

Data Analysis and Probability

Goal: The learner will understand and determine probabilities.

Objective:

4.01 Develop fluency with counting strategies to determine the sample space for an event. Include lists, tree diagrams, frequency distribution tables, permutations, combinations, and the Fundamental Counting Principle.

To achieve this objective, students should:

- When the possible outcomes of a probability situation can be directly observed (die, coin, spinner, etc), involve a limited number of choices, including where the order of the choices matters and does NOT matter, students should develop a variety of strategies to find the complete sample space including:
 - Organized lists of all possible outcomes
 - Tree diagrams
 - Table or Array
 - The Fundamental Counting Principle to determine the number of possible outcomes for combinations of independent events. For example, rolling a die and tossing a coin would have 6×2 possible outcomes.
- When the possible outcomes of a probability situation are purposely hidden or can NOT be directly observed without sampling (fish in a lake, marbles in a bag, grab bag of miscellaneous toys, etc) students should develop a variety of strategies to find a best estimate for the sample space including:
 - Sampling strategies to collect data about the unknown population
 - Frequency distribution tables to record the outcomes and frequencies from data collection
- For permutations, find all possible arrangements involving a limited number of choices. Do NOT use the permutation formula.
- For combinations, find all possible combinations and arrangements involving a limited number of choices. Do NOT use the combination formula.