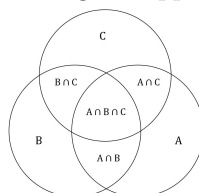


MA 4200: Quiz 3

Name: _____

- For three sets the Venn diagram appears as below. Can you draw a four



set Venn Diagram?

- My drive at home is very steep and I slip sometimes when I walk down to get my mail. I only slip when it is raining and the temperature is below freezing. I slip about 1% of the time. I slip about 10% of the time given tht it is raining and freezing. It rains about 40 % of the time.

- What is the probability that it is freezing given that it is raining?
- Assume the probability that it is freezing is 40%. Are the events raining and freezing independent? Why or why not?

- There are three age grouos we are considering that have approximately the following percentage of the population.

Age Group

1	under 21	25 %
2	21 to 55	45 %
3	over 55	30 %

That is the probability that a randomly selected person is in Age group 1 is 26 %. We are also considering their preference of Olympics with regards to the sport curling. We have three preference levels: likes curling ($P=1$), loves curling ($P=2$) and curling is life ($P=3$). We know the following $\Pr(P=3 \mid \text{Age} = 1) = 0.20$, $\Pr(P=3 \mid \text{Age} = 2) = 0.20$ and $\Pr(P=3 \mid \text{Age} = 3) = 0.20$.

- What is the probability that a randomly selected person thinks curling is life and the person is in age group 1.
 - What is the probability that a randomly selected person thinks curling is life.
 - What is the probability that a randomly selected person is in age group 1 given that they think curling is life.
- Given an urn (the famous urn problems) with five red balls, three purple bals, and Seven green balls. We will select two balls without replacement.
 - Find the probability that we get 2 reds.
 - Find the probability that we get 1 red ball (at least one red).
 - Find the probability that we get 1 red (exactly one red).
 - Find the probability that we get 0 red balls.
 - Flip a biased coin ($\Pr(H) = \frac{2}{3}$) seven times. Find probability of

- (a) zero heads
 - (b) exactly five heads
 - (c) at least five heads.
6. Draw five cards from a 52 card deck.
- (a) Find probability of getting four of a kind.
 - (b) Find probability of getting three of a kind (exactly three of a kind. Not four of a kind).
 - (c) Find probability of getting a full house.