Assignment 6

1) Answer may vary since the relative frequency is just an estimation.

a) The graph should look like this:

b) i) # of vehicles that last more than 5 years
= 200 x (1 – sum (relative frequency from year 1 to year 5))

ii) # of vehicles that last more than 10 years
= 200 x (1 – sum (relative frequency from year 1 to year 10))

iii) # of vehicles that last more than 15 years
= 200 x (1 – sum (relative frequency from year 1 to year 15))

c) Given the cars that last for 5 years, the proportion of them last an additional 5 years
= part b (ii) / part b (i)

d) Given the cars that last for 10 years, the proportion of them last an additional 5 years
= part b (iii) / part b (ii)

e) Logically, the hazard rate in this case should be increasing, therefore d) should be greater than c).
There is no exact answer for this question, because the answer depends on the student's assumption. If the student assumes this case has a geometric distribution, then the hazard rate is constant.

2)

P(answering Q1) = 2/5
P(answering Q2) = 3/5
N = number of students = 500

We expect there is 500 x 2/5 = 200 students answered Q1, so there should be "YES" refer to Q1.

a) Expected # of students answered Q2 = 500 x 3/5 = 300
Expected # of "YES" in Q2 = 400 – 200 = 200
Estimated proportion of the 500 students that would have answered Yes to Q2 = 200/ 300 = 2/3

b) p = proportion of answering "YES" = 2/3 from part (a).

SD of population = ROOT ((1-p) x p) = ROOT (2/3 x 1/3) = 0.471

SD of proportion saying 'YES" = 0.471/ ROOT(300) = 0.0272

c) The SD in part b) should be larger tan the SD in part a) because the variability for sample data is bigger than the variability for population data.