**Problem Statement 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.

**Answer**

**Sum** **Ʃ** = 1550 + 1700 + 900 + 850 + 1000 + 950 = $6950

**Mean** = 6950/6 = 1158

**Variance** = (1550 – 1158) \*\* 2 + (1700 -1158)\*\*2 +(900-1158)\*\*2 + (850-1158)\*\*2 +

(1000-1158)\*\*2+(950-1158)\*\*2/6

= 153664 + 293764+66564+94864+24964+43264/6 = 112847

**Standard Deviation = square root of(112847 ) =** $ **335.927**

**Problem Statement 2:**

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

3, 21, 98, 203, 17, 9

**Answer**

**Sum** = 3 + 21 + 98 + 203 + 17 + 9 = 351

**Mean** = 351/6 = 58.5

**Variance** = (3 – 58.5) \*\* 2 + (21 -58.5) \*\* 2 +(98-58.5) \*\* 2 + (203-58.5) \*\* 2 +

(17-58.5) \*\* 2 + (9 - 58.5) \*\* 2/6

= 3080.25 + 1406.25 + 1560.25 + 20880.25 + 1722.25 + 2450.25/6

= 5183.25

**Problem Statement 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.

**Answer :**

For a random student,

The probability of failing in 0 subjects , P(X=0) = 80/100 = 0.8

The probability of failing in 1 subjects , P(X=1) = 10/100 = 0.1

The probability of failing in 2 subjects , P(X=2) = 7/100 = 0.07

The probability of failing in 3 subjects , P(X=3) = 3/100 = 0.03

The probability distribution can be shown as:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **X** | **0** | **1** | **2** | **3** |
| P(X) | .8 | .1 | .07 | .03 |