

a) $P(R|C) = \frac{n(R \cap C)}{n(C)} = \frac{5}{50} = \frac{1}{10}$

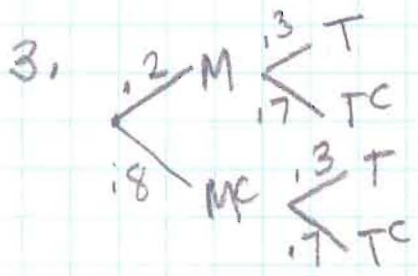
b) $P(R \cap C) \stackrel{?}{=} P(R) \cdot P(C)$
 $\frac{5}{100} \stackrel{?}{=} (\frac{40}{100}) \cdot (\frac{55}{100})$ No \rightarrow not indep.

c) Not ME b/c $P(R \cap C) \neq 0$

2.

	Ref	Fic	NE	TOT
HB	5	0	2	7
PB	0	10	5	15
TOT	5	10	7	22

$P(PB|NF) = \frac{5}{7}$



$P(M \cap T^c) + P(M^c \cap T)$
 $= (.2)(.7) + (.8)(.3)$
 $= .38$

4. for a single color you have 1,2,3; 2,3,4; ...; 7,8,9
 or 7 possible straights, with 5 colors, $7 \times 5 = 35$
 $P = \frac{35}{C(45,3)} = \frac{7}{2838} \approx 0.002467$

5. $\frac{18}{\text{choose a color to have 3 of}} \cdot \frac{C(4,3)}{\text{choose 3 of these}} \cdot \frac{17}{\text{choose a different color}} \cdot \frac{C(4,2)}{\text{choose 2 of these}} / C(72,5)$
 $= 0.000525$

6.	1~1	2~1	3~1	4~1	5~1	6~1	
	1~2	2~2	3~2	4~2	5~2	6~2	
	1~3	2~3	3~3	4~3	5~3	6~3	E
	1~4	2~4	3~4	4~4	5~4	6~4	G
	1~5	2~5	3~5	4~5	5~5	6~5	
	1~6	2~6	3~6	4~6	5~6	6~6	H

a) $P(E \cap F) \stackrel{?}{=} P(E) \cdot P(F)$
 $\frac{1}{36} \stackrel{?}{=} \frac{6}{36} \cdot \frac{6}{36} \rightarrow \text{yes} \rightarrow \text{Independent}$

b) $P(F \cap G) \stackrel{?}{=} P(F) \cdot P(G)$
 $\frac{1}{36} \stackrel{?}{=} \frac{6}{36} \cdot \frac{3}{36} \rightarrow \text{NO} \rightarrow \text{not Indep.}$

c) Yes - both can't happen at the same time

d) $P(G|E) = \frac{n(G \cap E)}{n(E)} = 0$

e) $P(G|H) = \frac{n(G \cap H)}{n(H)} = \frac{1}{6}$

7. $\frac{C(3,0)}{0 \text{ Bad}} \cdot \frac{C(11,4)}{4 \text{ good}} / \frac{C(14,4)}{n(S)} = 30/91 (\approx .33)$

8. $\left[\frac{C(15,9)}{9 \text{ know}} \cdot \frac{C(5,1)}{1 \text{ D know}} + \frac{C(15,10)}{10 \text{ know}} \cdot \frac{C(5,0)}{0 \text{ D.K.}} \right] / C(20,10) = \frac{49}{323} (\approx .15)$

9. $n(S) = 2^6 = 64$, $n(E) = C(6,3) = 20$

$P = \frac{20}{64} = \frac{5}{16} = 0.3125$