BALABHADRA SKILL DEVELOPMENT ACADEMY
MATHS FORMULA - 21

PROBABILITY

Sl	Situation	Formula
1	The experiment which have only one possible result or outcomes i.e. whose result is certain or unique is called a ____ or ____ experiment.	Deterministic, Predicable
2	An experiment in which all the outcomes are known in advance but the specific outcome that will occur is not known, is called a ______ experiment.	Random
3	The set of all possible outcomes in a random experiment is known as _____. It is denoted by _____.	Sample space, S
4	Each outcome of a sample space is a ______.	Sample Point
5	An event is subset of a sample space. In tossing of two coins,	A={HH,TT}=Same denominations appear on the both the coins and B={HT,TH}=Different denominations appear on both the coins, Here A and B are two events of the same sample space
6	An event having only a single sample point is called a simple event. In tossing of two coins,	S={HH,HT,TH,TT} E={HH} is a simple event
7	An event other than a simple event is called a compound event. In tossing of two coins	S={HH,HT,TH,TT} E={HH,HT,TH} is a compound event

8	Two events A and B are said to be independent events. If the happeing (or non-happening) of any one event does not affect the happening (non-happening) of the other. If A and B are independent events, then	P(A and B)= $P(A\cap B)=P(A).P(B)$
9	A set of events is said to be mutually exclusive and exhaustive events. If events are exclusive as well as exhaustive.	$E_1\cup E_2\cup....\cup E_n=S$ and $E_1\cap E_2 \cap ....\cap E_n=\emptyset$ then these events are known as mutually exclusive and exhaustive events.
10	If from n events associated with a random experiment, m events are in favour of event E, then probability of event E is denoted by P(E) and	$P(E)=\frac{m}{n}$ So, it is clear that, $0 \leq m \leq n = 0 \leq P(E) \leq 1$
11	Probability of non-occurrence of event E is denoted by $P(\overline{E})$, then	$P(\overline{E}) = \frac{n-m}{n} = 1 - P(E)$
12	If in a random experiment, sample space is S and event $E \subseteq S$, then probability of occurrence of an event E,	$P(E) = \frac{n(E)}{n(S)}$ Where, n(E) is the number of sample points in E and n(S) is the number of sample points in S.
13	The probability of certain event is 1 and that of impossible event is 0 i.e.	$P(S)=1$ and $P(\emptyset)=0$
14	In a random experiment , if out of (m+n) equally likely, mutually exclusive and exhaustive sample points, m sample points are in favour of an event A, then m:n is called odds in favour of E and n:m is called odds against E. Also probability of E	$P(E) = \frac{\text{Number of sample points in favour of E}}{\text{Total number of sample points}}$ $P(E) = \frac{m}{m+n}$ $=> P(E_1' \cup E_2') = 1 - P(E_1 \cap E_2)$ $=> P(E_1' \cap E_2') = 1 - P(E_1 \cup E_2)$ $=> P(E_1 \cap E_2') = P(E_1) - P(E_1 \cap E_2)$
15	If E_1 and E_2 are events associated with a random experiment, then probability of occurrence of E_1 or E_2	$P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$ Where, $P(E_1 \cup E_2)$ is the probability of occurrence of E_1 and E_2
16	If E_1 and E_2 are mutually exclusive events, then	$P(E_1 \cup E_2) = P(E_1) + P(E_2)$

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