$$SD = \sqrt{\frac{\Sigma X^2 - (\Sigma X)^2/n}{n-1}}$$

$$= \sqrt{\frac{2307 - (111)^2/12}{12-1}}$$

$$= \pm 12.7$$

4- $CV\% = \frac{SD}{\bar{X}} \times 100$

$$= \frac{12.7}{9.25} \times 100$$

$$= 137.2\%$$

5- $SE = \frac{SD}{\sqrt{n}} = \frac{12.7}{\sqrt{12}}$

$$= \frac{12.7}{3.5} = 3.6$$

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Ward A

no	X	X^2
1-	4	16
2-	5	25
3-	7	49
4-	3	9
5	5	25
6	8	64
7	10	100
8	2	4
9	5	25
10	8	64
11	5	25
12	49	2401
	111	2807

$$SD = \mp\sqrt{S^2}$$

$$= \mp 12.7$$

1- *Population and health characteristics:*

Q1- The age and sex distribution of a certain population is given in the following Table:

Age in years	Male	Female	Total
0<1	96	86	182
1-4	358	355	713
5-14	993	1057	2050
15-44	1530	1562	3092
45-64	301	312	613
65 and above	98	119	217
Total	3376	3491	6867

1. Describe the Table above and try to compare the relative composition with respect to age and sex. Comment on your findings.
2. Draw a population pyramid for this population.
3. What type of countries does this population belong to?
4. What health problems are expected to be prevailing in such population?
5. What will happen to this distribution if:
   - Fertility declined
   - Mortality declined.

Q2- A community is having the following data for the year 2012:

Total population	50000
Number of total births (LB+SB)	2200
Number of live births	2000
Number of total deaths	400
Number of deaths during first year of life	120
Number of deaths during first week of life	18
Number of persons who developed disease(x)	100
Number of persons who died from disease(x)	4

Calculate for this population epidemiological parameters related to fertility, morbidity and mortality in the year 2012.

2- *Measurements (indicators) of health:*

Q3- A class has 100 students during the month

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Answer Measures of central tendecy.

$\overline{X}$ mean for Ward A = 9.25

$\overline{X}$ mean for Ward B = 3.9

Median ward A = 5

Median ward B = 3

Mode ward A = 5

Mode ward B = 3

Measures of variability

Range, variance, SD, SE (↑ standard error)

Ward A Meas. of V.:-

① Range = $L_x - S_x = 49 - 2 = 47$

② Variance = $S^2 = \dfrac{\sum X^2 - \frac{(\sum X)^2}{2}}{n-1}$

$S^2 = \dfrac{2807 - \frac{(111)^2}{12}}{12-1}$

$= \dfrac{2807 - 1026.8}{11} = \boxed{161.8}$

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The length of stay in two different medical wards in two different district hospitals are given below.

Ward (A): 4, 5, 7, 3, 5, 8
10, 2, 5, 8, 5, 49

Wards (B): 2, 8, 5, 6, 3, 4, 3
7, 3, 2, 2, 5, 4, 4
3, 5, 4, 1, 3, 2, 2
9, 3

Using appropriate statistical method(s), Compare the duration of stay in the two hospitals.

(By measuring mean, median, & mode, rang, SD, variance, & coefficient of variation).