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Serial: 13

Class	f	u	fu	$f\log u$	f/u	$u-\bar{u}$ ($\bar{u}=\frac{75}{20}=3.75$)	$f|u-\bar{u}|$	$f(u-\bar{u})^2$
1-2	1	1.5	1.5	0.176	0.66	-2.25	2.25	5.06
2-3	3	2.5	7.5	1.194	1.2	-1.25	3.75	4.687
3-4	8	3.5	2.8	4.352	2.286	-0.25	2	0.5
4-5	6	4.5	27	3.919	1.33	0.75	4.5	3.375
5-6	2	5.5	11	1.48	0.384	1.75	3.5	6.125
Total	20(n)		75	11.12	5.87		16	19.75

a) $AM = \dfrac{75}{20} = 3.75$

$GM = Antilog\left(\dfrac{11.12}{20}\right) = 3.597$

$HM = \dfrac{20}{5.87} = 3.41$

b)

Class	frequency	Cumulative Frequency (cf)
1-2	1	1
2-3	3	4
3-4	8	12
4-5	6	18
5-6	2	20

①

$$\text{median} = 3 + \frac{\frac{20}{2} - 4}{8} \times 1 = 3.75$$

$$\text{mode} = 3 + \frac{8-3}{8 \times 2 - 3 - 6} \times 1 = 3.71$$

c) As, mean > median > mode, It is positively skewed.

d) $MD = \frac{16}{20} = 0.8$

e) variance, $\sigma^2 = \frac{19.75}{20} = 6.9875$

$SD, \sigma = 0.99$

f) $CV = \frac{0.99}{3.75} \times 100\% = 26.5\%$

3.1) let, A = multiple of $3 = \{3, 6, 9, 12, 15, 18\}$

$\quad$ B = " $\quad$ " $\quad$ 5 $= \{5, 10, 15, 20\}$

$\therefore P(A) = \frac{6}{20}$; $\quad P(B) = \frac{4}{20}$

$\therefore A \cap B = \{15\}$ $\quad \therefore P(A \cap B) = \frac{1}{20}$

$\therefore P(A \cup B) = \frac{6}{20} + \frac{4}{20} - \frac{1}{20} = \frac{9}{20}$

(Ans.)

②

3.2) Total Students $= 15 + 10 = 25$

Probality of selecting 1 girl and

$$2 \text{ boys} = \frac{10_{c_4} \times 15_{c_2}}{25_{c_3}}$$

$$= \frac{21}{46} \text{ (Ans)}$$

3.3) Total numbers of balls $= 4 + 5 + 6 = 15$

Probability of getting all reds

$$= \frac{5_{c_3}}{15_{c_3}} = \frac{2}{91} \text{ (Ans)}$$

3.4) Total Engineers $= 5 \cdot 6 = 11$

a) $\frac{5_{c_4}}{11_{c_4}} = \frac{1}{16}$

b) $\frac{5_{c_2} \, 6_{c_2}}{11_{c_4}} = \frac{5}{11} \text{ (Ans)}$