

Probability Vocabulary List

Trial: refers to any operation whose outcome cannot be predicted with certainty.

Experiment: consists of one or more trials. It is an activity with an observable result. For example, rolling a die and recording the number that was rolled. An experiment may consist of one or more trials.

Outcome: is one (single) particular result of an experiment (i.e. one of the elements of the sample space). For example, rolling a three is an outcome of the experiment of rolling a six-sided die.

Sample space: is the set of all possible outcomes of an experiment. For example, for the experiment of rolling a six-sided die, the sample space would be: {1, 2, 3, 4, 5, 6}. A sample space can be shown using set notation, or a chart, description, or diagram.

Event: is a subset of the sample space containing one or more possible outcomes of the experiment. Rolling an even number {2, 4, 6} or rolling a three {3} on a single roll of a six-sided die.

Probability: to denote the probability of an event A , we write $P(A)$, which is read as "the probability of A ". Probabilities are usually represented by decimals or fractions between 0 and 1, but sometimes percentages are used.

$$P(A) = \frac{\text{\# of ways that } A \text{ can occur}}{\text{Total \# of outcomes in the sample space}}$$

This can also be written as: written as $P(A) = \frac{n(A)}{n(S)}$

Equally likely outcomes: refers to events in the sample space where each outcome has the same chance of happening. For example, when you roll a die, you have an equally likely chance of rolling a 1, 2, 3, 4, 5 or 6. As well, you have an equally likely chance of rolling either an even number or an odd number.

Complement: The complement of an event is all of the outcomes that would NOT be considered successes for the event. For example, if you roll a six-sided die and determine the possibility of *rolling a 4*, then the **complement** of *rolling a 4* would be rolling a 1, 2, 3, 5, or 6. (Also expressed as rolling a 4, and NOT rolling a four.) The sum of the probabilities of an event and its complement will always add up to 1.