

Question #60

Answer is C

The posterior probability of having one of the coins with a 50% probability of heads is proportional to $(.5)(.5)(.5)(.5)(4/6) = 0.04167$. This is obtained by multiplying the probabilities of making the successive observations 1, 1, 0, and 1 with the 50% coin times the prior probability of $4/6$ of selecting this coin. The posterior probability for the 25% coin is proportional to $(.25)(.25)(.75)(.25)(1/6) = 0.00195$ and the posterior probability for the 75% coin is proportional to $(.75)(.75)(.25)(.75)(1/6) = 0.01758$. These three numbers total 0.06120 . Dividing by this sum gives the actual posterior probabilities of 0.68088 , 0.03186 , and 0.28726 . The expected value for the fifth toss is then $(.68088)(.5) + (.03186)(.25) + (.28726)(.75) = 0.56385$.