

## STATISTICS 1&2

### - Task 1 - 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 1 -

##### - Step 1 – Calculation of Mean – $(x_1+x_2+x_3+x_4+x_5+x_6)/(n-1)$

$(1550+1700+900+850+1000+950) / 6 = \mathbf{1158.33}$

##### - Step 2 – Calculation of Variance –

1550	392	153403
1700	542	293403
900	-258	66736
850	-308	95069
1000	-158	25069
950	-208	43403
<b>1158.33</b>		<b>677083.3</b>

$$s^2 = \frac{\sum (X - \bar{X})^2}{N-1}$$

Variance –

$677083.3/(6-1) = \mathbf{135416.7}$

##### - Step 3 – Calculation of Standard Deviation –

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

$\sqrt{135416.7} = 367.99$

Therefore, Standard Deviation is **367.99**

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### - Task 1 - 2:

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

3, 21, 98, 203, 17, 9

#### - Solution 2 -

- Step 1 – Calculation of Mean –  $(x_1+x_2+x_3+x_4+x_5+x_6)/n$

$(3+21+98+203+17+9) / 6 = 58.5$

- Step 2 – Calculation of Variance –

3	-55.5	3080.25
21	-37.5	1406.25
98	39.5	1560.25
203	144.5	20880.25
17	-41.5	1722.25
9	-49.5	2450.25
<b>58.5</b>		<b>31099.5</b>

$$s^2 = \frac{\sum (X - \bar{X})^2}{N-1}$$

Variance –

$31099.5/(6-1) = 6219.9$

Therefore, Variance is **6219.9**

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### - Task 1 - 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 3 –

- 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)	0.8	0.1	0.07	0.03