

# Chapter 2 Review Key

1 a.)  $\frac{57}{100} \cdot \frac{56}{109} \cdot \frac{55}{108}$  OR  $\frac{{}^{57}C_3}{{}^{110}C_3} \approx 14\%$

b.)  $\frac{53}{110} \cdot \frac{52}{109} \cdot \frac{51}{108}$  OR  $\frac{{}^{53}C_3}{{}^{110}C_3} \approx 11\%$

c.)  $P_{\substack{\text{down} \\ \uparrow\uparrow\downarrow}}$  OR  $P_{\substack{\uparrow \\ \downarrow\downarrow\uparrow}}$   $\frac{{}^{57}C_2 * {}^{53}C_1}{{}^{110}C_3} + \frac{{}^{57}C_1 * {}^{53}C_2}{{}^{110}C_3} \approx 76\%$

2 a.)  $\frac{6}{36} \rightarrow \frac{1}{6}$

b.)  $\frac{6}{36} \rightarrow \frac{1}{6}$

c.)  $\frac{24}{36} \rightarrow \frac{2}{3}$

d.) product means multiply  $\frac{9}{36} \rightarrow \frac{1}{4}$

e.)  $\frac{15}{36} = \frac{5}{12}$

make a list (1,1)(1,2)...  
(2,1)(2,2)...  
(3,1)(3,2)...

