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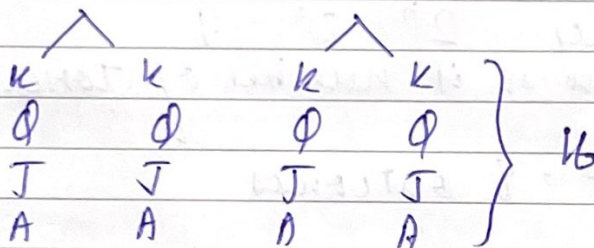
$$P(A \cup B) = P(A) + P(B)$$

$$= \frac{13}{52} + \frac{13}{52} = \frac{26}{52} = \frac{1}{2}$$

ii) The card is of club or face card (including Ace)  
 Find.

$$P(\text{club}) = P(A) = \frac{13}{52}$$

$$P(\text{face}) = P(B) = \frac{16}{52}$$



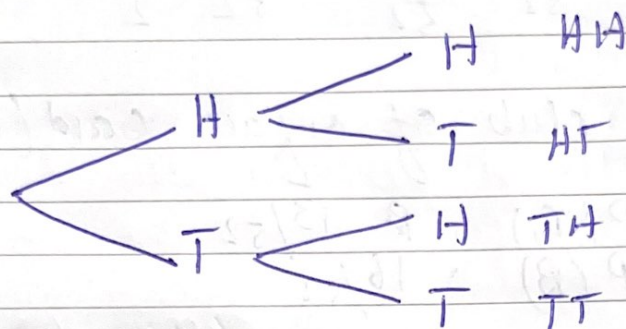
$$P(A \cup B) = P(B) + P(A) - P(A \cap B)$$

$$= \frac{13}{52} + \frac{16}{52} - \frac{4}{52} = \frac{25}{52}$$

## Tree Diagram

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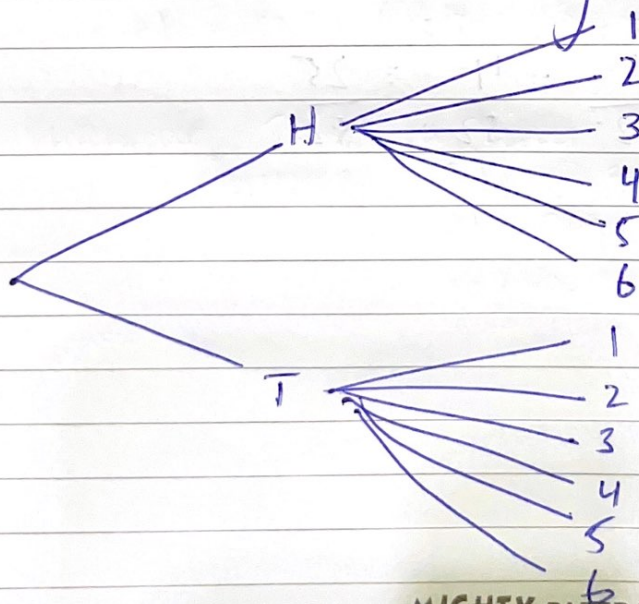
If a coin is Tossed two times :-



Possible outcomes =  $2^n = 2^2 = 4$   
when  $n$  is number of tosses

for 3 tosses,  $2^3 = 8$  outcomes

if a die is tossed along with a coin,

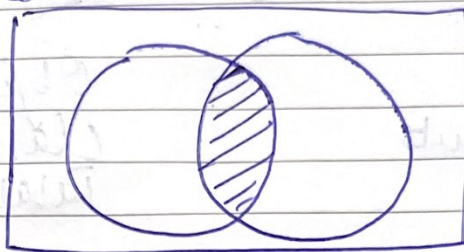




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Events are subsets of sample space

Intersection of events :-



\* Probability of a null set is always 0 \*

- Mutually exclusive events are events where there is no intersection e.g.  $A \cap B = \emptyset$  where A and B have no common elements.

- Union of events is the event containing all elements that belong to those events.  $A \cup B$

- Venn Diagram to Show These can be simplified by a method similar to De Morgan's theorem

$$\left. \begin{array}{l} A \cap B \\ B \cap C \\ A \cap C \\ B' \cap A \\ A \cap B \cap C \\ (A \cup B) \cap C \end{array} \right\} \begin{array}{l} \text{Draw the} \\ \text{venn} \\ \text{diagram} \\ \text{(in slides)} \end{array}$$

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## Probability

Subjective:  
Personal experiments

Objective:  
Classical Approach  
Relative Approach

### Example 7 (slides)

$$P(\text{Mechanical}) = \frac{10}{53}$$

$$P(\text{electrical}) = \frac{10}{53}$$

$$P(\text{civil}) = \frac{8}{53}$$

$$P(\text{industrial}) = \frac{25}{53}$$

$$a) = \frac{25}{53}$$

$$b) \frac{8}{53} + \frac{10}{53} = \frac{18}{53}$$

Do example 8-10 in slides

Answers 8) 0.9

9)  $\frac{2}{9}$

10) 0.6



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The product Rule: (Independent events)

$$P(A \cap B) = P(A) P(B)$$