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① Mean = 13.4 4, 7, 9, 9, 11, 15, 18, 18, 18, 25

Median = 13.

Mode = 18

$\sigma \Rightarrow$

4 − 13.4	= (−9.4)	=	88.36
7 − 13.4	= (−6.4)	=	40.96
9 − 13.4	= (−4.4)	=	19.36
11 − 13.4	= (−2.4)	=	5.76
15 − 13.4	= 1.6	=	2.56
18 − 13.4	= 4.6	=	21.16
18 − 13.4	= 4.6	=	21.16
18 − 13.4	= 4.6	=	21.16
25 − 13.4	= 11.6	=	134.56
			394.4

$$\sigma = \frac{\sqrt{x - \bar{x}}}{N} \qquad \frac{18.8425}{\sqrt{10}} = 6.418$$

Interquartile

$$Q_1 = \left(\frac{N+1}{4}\right)^{th} \text{ term}$$

$$= \left(\frac{10+1}{4}\right)^{th} \text{ term}$$

$= 2.75^{th}$ ter.

$7 + 0.75\,(3^{rd} - 2^{nd}\text{ term})$

$7 + 3/2 = 17/2 = 8.5$

(i) Given :- λ (rate) = 0.5. Poisson distribution

To findout :- $r = 0$

Poisson

(2) (i) $P(X=0) = \dfrac{e^{-\lambda} \times \lambda^{r}}{r!}$

$= \dfrac{(e)^{-0.5} \times (0.5)^{0}}{0!}$

$= \dfrac{0.606530 \times 1}{1}$

$= 0.6065306595.$

(ii) Binomial

$^{3}C_{2} (1-0.60653) (0.60653)^{2}$

$= 3 \times (0.39346) \times (0.367878)$

$= 0.434$

(iii)

$(e)^{-0.5 \times 2} = 0.368$

Exponential.

(3) $\alpha = 2$ $\lambda = 1/2$

(1) Mean $= \frac{\alpha}{\lambda} = 2 \times 2 = 4$

variance $= \frac{\alpha}{(\lambda)^2} = 8$

$S.D = 2\sqrt{2}$

(5) $\dfrac{0.2}{0.08 + 0.2 + 0.01}$

$= \dfrac{0.2}{0.29}$

$= 0.6898$

(68.98%)

(4) $F(3) = 0.35 + 0.15 + 0.05$

$= 0.55$

$E(X) = (1 \times 0.05) + (2 \times 0.15) + (0.35 \times 3) + (0.4 \times 4) + (0.05 \times 5)$

$= 3.25$

$V(X) = \cancel{E(x} \; E(x - \bar{x})^2$

$= \cancel{(0.05 - 3.25)^2 + (0.3 - 3.25)}$

$= E(x^2) - (E(x))^2$

$= 11.45 - 10.5625 = 0.8875$

Skewness $= E(x - \bar{x})^3$

$= 42.55 - 34.328125$

$= 8.221875$

(5) $\cancel{P(B/A)}$ 0.2

$$\frac{0.2}{0.08 + 0.2 + 0.01}$$

$= \frac{0.2}{0.29}$

$= 0.6896$

(68.96%)

(4) $F(3) = 0.35 + 0.15 + 0.05$

$= 0.55$

$E(X) = (1 \times 0.05) + (2 \times 0.15) + (0.35 \times 3) + (0.4 \times 4) + (0.\ldots$

$= 3.25$

$V(X) = \cancel{E(X)}\ E(X - \bar{x})^2$

$= \cancel{(0.05 - 3.25)^2 + (0.3 - 3.25)}$

$= E(X^2) - (E(X))^2$

$= 11.45 - 10.5625 = 0.8875$

Skewness $= E(X - \bar{x})^3$

$= 42.55 - 34.328125$

$= 8.221875$

Let X be

$P(x < 1000) = 0.2$

(a) Using Binomial Theorem

$n = 7$ $\quad r = 3$

$p = 0.01$ $\quad q = 0.99$

$= {}^7C_3 (0.01)^4 (0.99)^3$

$= 3.3960465 \times 10^{-7}$

(b) $E(x) = 0.2 = \lambda$

$f_x(2) = \frac{(e)^{-0.2} \times (0.2)^2}{2} = 0.016374$

$f_x(1) = (e)^{-0.2} \times (0.2) = 0.16374$

0.180120

(10) $f_{X,Y}(x,y) = \frac{3}{5}\, x(x+y)$

$1/\lambda = 2.$ $\lambda = 1/2$

$f_X(x) = \lambda e^{-\lambda x}$

In Poisson distribution

Given - $\lambda = 2/5$ (2 per 5 days) $x = 2$

$\uparrow$
$E(X)$

$$\frac{e^{-2/5} \times (2/5)^2}{2!} = 0.0536256036$$

(12) $\lambda = 10$

$x = 0.1$

$\lambda e^{-\lambda x}$

$10 \cdot e^{-10 \times 0.1}$

$= 3.678794412$

(14) $X \sim \text{Gamma}(5, 0.4)$

$\alpha = 5$

$\lambda = 0.4$

$0.8 X \sim \chi^2_{10}$ $= V$

$P(X > 22.88) = P(0.8X >$