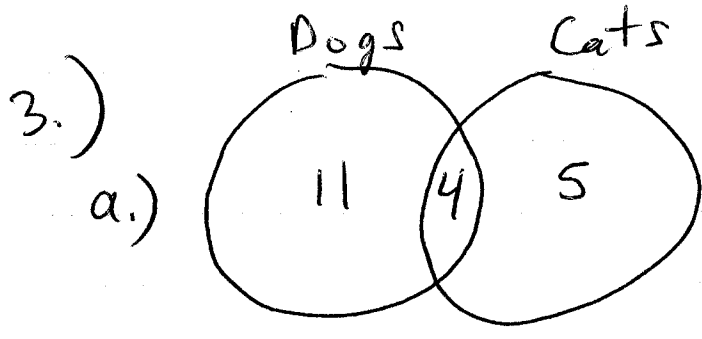
f.)  $\frac{20}{36} = \frac{5}{9}$

make the list ↗

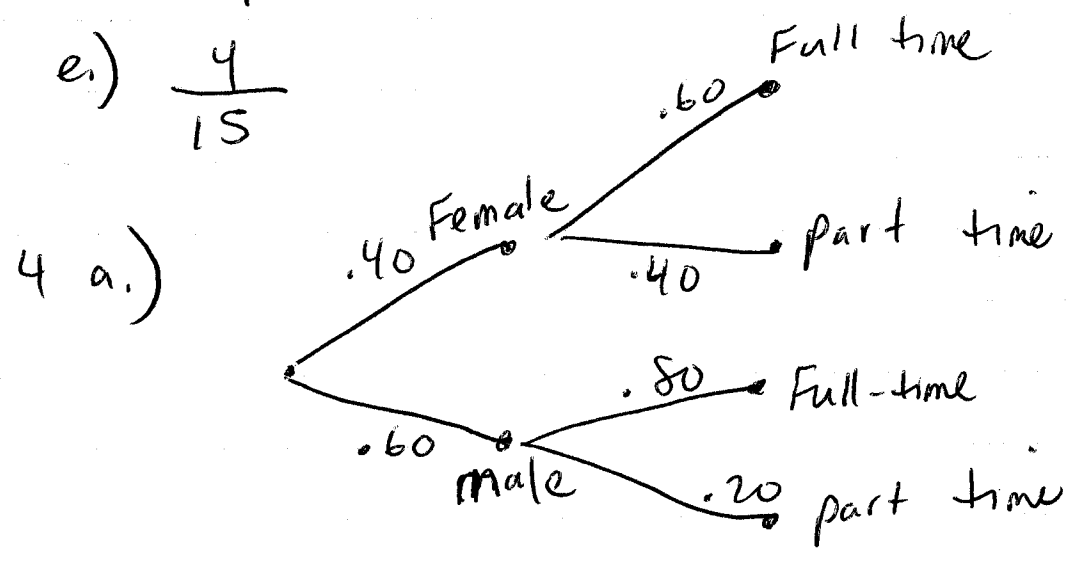
g.)  $\frac{32}{36} = \frac{8}{9}$

make the chart

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						



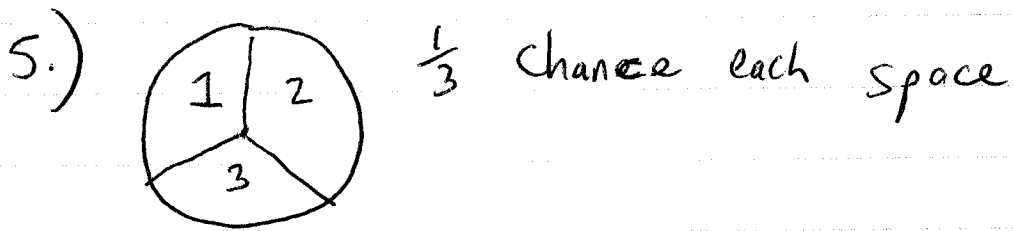
- a.)
- b.) 20
- c.)  $\frac{15}{20} = \frac{3}{4}$
- d.)  $\frac{4}{9}$
- e.)  $\frac{4}{15}$



b.)  $.40(.60) + .60(.80) = \cancel{72} 72$

~~72~~

3



a.)  $\frac{1}{3}$

b.)  $\frac{30}{50} \cdot \frac{29}{49} \cdot \frac{28}{48} =$  or  $\frac{30C3}{50C3}$

c.)  $\frac{20}{50} \cdot \frac{19}{49} \cdot \frac{18}{48} =$  or  $\frac{20C3}{50C3}$

