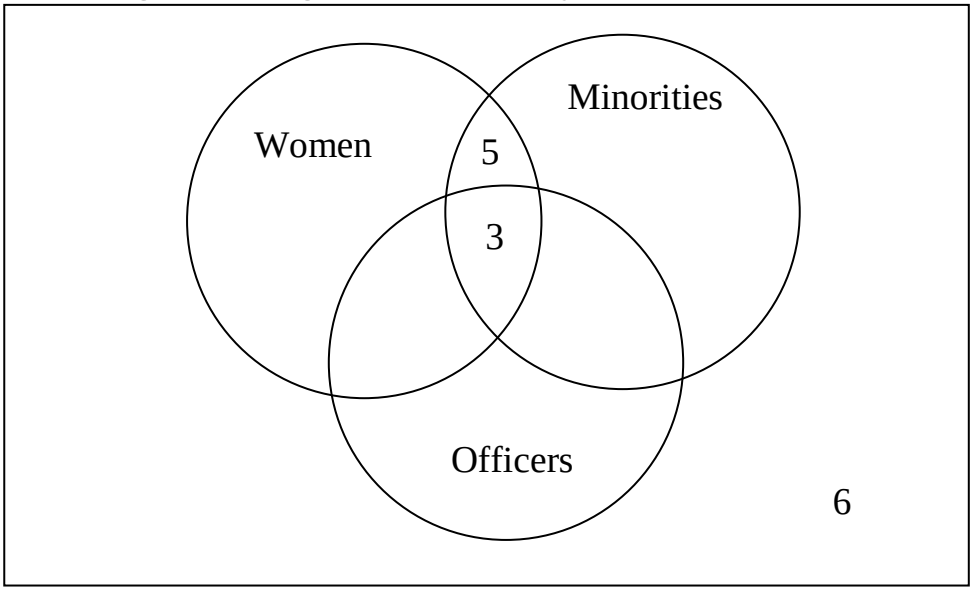
Math 1324 Review 4

A survey of a group of military personnel revealed that the respondents could be categorized as follows:

20 officers
27 minorities
19 women
5 women officers
8 minority women
10 minority officers
3 women minority officers
6 non-minority enlisted men

1. Complete the following Venn diagram of the survey:



2. How many were interviewed? **3.** How many were enlisted minority women?
4. How many were male minority officers?

A jar contains 5 discs labeled 2,4,6,8, and 10, and another jar contains 2 blue and 3 yellow marbles. One disc is drawn, and then a marble is drawn.

5. Complete the sample space, S, for this experiment.

$(2, blue)$				
$(2, yellow)$				

6. List the outcomes in the event, F, that the marble is blue.
7. List the outcomes in the event, E, that the disc shows a number greater than 5.
8. Are the outcomes in this sample space equally likely?

A single card is randomly drawn from a standard 52-card deck. Determine the following probabilities or odds:

9. probability of a red queen **10.** probability of a red card or a face card
11. probability of a black card, given that it is a 10
12. probability of a face card, given that it is a king
13. the odds in favor of drawing a club
14. the odds in favor of drawing a face card or a 9

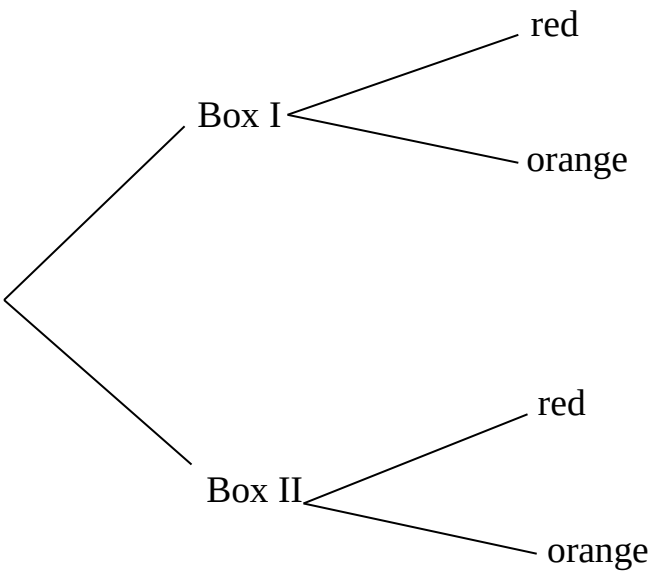
One orange and four red marbles are placed in Box I. Two red and three orange marbles are placed in Box II. A box is chosen at random, and a marble is selected from it.

15. Complete the following probability tree

16. $P(red)$ **17.** $P(orange)$

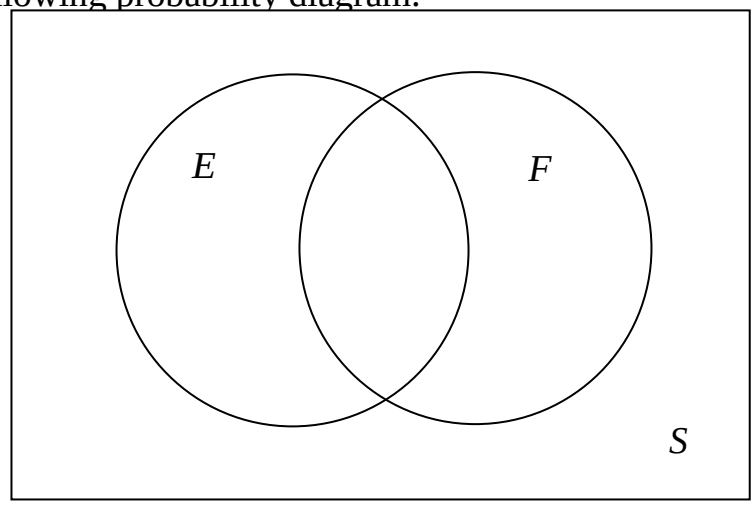
18. $P(Box\ I|red)$ **19.** $P(Box\ I|orange)$

20. $P(Box\ II|red)$ **21.** $P(Box\ II|orange)$



Suppose that $P(E)=.62$, $P(F)=.25$, *and* $P(E\cap F)=.16$.

