19.4.22.

Data Science Assessment.

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19BEC4038

$$n(S) = {}^{52}C_3 = \frac{52 \times 51 \times 50}{3 \times 2 \times 1} = 88,400$$

$$= {}^{13}C_1 \times {}^{13}C_1 \times {}^{13}C_1$$

$$= 13 \times 13 \times 13$$

$$= 2197$$

$$P(E) = \frac{n(E)}{n(S)} = \frac{2197}{88400} = \frac{169}{6800}.$$

(2) Action movies = 42% → P(A)

Comedy movies = 54% → P(A)

Drama movies = 36% → P(C)

Horror movies = 12% → P(D).

a) Either action or drama.

$$P(A \cup C) = P(A) + P(C) - P(A \cap C)$$

$$= 42 + 36 - 0$$

$$P(A \cup C) = 78/100$$

b) Either comedy or horror.

$$P(B \cup D) = P(B) + P(D) - P(B \cap D)$$

$$= 54 + 12 - 0$$

$$P(B \cup D) = 66/100.$$

(3)

Bag A	Bag B.
Red - 3	White - 4
Black - 5	Black - 7

$$P(A) = 1/2 \quad , \quad P(B) = 1/2.$$

$$P\left(\frac{Black}{A}\right) = 5/8, \quad P\left(\frac{Black}{B}\right) = 7/11.$$

$$P\left(\frac{B}{Black}\right) = \frac{P(B) \times P\left(\frac{Black}{B}\right)}{P(A) \times P\left(\frac{Black}{A}\right) + P(B) * P\left(\frac{Black}{B}\right)}$$

$$= \frac{1/2 \times 7/11}{[1/2 \times 5/8] + [1/2 \times 7/11]}$$

$$= \frac{7/22}{[5/16 + 5/8]} \neq 7/22$$

$$= \frac{7/22}{5/16 + 7/22} = \frac{7/22}{\frac{110+112}{352}}$$

$$= \frac{7.22}{222} = 7/22 \times \frac{352}{222}.$$

$$= \frac{2464}{4884} = 0.5045.$$

$P(B/Black) = 0.5045.$

(6.)

$$z = \frac{x - \mu}{\sigma}$$

$$0.675 = \frac{x - 350870}{12405}$$

$$x = 350870 + (0.675 \times 12408)$$

$$x = 359237.045$$

75^{th} percentile $= 359237.045.$

4. Given

450 Applications in 1 hour.

By poisson Distribution:-

a) $\lambda = \frac{45\cancel{0}}{6\cancel{0}}$

$\lambda = 15/2$, $x = 10$

$$P(x = x) = \frac{e^{-15/2} \cdot (15/2)^{10}}{10!}$$

$= 0.0858.$

4. b). $P(x=x) = e^{-15/2} - (15/2)^{17}$

$\frac{}{171}$

$= 0.6321$