

Computational Statistics and Probability [0]

Khan, Mohiur Rahman

18-36303-1

Assignment 33.1

Tickets 1-20

Let a = multiple of 3 = $\{3, 6, 9, 12, 15, 18\}$

$$P(a) = \frac{6}{20}$$

Let b = multiple of 5 = $\{5, 10, 15, 20\}$

$$P(b) = \frac{4}{20}$$

$$P(a \cap b) = \{15\} = \frac{1}{20}$$

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

3.2P $n = 25$ (15 B, 10 G) ~~$P(G, B, B)$~~ ~~$P(GBB, BGB, BBG)$~~ Let B = one girl, two boys = $10C_1 \times 15C_2$

$$\therefore P(B) = \frac{10C_1 \times 15C_2}{25C_3} = 0.457$$

3.3

4 W, 5 R, 6 B

Total = 15 balls

$$\text{Let } C = r, r, r = \frac{5C_3}{15C_3} = \frac{2}{91}$$

3.4

5 EE, 6 CE

$$a) \text{ Let } E = \text{All 4 Electronic} = \frac{5C_4}{11C_4} = \frac{1}{66}$$

$$b) \text{ Let } G = 2 EE, 2 CE = \frac{5C_2 \times 6C_2}{11C_4} = \frac{5}{11}$$

Serial: 4

Moshur
Rehman
Khan

Class	f	cf	x	f(x)	f Log(x)	f/x
1-2	1	1	1.5	1.5	0.17	0.667
2-3	3	4	2.5	7.5	1.19	1.20
3-4	8	12	3.5	28	4.38	2.28
4-5	6	18	4.5	27	3.91	1.33
5-6	2	20	5.5	11	1.48	0.36
Total	20			75	11.12	5.837

$$\text{Arithmetic mean} = \frac{1}{n} \sum_{i=1}^n f_i x_i = \frac{75}{20} = 3.75$$

$$\text{Geometric mean} = \text{Antilog} \left(\frac{11.12}{20} \right) = 3.60$$

$$\text{Harmonic mean} = \frac{20}{5.837} = 3.426$$

$$\text{Median} = \frac{n}{2} = 10$$

(cf for class (3-4) is $4 > (3-4) \geq 12$)

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

$$= 3.75$$

Mode = f for class (3-4) is 8
highest frequency

$$\therefore \begin{matrix} f_m = 8 \\ f_1 = 3 \\ f_2 = 6 \\ L = 3 \\ n = 1 \end{matrix} \quad \left| \quad \begin{matrix} \text{mode} = 3 + \frac{8-3}{(2 \times 8) - 3 - 6} \times 1 \\ = 3.71 \end{matrix} \right.$$

Class	\bar{x}	$ x - \bar{x} $	$f(x - \bar{x})$	$f(x - \bar{x})^2$
1-2	$\frac{75}{20} = 3.75$	2.25	2.25	5.06
2-3		1.25	3.75	4.68
3-4		0.25	2	0.5
4-5		0.75	4.5	3.37
5-6		1.75	3.5	6.12
			16	19.75

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

$$\sigma^2 = \frac{19.75}{20} = 0.98$$

$$\sigma_x = \sqrt{0.98} = 0.99$$

$$CV = \frac{\sigma}{\bar{x}} \times 100\% = \frac{0.99}{3.75} \times 100\%$$

$$= 26.4\%$$