d.)  $\frac{1}{3} * \frac{20}{50} = \frac{20}{150} = \frac{2}{15}$

e.)  $\frac{1}{3} * \frac{20C1 * 30C1}{50C2} \approx .16$

6.) \* Make Row & column totals first

a.)  $\frac{36}{67}$

b.)  $\frac{25}{67}$

c.)  $36 + 4 = \frac{40}{67}$

d.)  $\frac{7}{31}$

e.)  $\frac{17}{42}$

7.) a.)  $\frac{23}{85}$

b.)  $\frac{28}{85}$

c.)  $13 + 13 = \frac{26}{85}$

d.)  $\frac{14}{24}$

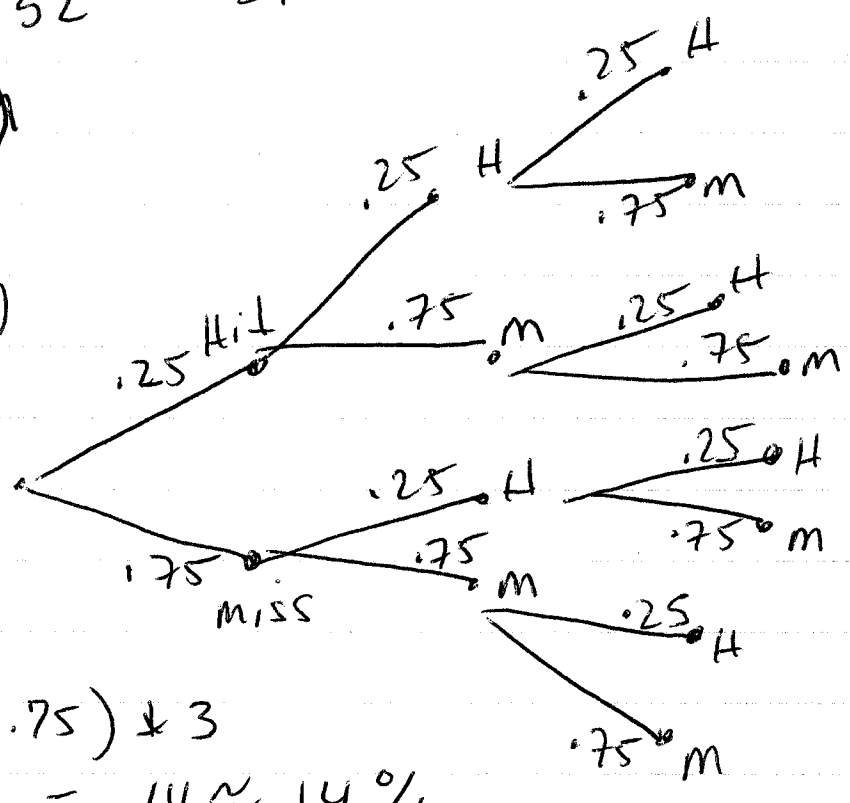
e.)  $\frac{9}{28}$

8.) a.)  $\frac{40}{52} + \frac{39}{51} =$

~~BM~~

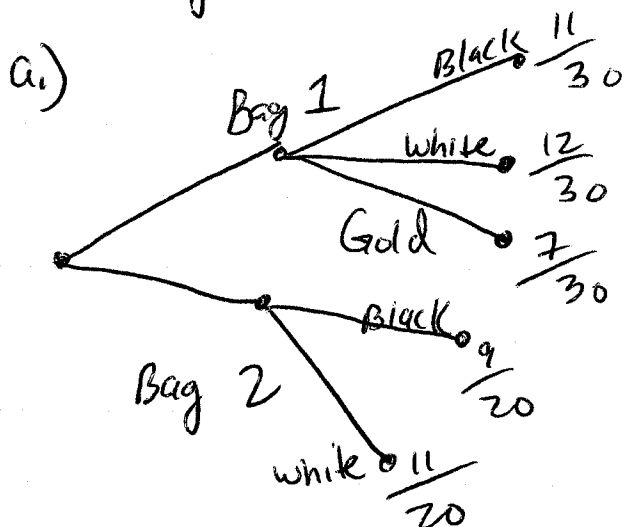
9.)  
2 Hits could  
be HHm  
HmH  
mHA

So...



$(.25 * .25 * .75) * 3 = .14 \approx 14\%$

10.) Bag 1 = 30 TOTAL  
 Bag 2 = 20 TOTAL



b.)  $\frac{11}{30} * \frac{9}{20} = \frac{99}{600} \approx 16.5\%$

c.)  $\frac{11}{30} * \frac{9}{20} + \frac{12}{30} * \frac{11}{20} \approx 38.5\%$

11.)  $\heartsuit K, Q, J, A$  and  $\diamondsuit K, Q, J, A$

a.) ~~8~~ ~~7~~  $\frac{2}{8} * \frac{1}{7} = \frac{2}{56}$

b.)  $\frac{8}{8} * \frac{6}{7} = \frac{48}{56}$

any will do      only 1 match

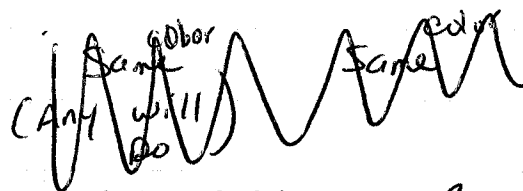
$$11 c.) \quad \frac{8}{8} * \frac{1}{7} = \frac{8}{56} = \frac{1}{7} \quad 6$$

$$d.) \quad \frac{8}{8} * \frac{3}{7} = \frac{24}{56} = \frac{3}{7}$$

12 a.) R R R R R R R R R R      G G G G G  
 1 2 3 4 5 6 7 8 9 10      1 2 3 4 5  
 15 TOTAL

$$a.) \quad \frac{10}{15} * \frac{9}{14} = \frac{90}{210} \approx 43\%$$

$$b.) \quad \frac{8}{15} * \frac{7}{14} = \frac{56}{210} \approx 27\%$$

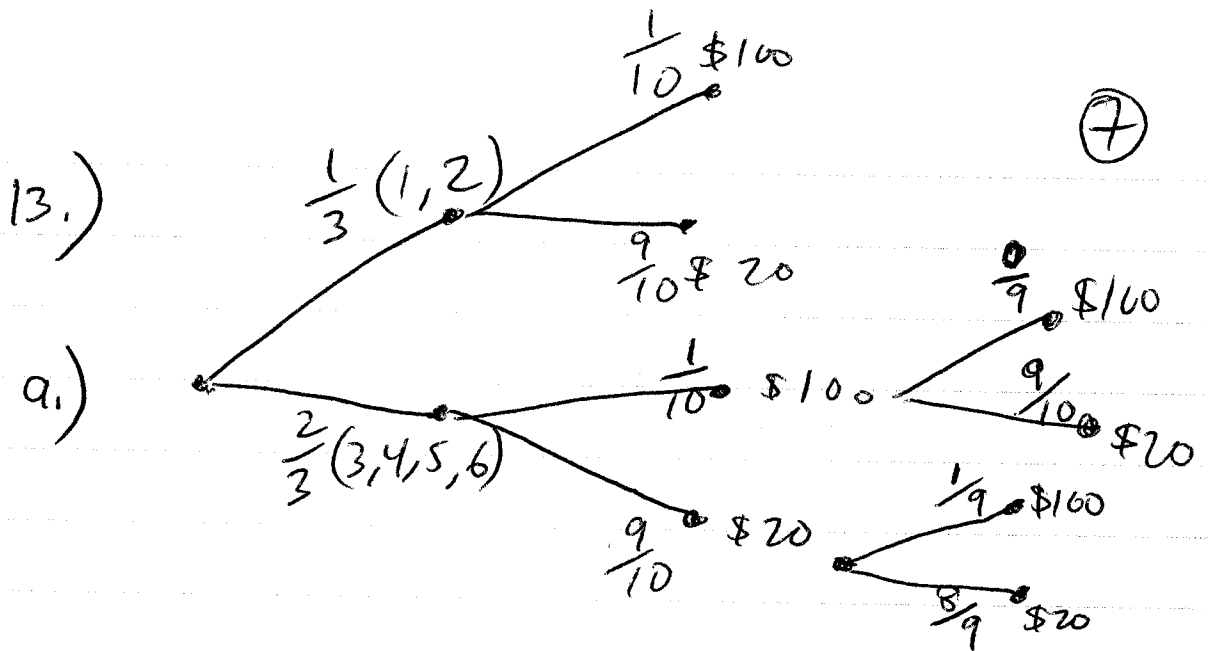
c.) 

