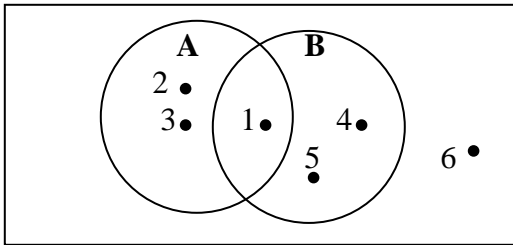


6pts 1. a) How many 3-person committees can be formed using a group of seven people if one is the president, another is the secretary, and the third the treasurer?

b) Evaluate $\frac{948! 534!}{947! 535!}$

6pts 2. The accompanying Venn diagram describes the sample space of a particular experiment and events A and B. Suppose $P(1) = P(2) = P(3) = 0.20$, $P(4) = 0.15$ and $P(5) = 0.05$ and $P(6) = 0.20$. Find $P(A)$ and $P(B)$.



6pts 3. The following table describes the adult population of a large city of 300,000 people

		<u>under 40k</u>	<u>40k-100k</u>	<u>over 100k</u>
A: {person under 21 years}	under 21	18,000	64,000	30,000
B: {person 21-50 years}	21-50yrs	24,000	36,000	46,000
C: {person over 50 years}	over 50	20,000	24,000	38,000
D: {income less than 40k}				
E: {income 40k - 100k}				
F: {income over 100k}				

a) Find $P(A \cup F)$

b) Find $P(C \cap D)$

c) Find $P(B^c)$

9pts 4. Given a standard deck of 52 cards

- a) Find the probability of drawing a black face card.

- b) Find the probability of drawing a number card.

- c) Find the probability of drawing a red ace or a card that is not a diamond.

10pts 5. Suppose the events A and B from a die toss experiment are as follows

A: {Odd number is rolled}

B: {Number more than 4 is rolled}

a) Find the conditional probability $P(A/B)$

b) Are the events A and B independent or dependent? Show work to support answer.

6pts 6. Is the random variable involved continuous or discrete?

- a) The number of cars currently in the parking lot.

- b) The time it takes to complete this test.

- c) The number of students who receive a C or better on this test.

10pts 7. Four coins are tossed. Let $x = \#$ heads observed.

a) Identify the 16 simple events associated with this experiment and assign a value of x to each.

b) Display the probability distribution of x in tabular form.

10pts 8. Given the following probability distribution for the random variable x , find $E(x)$ and σ .

x	30	50	70	100	120
$p(x)$	0.10	0.20	0.10	0.40	0.20

In problems 9-12 Identify the distribution(Binomial, Poisson, Geometric, Hypergeometric). Also identify (λ , x , n , p , etc) Then use the tables in the appendix and/or the formulas discussed in class to find the probability

8pts 9. If eight cards are drawn without replacement from a standard deck of 52 cards what is the probability that there are either 1 or 2 faces?

8 pts 10. Suppose 4 red marbles, 9 white marbles, and 7 blue marbles are placed in a bag. You draw a marble and then replace it before another is drawn. What is the probability of getting the first red marble on the fourth draw?

8pts 11. Suppose 12 black marbles, 6 red marbles and 2 green marbles are placed in a bag. You draw a marble and then replace it before another is drawn. What is the probability of getting at least seven black marbles from fifteen draws?

8pts 12. A company reports the number of breakdowns per day is on the average 3.6. What is the probability on a given day that five or fewer breakdowns would occur?