

Probability.

1).

Cards = 52

Diamond = 13

Heart = 13

Spade = 13

$$\text{Probability} = \frac{13C_1 \times 13C_1 \times 13C_1}{52C_3}$$

$$= \frac{13 \times 13 \times 13}{52 \times 52 \times 52} = \frac{2197}{140608} = \frac{13 \times 13 \times 13 \times 2 \times 1}{4 \times 52 \times 52 \times 52} = \frac{1014}{102080}$$

$$\text{Probability} = 0.0165$$

2.

Action movies = 42%

Comedy movies = 54%

Drama " = 36%

Horror movies = 12%

$$n = 144$$

P(Comedy or Horror)

$$= 54 + 12 = 66$$

$$P(\text{Comedy or Horror}) = 66$$

$$P(\text{Action or Drama}) = \frac{42}{144} + \frac{36}{144} = \frac{78}{144}$$

$$P(\text{Action or Drama}) = 0.5416$$

3.

Bag A
3 red ball 5 Black

Bag B

4 white ball 1 Black ball.

$$P(A) = P(B) = \frac{1}{2}$$

$$P(A, B_1) = \frac{5}{8}$$

$$P(B, B_1) = \frac{7}{11}$$

$$P(\text{Black}) = P(A \cap B_1) + P(B \cap B_1)$$

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

$$= \frac{1}{2} \left(\frac{5}{8} + \frac{7}{11} \right) = \frac{1}{2} \left(\frac{14}{88} \right)$$

$$P\left(\frac{B}{B_1}\right) = \frac{P(B \cap B_1)}{P(B_1)} = \frac{\frac{1}{2} \times \frac{7}{11}}{\frac{1}{2} \times \frac{11}{88}} = \frac{7}{11} \times \frac{88}{111}$$

$$= \frac{5.6}{111}$$

6). 75th percentile value = ?

$$\text{Average} = \$350870.$$

$$\text{S.D.} = 12405$$

$$\text{Percentile value} = \text{Average} + (Z \times \text{S.D.})$$

$$= 350870 + (0.67 \times 12405)$$

$$75^{\text{th}} \text{ percentile value} = 359181.35$$

$$Z = \frac{X - \mu}{\sigma}$$

4. a) $\lambda = \frac{15}{2}$

$$\lambda = \frac{15}{2}, \quad x = 10$$

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

$$= 0.0858.$$

b)

$$P(X=x) = \frac{e^{-15/2} \cdot (15/2)^{17}}{17!}$$

$$= 0.6321.$$

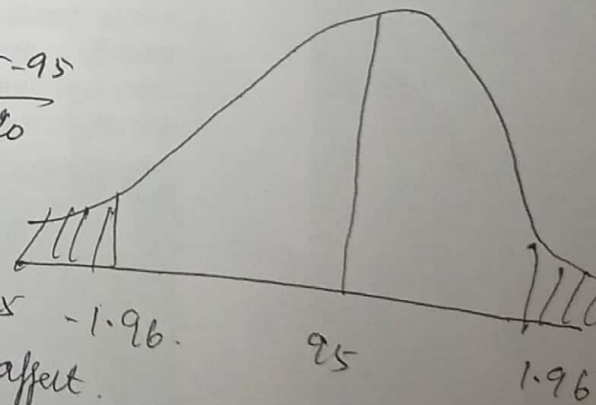
10. $\mu = 95$

$$T = 20$$

$$x_i = 25$$

$$Z\text{-score} = \frac{x_i - \mu}{T} = \frac{25 - 95}{20}$$

$$= -3.5$$



$$\frac{x}{2} = 0.475$$

The Potient supplied will not affect.

H_0 = The Potient supplies will affect

H_1 = The Potient supplies will not affect

$$\text{value} = -3.5$$

$$\alpha = 0.05$$

$$= 95\%$$

Critical boundary ≈ -1.96 to 1.96 .

Reject the null hypothesis and accept the alternative hypothesis.