

# How To Think Logically

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Base your writing on logical thinking. Learn to use inductive and deductive reasoning in your writing. Avoid common fallacies.

**INDUCTIVE REASONING:** When you reason inductively, you begin with a number of instances (facts or observations) and use them to draw a general conclusion. Whenever you interpret evidence, you reason inductively. The use of probability to form a generalization is called an inductive leap. Inductive arguments, rather than producing certainty, are thus intended to produce probable and believable conclusions. As your evidence mounts, your reader draws the conclusion that you intend. You must make sure that the amount of evidence is sufficient and not based on exceptional or biased sampling. Be sure that you have not ignored information that invalidates your conclusion (called the “neglected aspect”) or presented only evidence that supports a predetermined conclusion (known as “slanting”).

**DEDUCTIVE REASONING:** When you reason deductively, you begin with generalizations (premises) and apply them to a specific instance to draw a conclusion about that instance. Deductive reasoning often utilizes the syllogism, a line of thought consisting of a major premise, a minor premise and a conclusion; for example, All men are foolish (major premise); Smith is a man (minor premise); therefore, Smith is foolish (conclusion). Of course, your reader must accept the ideas or values that you choose as premises in order to accept the conclusion. Sometimes premises are not stated. A syllogism with an unstated major or minor premise, or even an unstated conclusion, needs to be examined with care because the omitted statement may contain an inaccurate generalization.

**THE TOULMIN METHOD:** Another way of viewing the process of logical thinking is through the Toulmin method. This model is less constrained than the syllogism and makes allowances for the important elements of probability, backing, or proof for the premise and rebuttal of the reader's objections. This approach sees arguments as the progression from accepted facts or evidence (data) to a conclusion (claim) by way of a statement (warrant) that establishes a reasonable relationship between the two. The warrant is often implied in arguments, and like the unstated premise in the syllogism, needs careful examination to be acceptable. The writer can allow for exceptions to a major premise. Qualifiers such as probably, possibly, doubtless, and surely show the degree of certainty of the conclusion; rebuttal terms such as unless allow the writer to anticipate objections.

**FALLACIES:** A deductive argument must be both valid and true. A true argument is based on generally accepted, well-backed premises. Learn to distinguish between fact (based on verifiable data) and opinion (based on personal preferences). A valid argument follows a reasonable line of thinking.

Fallacies are faults in premises (truth) or in reasoning (validity). They may result from misusing or misrepresenting evidence, from relying on faulty premises or omitting a needed premise, or from distorting the issues. The following are some of the major forms of fallacies:

**Non Sequitur:** A statement that does not follow logically from what has just been said; in other words, a conclusion that does not follow from the premises.

**Hasty Generalization:** A generalization based on too little evidence or on exceptional or biased evidence.

**Ad Hominem:** Attacking the person who presents an issue rather than dealing logically with the issue itself.

**Bandwagon:** An argument saying, in effect, "Everyone's doing or saying or thinking this, so you should too."

**Red Herring:** Dodging the real issue by drawing attention to an irrelevant issue.

**Either...Or:** Stating that only two alternatives exist when in fact there are more than two.

**False Analogy:** The assumption that because two things are alike in some ways, they must be in other ways.

**Equivocation:** An assertion that falsely relies on the use of a term in two different senses.

**Slippery Slope:** The assumption that if one thing is allowed, it will be the first step in a downward spiral.

**Oversimplification:** A statement or argument that leaves out relevant considerations about an issue.

**Begging the Question:** An assertion that restates the point just made. Such an assertion is circular in that it draws as a conclusion a point stated in the premise.

**False Cause:** The assumption that because one event follows another, the first is the cause of the second. Sometimes called *post hoc, ergo propter hoc* ("after this, so because of this").