Induction Encyclopedia Article

Induction

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Induction

In mathematics as well as logic, the word induction means "generalization." In logic, it is a process of reasoning from particular situations or conditions to general ones in order to arrive at a conclusion about other similar situations. This is similar to its use in mathematics. Mathematical induction is the use of a formula to prove and analyze. In both fields, the justification for the usefulness of induction is the assumption that if something is true in a number of observed situations, it must also be true in similar but, as yet, unobserved or unproven situations. The probability that an outcome arrived at through induction is accurate depends, in part, on the number of situations observed that show a particular outcome. In mathematics, the induction principle says that if you can prove every other prediction about a series or equation, then the assumption in question must also be true. One of the simplest examples of induction is the interpretation of opinion polls, in which the answers given by a small percentage of the total population are assumed to be the same answers that would be given by the entire country. If 60 out of 100 people use Brand X laundry detergent to wash their clothes, then by induction it can be assumed that 600,000 out of a million do also. Of course, a poll that samples many more than 100 people and people form different parts of the country and many different income letters would povide a more accurate prediction.