

DATA SCIENCE - ASSESSMENT

Mythush.C

19BEC11123

1) Cards = 52

diamond = 13

heart = 13

spade = 13

$$\text{Total probability} = \frac{13}{52} \times \frac{13}{51} \times \frac{13}{50}$$
$$= 0.0165$$

2) Action = 42 %

Drama = 36 %

Comedy = 54 %

Horror = 12 %

a) Either action or drama

$$\Rightarrow \frac{42}{100} + \frac{36}{100}$$

$$= \frac{78}{100} = 0.78$$

b) Either Comedy or Horror

$$= \frac{54}{100} + \frac{12}{100}$$

$$= \frac{66}{100} = 0.66$$

3) Bag A

red - 3

black - 5

Bag B

white - 4

black - 7

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

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

$$P(B/b) = \frac{P(B) \times P(b/B)}{P(A) \times P(b/A) + P(B) \times P(b/B)}$$

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

$$= \frac{\frac{7}{22}}{\frac{5}{16} + \frac{7}{22}}$$

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

$$= 0.5045$$

$$4) n = 450$$

$$a) \lambda = \frac{450}{60} = \frac{15}{2}$$

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

$$= 0.88 \cdot 0.085$$

$$b) \lambda = \frac{450}{120} = 3.75$$

$$P(X \geq 17) = 1 - P(X=0)$$

$$= 1 - \frac{e^{-3.75} \cdot (3.75)^0}{0!}$$

$$= 1 - (0.0235 \times 1)$$

$$= 0.976$$

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

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

$$X = 350870 + (0.675 \times 12405)$$

$$= 359287.011$$