22. Complete the following probability diagram:



23. $P(E\cup F)$ **24.** $P(E\cap F')$ **25.** $P(E'\cap F')$ **26.** $P(E\,|\,F)$ **27.** $P(F\,|\,E)$

28. Are *E* and *F* independent?

The table gives the results of a survey question which asked: "Are federal income taxes too high, about right, too low, or don't know?". If a respondent is chosen at random, determine the following:

	Too High	**About Right**	**Too Low**	**Don't Know**	**Total**
Male	289	192	6	10	497
Female	257	153	3	14	427
Total	546	345	9	24	924

29. $P(Female)$ **30.** $P(About\ Right)$ **31.** $P(Male\ or\ Too\ Low)$ **32.** $P(Female\ and\ Don't\ Know)$

33. $P(Female|Don't\ Know)$ **34.** Are *Female* and *Don't Know* independent?

35. Three cards are drawn at random from an ordinary 52-card deck.

a) How many different 3-card hands are possible?

b) What is the probability that the 3-card hand has ***exactly two*** kings?

c) What is the probability that the 3-card hand has ***exactly two*** face cards?

d) What is the probability that the 3-card hand contains ***at least 1*** black card?

36. Two names are randomly drawn from a hat without replacement. Three of the names in the hat are Aggies, two are Longhorns, and one is a Cougar. Let the random variable, x, be the total number of Aggies selected.

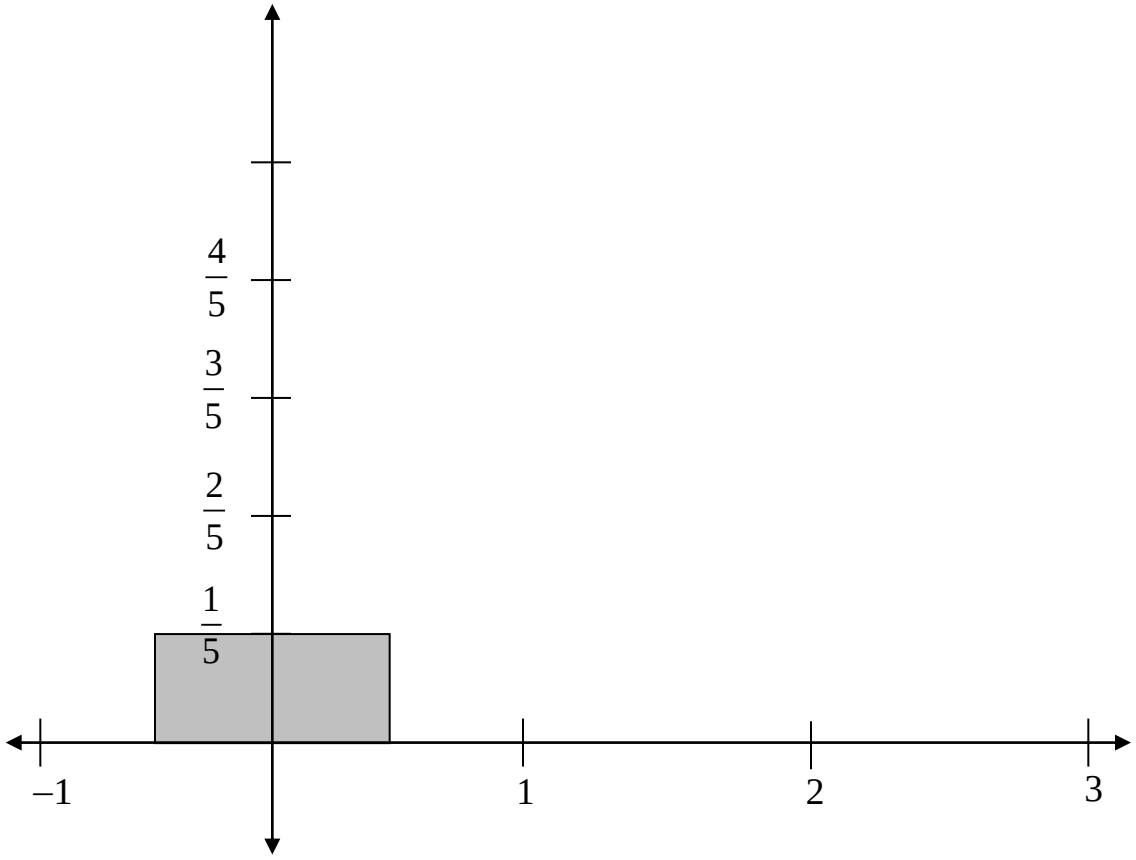
The sample space for this experiment is

(L_1, A_1)	(L_1, A_2)	(L_1, A_3)	(L_1, C_1)
(L_2, A_1)	(L_2, A_2)	(L_2, A_3)	(L_2, C_1)
(A_1, C_1)	(A_2, C_1)	(A_3, C_1)	(L_1, L_2)
(A_1, A_2)	(A_1, A_3)	(A_2, A_3)	

a) Complete the probability distribution for the random variable:

x	**0**	**1**	**2**
$P(x)$	$\frac{1}{5}$		

b) Complete the histogram for the random variable:



c) Find the expected value of the random variable.