

UNIT 11: Sample space, event and probability of an event

Specific Objectives:

1. To understand the set notation for application in probability
2. To understand the meaning of sample space, event and probability of an event.
3. To learn the concept of mutually exclusive, exhaustive and complementary events.
4. To find the probability of an event.
5. To use simple permutations and combinations in finding probabilities.

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	Detailed Content	Time Ratio	Notes on Teaching
	11.1 Set notation	2	The concept of element and set should be introduced here. Use of upper case letters for sets and use of brackets {...} to list a set should also be mentioned. The meaning of subset, union, intersection and complement may be introduced through Venn Diagrams. Moreover the notation $n(A)$ should be mentioned. Detailed treatment of set language is not expected.
	11.2 Sample space, event and probability	3	The concept of finite and infinite sample spaces should be introduced through examples. For a finite sample space S, the probability of an event E is defined as $P(E) = \frac{n(E)}{n(S)}$ Students should be reminded that in the above definition, all the elements in S should be equally likely to happen. For a more general definition, $P(E)$ is the sum of the probabilities associated with every element belonging to the subset E. Various examples should be discussed to illustrate the above point.
	11.3 Mutually exclusive, exhaustive and complementary events	2	Two events are said to be mutually exclusive when their intersection is empty. The meaning of the above definition should be illustrated by examples. A set of events E_1, E_2, \dots are said to be mutually exclusive and exhaustive if every element in the sample space belongs to one and only one event among E_1, E_2, \dots . Hence two events are complementary if and only if they are mutually exclusive and exhaustive. Teachers are expected to guide the students to discover the rule that when A and B are complementary, then $P(A)+P(B)=1.$ Examples involving the application of the above should be discussed and the addition and multiplication laws could be incorporated as revision and continuation.

	Detailed Content	Time Ratio	Notes on Teaching
	11.4 Further Examples	5	Various techniques of finding the probability of an event should be introduced here through examples. Techniques such as tabulation of a finite sample space and tree diagram should be discussed. Students should also be able to apply the counting techniques such as permutation and combination in calculating the number of elements in events and the sample space and hence the probabilities.
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