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.

$S^2 = \Sigma(x-\sigma)^2 / n$

x= 1550, 1700, 900, 850, 1000, 950

σ = (1550 + 1700+ 900+ 850+1000+950)/6

= 1158.33

| x | σ | x-σ | $(x-\sigma)^2$ |
|---|---|---|---|
| 1550 | 1158.33 | 1550 - 1158.33 = 391.67 | 783.34 |
| 1700 | 1158.33 | 1700 -1158.33 = 541. 67 | 1083.34 |
| 900 | 1158.33 | 900 -1158.33 = -258.33 | 516.66 |
| 850 | 1158.33 | 850 -1158.33 = -308.33 | 616.66 |
| 1000 | 1158.33 | 1000 – 1158.33 = -158.33 | 316.66 |
| 950 | 1158.33 | 950 – 1158.33 = -208.33 | 416.66 |

$S^2$ = (783.34+1083.34+ 516.66+ 616.66+316.66+ 416.66)/6

= 622.22

S = 24.94

2. Find the variance for the following set of data representing trees in California (heights in feet):
3, 21, 98, 203, 17, 9

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

Step 1**.** Add the number of the dataset
3+21+98+203+17+9 = 351

step 2. square your answer
351*351 = 123201

step 3. divided by total number of items = 123201/6 = 20533.5

step 4. Take your set of original numbers from 1, and square them individually this time:
3 × 3 + 21 × 21 + 98 × 98 + 203 × 203 + 17 × 17 + 9 × 9

Add the squares together:

9 + 441 + 9604 + 41209 + 289 + 81 = 51,633

step 5. Subtract the amount in Step 3 from the amount in Step 4.
51633 – 20533.5 = 31,099.5 Set this number aside for a moment.

Step 6**:** Subtract 1 from the number of items in your data set. For our example:

6 – 1 = 5

Step 7**:** Divide the number in Step 5 by the number in Step 5. This gives you the variance:

31099.5/5 = 6219.9

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.

Total number of students – 100
Students passed all subject – 80
student failed 1 subject – 10
students failed 2 subject – 7
students failed in 3 subject – 3

probability of failing 0 subject - 80/100
probability of failing 1 subject - 10/100
Probability of failing 2 subject – 7/100
Probability of failing 3 subject – 3/100

Probability distribution = 0*(80/100)+1(10/100)+2(7/100)+3*(3/100)
= (0+10+14+9)/100
= 33/100