed   = 0 \* (80/100) + 1(10/100) + 2(7/100) + 3(3/100)

= (0 + 10 + 14 + 9)/100

= 33/100

**Task 2:**

**Problem 1**

A test is conducted which is consisting of 20 MCQs (multiple choices questions) with every MCQ having its four options out of which only one is correct. Determine the probability that a person undertaking that test has answered exactly 5 questions wrong.

**Solution:**

Here N = 20,

the probability of success= p = 5/20 = 0.25,

the probability of failure q = 1 – p = 1 – 0..25 = 0.75

test has answered exactly 5 questions wrong, x = 5

According to Binomial distribution

= N!/x!(N-X)!

**Problem 2:**

A die marked A to E is rolled 50 times. Find the probability of getting a “D” exactly 5 times.

**Solution:**

Here, N = 50, x = 5, N - x = 45.

The probability of success = probability of getting a “D”= s = 1/5

Hence, the probability of failure = probability of not getting a “D” = 1 - s = 4/5

According to Binomial distribution

= N!/x!(N-X)!

**Problem 3:**

Two balls are drawn at random in succession without replacement from an urn containing 4 red balls and 6 black balls. Find the probabilities of all the possible outcomes.

**Solution:**

Total Outcomes= 6+4 = 10

Probability of getting red ball= 4/10=2/5

Probability of getting black ball = 6/10 = 3/5