PROBABILITY

Elementary event (E) :
Only one outcome
sum of the probabilities of all elementary events is 1.

EVENT(E)

$0 \le P(E) \le 1$

$$P(E) = \frac{\text{No. of outcomes favourable to E}}{\text{No. of all possible outcomes}}$$

2nd dice \ 1st dice	36 posibilities in throwing two dices simultaneously					
	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

Applications
Gambling, insurance & statistics control theory.

Complimentary Events(E)
Not E = $\bar{E}$, $P(\bar{E}) = 1 - P(E)$
In case 1 :

$P(1) = \frac{1}{6}$; $P(\bar{1}) = 1 - \frac{1}{6} = \frac{5}{6}$

$P(\bar{1})$ = not getting 1 ;
= getting 2,3,4, 5 and 6

Certain event P(E) = 1
Impossible event P(E) = 0
In case 2 :
P(sum 13) is impossible.
hence, P (sum 13) = 0

Examples

Case -1) One dice is rolled:
P(1) = Probability of getting 1.

$P(1) = \frac{1}{6}$

Similarly P(2),P(3), P(4), P(5) & P(6)

$= \frac{1}{6}$

P(E > 4) → Probability of getting 5 & 6.

P(E > 4)
= P(5) + P(6)

$= \frac{2}{6} = \frac{1}{3}$

P(E ≤ 4)
= P(1) + P(2) + P(3) + P(4)

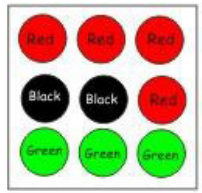
$= \frac{4}{6} = \frac{2}{3}$

Case -2) Two dice are rolled:
P(sum = 8) = Probability of getting two numbers whose sum is 8.

Sum = 8 for
(2,6) (3,5) (4,4) (5,3) (6,2)

$P(\text{sum } 8) = \frac{5}{36}$

Case -3) Box with balls :
A box contains 2 black, 3 green and 4 red balls.



Probability of picking up black
$P(B) = \frac{2}{9}$