2)   Action   =   42%.   → P(A)

Comedy   =   54%   → P(C)

Drama   =   36%   → P(D)

Horror   =   12%.   → P(H)

a.   P(A ∪ D) =   P(A) + P(D) - P(A ∩ D)

$$= \frac{42}{100} + \frac{36}{100} - 0$$

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

b.   P(C ∪ H) = P(C) + P(H) - P(C ∩ H)

$$= \frac{54}{100} + \frac{12}{100} - 0$$

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

3)

A Bag   B Bag

Red – 3   =   white – 4
Black – 5   Black – 7

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

$P(\text{Black}/A) = 5/8$, $P(\text{Black}/B) = 7/11$

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

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

$\Rightarrow \frac{7}{22}$, $\frac{7/22}{5/16 + 7/22}$ $= \frac{7/22}{\frac{222}{352}}$

$\Rightarrow \frac{7}{22} \times \frac{352}{222} = 0.5045$ $P(B/\text{Black}) = 0.5045$

6) $z = \dfrac{x - \mu}{\sigma}$

$0.675 = \dfrac{x - 350\,870}{12405}$

$x = 359\,237.045$

75th Percentile $= 359\,237.045$

4) a) 10 application in 1 minute

$$\lambda = \frac{450}{60} = 15/2$$

$$x = 10$$

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

$$= 0.0858$$

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

$$\lambda \Rightarrow \frac{450}{120} = 45/12 = \frac{15}{4} =$$

$$= \frac{e^{-15/4} \cdot (15/4)^{17}}{17!} \Rightarrow \frac{0.023 \times (15/4)^{17}}{17!}$$

$$\Rightarrow \frac{13190443.777}{17!}$$

1) $$n(s) = 52C_3 = \frac{52 \times 51 \times 50}{3 \times 2 \times 1} = 88400$$

$$= 13C_1 \times 13C_1 \times 13C_1 = 2197$$

$$P(E) = \frac{n(E)}{n(s)} = \frac{2197}{88400} = 169/6800$$