$$\frac{10}{15} * \frac{9}{14} + \frac{5}{15} * \frac{4}{14} \approx 52\%$$

d.) Can only match 1-5

so

$$\frac{10}{15} * \frac{1}{14} = \frac{10}{210} = \frac{1}{21}$$



Could win \$20

b.)

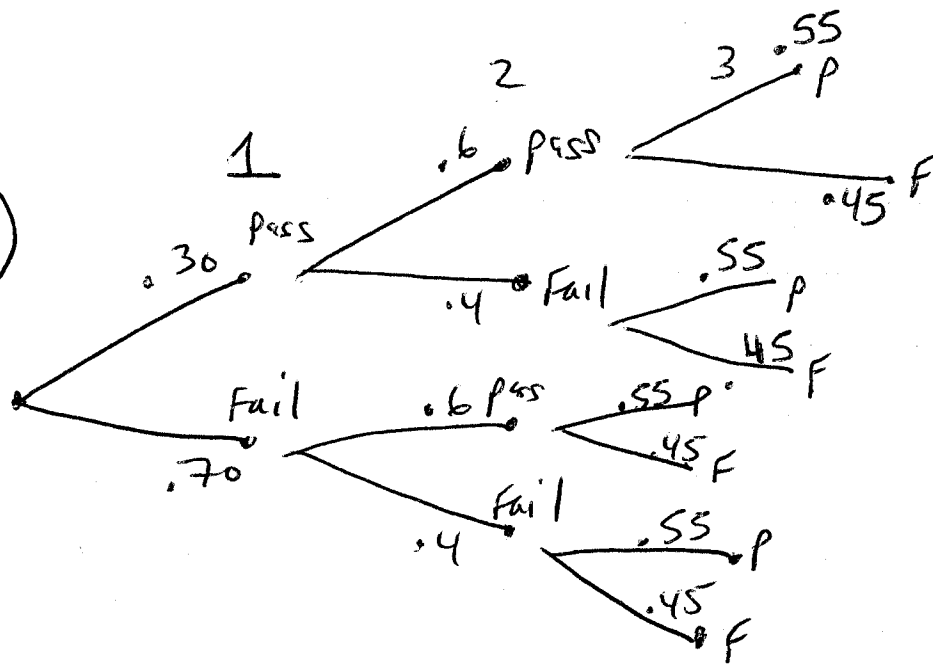
$\frac{1}{3} * \frac{9}{10}$	$\frac{1}{3} * \frac{1}{10}$	$\frac{9}{10} * \frac{8}{9}$	$\frac{1}{10} * \frac{9}{10}$	<del>2/3 * 1/10</del>
$\frac{9}{30} \approx 30\%$	$\frac{1}{30} \approx 3\%$	$* \frac{2}{3}$	$\frac{9}{10} * \frac{1}{9}$	
		$\approx 53\%$	$\uparrow$	
			<del>1/10 * 2/3</del>	
			$\approx 13\%$	

c.)

$$\frac{2}{3} * \frac{1}{10} * \frac{9}{10} + \frac{2}{3} * \frac{9}{10} * \frac{1}{9}$$

$$\frac{18}{360} + \frac{18}{270} = .126 \approx 13\%$$

14.)



