## System Linear Equations

1. The manager of a garden shop mixes grass seed that is 40% rye grass with 100 pound of grass seed that is 70% rye grass to make a mixture that is 50% rye grass. How much of the 40% mixture is used?

Set Theory. **Shade the set.** (Hint: **U union – all inclusive; ∩- Intersection- the common elements (area)**

A′ complement of set A -"Not A")
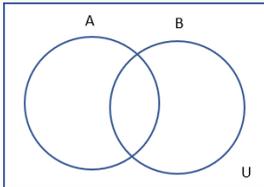
**2A)**   **A U B′**

2B)   **A′ ∩ B**
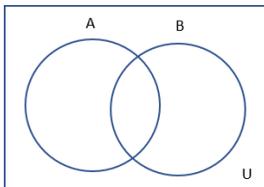
2C) B '
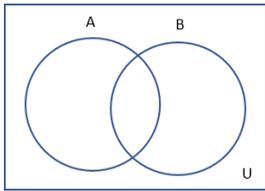
2D) A ∩ U
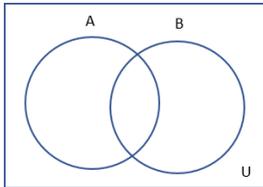
2E) A ∩ (B ∪ C)
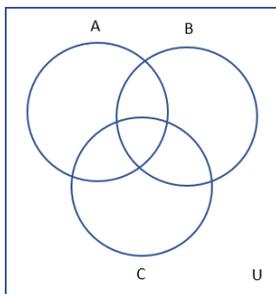
Probability

2. **Find the Probability.** (Hint: **P** = Favorable Outcomes / Total Outcomes ; $0 \le P \le 1$)
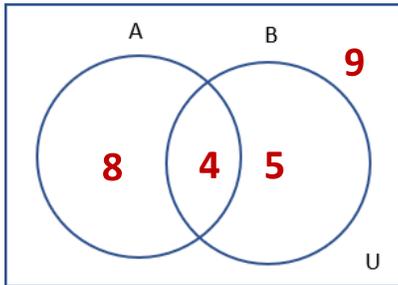
A) P (A or B)

B) P (A and B)

C) P (B)

D) P (B | A)

E) Are events **A** and **B** *independent?*

3. Standard deck of 52 cards
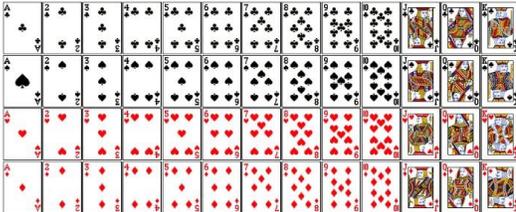
4A) **Find the probability to withdraw randomly** *a 7,8,9,or 10 card* **or** *a Diamond.*

Hint: P(A or B) = P(A) + P(B) − P(A and B)   Addition Rule

4B) **Find the** *probability* **to withdraw first time** *a Red card* **and** **second time** *a Black face card* **without replacement.**

Hint: P(A and B) = P(A)xP(B|A)   Multiplication Rule

5. Find the *Expected Value* for the given game

Outcome, X	-7	-3	1	10	50
Probability,P (X)	0.25	0.35	0.25	0.135	0.015

(Hint: $E = X_1P_1 + X_2P_2 + X_3P_3 + ... + X_nP_n$)

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6. *Combinations and Permutations* (Hint: order matters- $_nP_r$; order doesn't matter -$_nC_r$)

6A) How many ways can choose 7 friends to be invited to the party out of 20 total friends ?

6B) How many different pictures can be made, choosing 5 people out of 30 and they will be sitting on one row?

6C) How many committees of 5 people can be formed from a pool of 32 people ?

6D) How many passwords with 5 different letters can be made from the letters A, B, C, D, E, F, G, H, I ?