

For part a) my understanding of it is there was 4 people out 12 which are not chosen in the first sample $\binom{4}{0}$. Hence this must mean that from the remaining 8 the the sample of 3 must be chosen $\binom{8}{3}$. Hence this means $\frac{\binom{4}{0}\binom{8}{3}}{\binom{12}{3}}$ which gives $\frac{14}{25}$.