

**Answer on Question #63553 – Math – Statistics and Probability
Question**

From the frequency distribution table below calculate:

- i)** The harmonic mean
- ii)** The geometric mean
- iii)** The mode

Class	25-29	30-34	35-39	40-44	45-49	50-54
Frequency	3	9	13	10	7	2

Solution

i)

Class Interval	Frequency f	x	f/x
25-29	3	27	0.11111111
30-34	9	32	0.28125000
35-39	13	37	0.35135135
40-44	10	42	0.23809524
45-49	7	47	0.14893617
50-54	2	52	0.03846154
Total	44		1.1692

The harmonic mean is $H.M. = \frac{N}{\sum f/x} = \frac{44}{1.1692} = 37.63$

ii)

Class Interval	Frequency f	x	Log (x)	F Log (x)
25-29	3	27	1.43136	4.29408
30-34	9 (f_0)	32	1.50515	13.54635
35-39	13 (f_1)	37	1.56820	20.38660
40-44	10 (f_2)	42	1.62325	16.23250
45-49	7	47	1.67210	11.70470
50-54	2	52	1.71600	3.43200
Total	44			69.59623

$\text{Log (GM)} = \frac{\sum f x_i}{N} = \frac{69.59623}{44} = 1.5817325$

The geometric mean is $GM = 10^{1.5817325} = 38.17$

iii) To find the mode of grouped distribution, the following formula will be used:

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \cdot h,$$

where l is the lower limit of model class, f_0 is the frequency of class preceding, f_1 is the frequency of that class and f_2 is the frequency of class succeeding the model class respectively, h is the class width.

The mode containing class is [35-39] has the biggest frequency 13.

So the mode value is

$$\text{Mode} = 35 + \frac{13 - 9}{2 \cdot 13 - 9 - 10} \cdot 4 = 37 \frac{2}{7} \approx 16.29.$$

Answer: i) 37.63; **ii)** 38.17; **iii)** 16.29.