STATISTICS TEST

1) S = 52 cards (without Replacement)
(3 cards drawn)

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

= P(diamond) x P(heart) x P(spade)

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

2)
a) action movies = 42%.
comedy movies = 54 %
Drama movies = 36 %
horror movies = 12 %.
total = 144

P(action or drama) = P(action) + P(drama) $= \frac{42}{144} + \frac{36}{144} = \frac{78}{144}$

P(action or drama) =

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

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

$= \frac{66}{144}$

5)
P(either comedy or horror) = P(comedy) + P(horror) -
P(comedy & horror)

= 54 + 12 - 0 = 66

3)

A		B	
Red	3	White	4
Black	5	black	7

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

$P\left(\frac{\text{Black}}{A}\right) = \frac{5}{8}$

$P\left(\frac{\text{Black}}{B}\right) = \frac{7}{11}$

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

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

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

$$= \frac{\frac{7}{22}}{\frac{110 + 112}{352}}$$

$$= \frac{\frac{7}{22}}{\frac{222}{352}}$$

$$= \frac{7}{22} \times \frac{352}{222}$$

$$= \frac{2464}{4884}$$

$P\left(\frac{B}{\text{Black}}\right) =$ [illegible]

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

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

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

$X = 359237.065$

75th percentile $= 359237.047$

c) option

a)

450 applications in hours

By poisson distribution

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

$\lambda = \frac{15}{2}$, $n = 10$

$P(X = x) = \frac{e^{-15/2} \cdot (15/2)^{10}}{10!} = 0.0859$

b)

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

$= 0.6321$