Question 2

Sol Probility of black ball from first bag $P(B_1) = 6/1$

Probility of first bag to be choose $P(I) = 1/2$

Probility of ~~Second bag to be~~ black ball from second bag $P(B_2) = 3/1$

Probility of second bag to be choosen $P(II) = 1/2$

Probility of Black ball $P(S) = 9/17$

Probility that black ball is drawn from first bag $= \frac{P(B_1) \times P(I)}{P(S)}$

$= \frac{6/10 \times 1/2}{9/17} = 17/30$

$= 0.5667$

Question 3

Sol Probility of Truth $P(T) = 2/3$

Probility of lie $P(L) = 1 - 2/3 = 1/3$

Probility of four $P(F) = 1/6$

Probility of not four $P(N) = 1 - 1/6 = 5/6$

Probility that it's actually four =

$$\frac{P(T) \times P(F)}{P(T) \times P(F) + P(L) + P(N)} = \frac{2/3 + 1/6}{(2/3 + 1/6) + 1/3 \times 5/6}$$

$$= \frac{1/9}{\frac{2+5}{18}} \Rightarrow 2/7$$