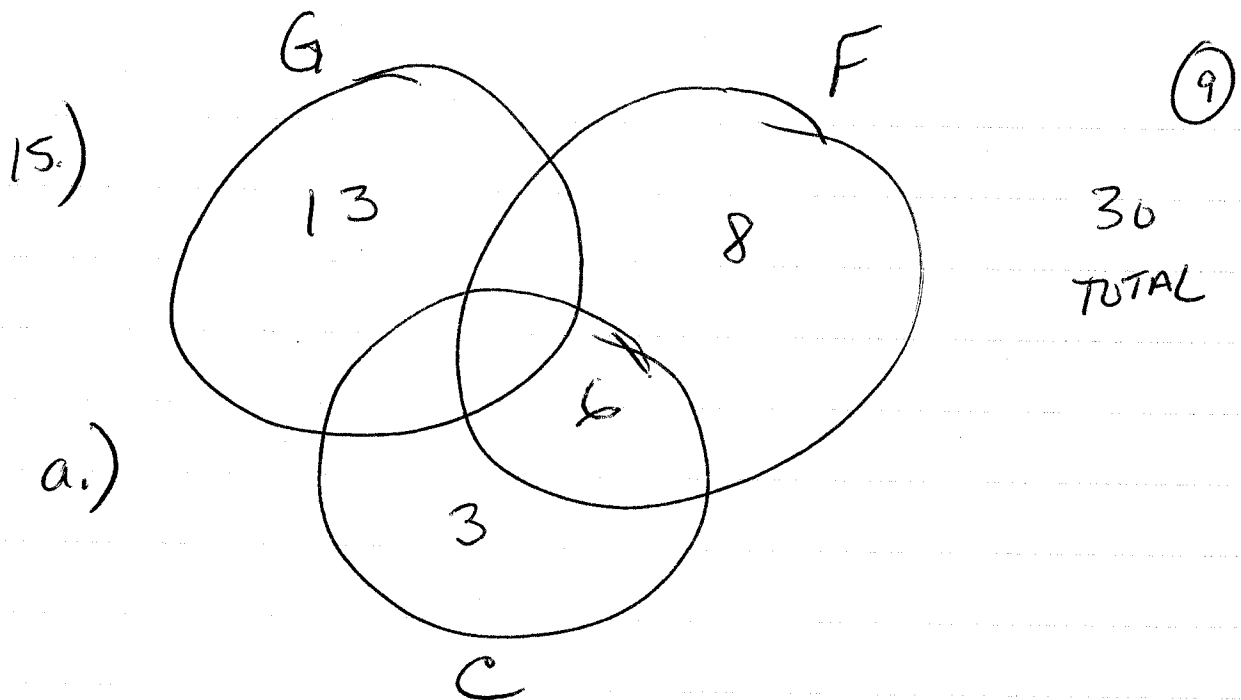
page 8

a.) all pass  $\rightarrow .30 * .6 * .55 = .099 \approx 9.9\%$

b.)  $1 - .099 = .901 \approx 90\%$

c.)  $P(\text{pass } \binom{2}{\text{steps}}) = PPF + PFP + FPP$   
 $.3 * .6 * .45 + .3 * .4 * .55 + .7 * .6 * .55$   
 $.081 + 0.66 + .231 = .378$   
 $\approx 38\%$





a.)

b.)  $\frac{14}{30} = \frac{7}{15}$

c.)  $\frac{6}{14} = \frac{3}{7}$

16.) a.)  $5 * 6 * 8 = 240$  ways

b.)  $\frac{5C3}{19C3} + \frac{6C3}{19C3} + \frac{8C3}{19C3} = \approx 8.9\%$

3 Bracelets OR 3 Rings OR 3 Necklaces

same as

$$\frac{5 \cdot 4 \cdot 3}{19 \cdot 18 \cdot 17} + \frac{6 \cdot 5 \cdot 4}{19 \cdot 18 \cdot 17} + \frac{8 \cdot 7 \cdot 6}{19 \cdot 18 \cdot 17} = \frac{516}{5814}$$

$\approx 8.9\%$

10

$$16c.) \frac{{}_5C_1 * {}_6C_1 * {}_8C_1}{{}_{19}C_3} = \frac{240}{969} \\ \approx 25\%$$

17.) 36 total students, select any 3

$$a.) {}_{36}C_3 = 7140$$

$$b.) \frac{{}_{19}C_3}{{}_{36}C_3} = \frac{969}{7140} = 14\%$$

OR could do  $\frac{19}{36} \cdot \frac{18}{35} \cdot \frac{17}{34}$

$$c.) \frac{{}_{12}C_1 * {}_{19}C_1 * {}_5C_1}{{}_{36}C_3} = \frac{1140}{7140} \\ \approx 16\%$$