

Questions On Discussion Section 3 Handout

#5(a) fair: ① independent
② all basic possibilities are equally likely.

	2 nd Toss	
	H (1/2)	T (1/2)
1 st (1/2)H	HH	HT
toss (1/2)T	TH	TT

ELM? ✓

$p(\text{exactly 1H in 2 tosses}) = \frac{2}{4} = \frac{1}{2} = 50\%$ (true)

(b) ~~2
3
4
⋮
12~~ } 11 possibilities
if ELM,
 $P(3) = \frac{1}{11}$ Not ELM!
 $P(7) = \frac{1}{11}$

	2 nd die					
	1	2	3	4	5	6
1 st die	1	2	3	4	5	6
	2	3	4	5	6	7
	3	4	5	6	7	8
	4	5	6	7	8	9
	5	6	7	8	9	10
	6	7	8	9	10	11
	7	8	9	10	11	12

ELM? ✓

$P(3) = \frac{2}{36} = \frac{1}{18} \doteq 5\%$

$P(7) = \frac{6}{36} = \frac{1}{6} \doteq 17\%$

#6(a) $P(\text{both smokers die first} \mid \text{Fisher's story}) = P(HH) = \frac{1}{4} = P(\text{H on 1st toss and H on 2nd})$
product rule for independent events = $P(\text{on 1st} \times \text{H on 2nd}) = \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

(b) $P(\underbrace{H \text{ and } H \dots H}_q) = \underbrace{(\frac{1}{2})(\frac{1}{2}) \dots (\frac{1}{2})}_q = (\frac{1}{2})^q = \frac{1}{2^q} = \frac{1}{512} = 0.2\%$

- (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