4) Random Variables

Random Variable is a process of mapping the output of a random process or experiment to a number.

* Example:

1) Tossing a Coin

$$X = \begin{cases} 0, & \text{if Head} \\ 1, & \text{if Tail} \end{cases}$$

2) Rolling a dice 6 times

$$Y = \{2,1,4,2,3,5\}$$

Someone may ask question like if $Y = \{$ sum of rolling a dice 7 times $\}$ Then, what is,

$P(Y \geq 15)$, $P(Y < 10)$.

5) Sets

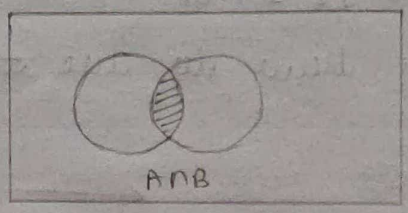
$A = \{1,2,3,4,5,6,7,8\}$

$B = \{3,4,5,6,7\}$

1. Intersection

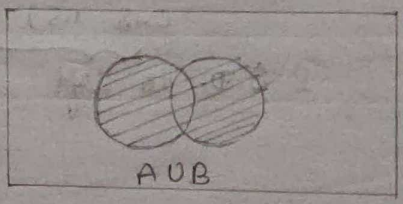
$(A \cap B)' = \{1,2,8\}$ (by mistake 😉)

$A \cap B = \{3,4,5,6,7\}$



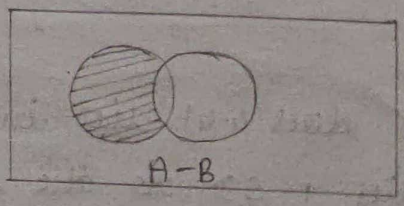
2. Union

$A \cup B = \{1,2,3,4,5,6,7,8\}$



3. Difference

$A - B = \{1,2,8\}$



4. Subset

$A \subseteq B \Rightarrow$ False

$B \subseteq A \Rightarrow$ True

5. Superset

$A \supset B \Rightarrow$ True

$B \supset A \Rightarrow$ False