

comedy = 54

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1) No. of cards = 52

Diamond cards = 13

heart = 13

Spade = 13

A cards drawn without replacement

$$= \frac{13}{52} \times \frac{13}{51} \times \frac{13}{50} = \frac{2197}{132600}$$

~~2197~~

2.) Total percentage = 100

action movies = 42% = 42/100

comedy movies = 54% = 54/100

drama movies = 36% = 36/100

horror movies = 12% = 12/100

a.) Favourite is either action or drama

$$\frac{42}{100} + \frac{36}{100} = \frac{78}{100} \neq 78$$

b.) Favourite either comedy or horror

$$\frac{54}{100} + \frac{12}{100} = \frac{66}{100} \neq 66$$

3) A = 3 red, 5 black

B = 4 white, 7 black

$$P\left(\frac{\text{Black}}{A}\right) = \frac{5}{8} \quad ; \quad P\left(\frac{\text{Black}}{B}\right) = \frac{7}{11}$$

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

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

$$= \frac{7/22}{0.630}$$

$$= 0.505$$

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6. $\mu = 350870$

$$\sigma = 12405$$

$$Z = 55 \Rightarrow 0.675$$

$$\text{percentile} = 350870 + (0.675) \times (12405)$$

$$= 359,243.375$$

$$= 359243.375$$