Statistics

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1) Soln:

S = 52 cards (without replacement)

(3 cards drawn)

P(one card is diamond, one card is heart, one card is spade)

= P(Diamond) × P(heart) × P(spade)

$= \frac{13}{52} \times \frac{13}{51} \times \frac{13}{50} = \frac{169}{10200}$

2) Soln:

Action Movies = 42%

Comedy Movies = 54%

Drama Movies = 36%

Horror Movies = 12%

144

a) P(action (or) drama) = P(Action) + P(Drama)

$= \frac{42}{144} + \frac{36}{144} = \frac{78}{144}$

b) P(comedy (or) horror) = P(comedy) + P(horror)

$= \frac{54}{144} + \frac{12}{144} = \frac{66}{144}$

3) Soln:

BAG A

3 R
5 B

BAG B

4 W
7 B

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

$P(A|B) = 5/8$

$P(B|B) = 7/11$

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

$P(B) \overset{(or)}{=} \frac{1}{2} \times \frac{5}{8} + \frac{1}{2} \times \frac{7}{11}$

$= \frac{1}{2}\left[\frac{5}{8} + \frac{7}{11}\right]$

$= \frac{1}{2}\left[\frac{55+56}{88}\right]$

$= \frac{1}{2}\left[\frac{111}{88}\right]$

$P\left(\frac{B}{B}\right) = \frac{P(B \cap B)}{P(B)} = \frac{\frac{1}{2} \times \frac{7}{11}}{\frac{1}{2} \times \frac{111}{88}} = \frac{7}{11} \times \frac{8}{111} = \frac{56}{111}$.

6) Soln:

75th Percentile Value = ?

Average = $35087.0

St. D = $12405

Percentile Value = Average + (z × SD)

where, z = z table Value

(z Value for 75th Percentile z = 0.67)

= 350870 + (0.67 × 12405)

= 350870 + 8311.35

75th Percentile = 359181.35

4) Soln:

450 Applicants in 1 hour

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

$\lambda = 15/2$

$x = 10$

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

$= 0.0858$

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

$= 0.6321$