Questions On Discussion Section 3 Handout

#5(a)

1. Independent  
2. All basic possibilities are equally likely  
3. H(H)  
4. HT  
5. TH  
6. TT  

ELM? √

\[ P(\text{exactly 1H in 2 tosses}) = \frac{2}{4} = \frac{1}{2} = 50\% \] (true)

(b)

\[
\begin{array}{c}
\text{2nd die} \\
\hline
1 & 2 & 3 & 4 & 5 & 6 \\
5 & 6 & 7 & 8 & 9 & 10 \\
6 & 7 & 8 & 9 & 10 & 11 \\
\end{array}
\]

\[
P(3) = \frac{2}{6} = \frac{1}{3} = 5\%
\]

ELM? √

\[
P(7) = \frac{6}{36} = \frac{1}{6} = 17\%
\]

#6(a)

\[
P(\text{both smokers die first | Fisher's story}) = P(\text{H H}) = \frac{1}{4} = P(\text{Head on 1st toss and Head on 2nd toss})
\]

Product rule for independent events:

\[
P(\text{H on 1st} \times \text{H on 2nd}) = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}
\]

(b)

\[
P(\text{Head H...H}) = \left(\frac{1}{2}\right) \times \left(\frac{1}{2}\right) = \frac{1}{2^q} = \frac{1}{512} = 0.2\%
\]

(c) (i) no (too unlikely)  
(ii) no (constant)  
(iii) yes (all that's left)

#1

Longitudinal/repeated measure design  
They need a beginning test for the second year because the students have different fitness levels  
Also, fit people are most likely to volunteer for fitness programs