

STATISTICS 1 & 2 –

- Task 1 - A:

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
1158.33		677083.3

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

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 - B:

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 – $(x_1+x_2+x_3+x_4+x_5+x_6)/n$
 $(3+21+98+203+17+9) / 6 = \mathbf{58.5}$
- 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
58.5		31099.5

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

Variance –

$$31099.5/(6-1) = \mathbf{6219.9}$$

Therefore, Variance is **6219.9**

STATISTICS 1 & 2 –

Task 1 - C:

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