Deductive and Inductive Premises

Arguments can be separated into two categories: deductive and inductive. A **deductive** argument is one in which it is **impossible** for the premises to be true but the conclusion false. Thus, the conclusion follows **necessarily** from the premises and inferences. In this way, it is supposed to be a definitive proof of the truth of the claim (conclusion). Here is a classic example:

1. All men are mortal. (premise)
2. Socrates was a man. (premise)
3. Socrates was mortal. (conclusion)

As you can see, if the premises are true (and they are), then it simply isn't possible for the conclusion to be false. If you have a deductive argument and you accept the truth of the premises, then you must also accept the truth of the conclusion; if you reject it, then you are rejecting logic itself.

An **inductive** argument is one in which the premises are supposed to support the conclusion in such a way that if the premises are true, it is **improbable** that the conclusion would be false. Thus, the conclusion follows **probably** from the premises and inferences. Here is an example:

1. Socrates was Greek. (premise)
2. Most Greeks eat fish. (premise)
3. Socrates ate fish. (conclusion)

In this example, even if both premises are true, it is still possible for the conclusion to be false (maybe Socrates was allergic to fish, for example). Words which tend to mark an argument as inductive — and hence probabilistic rather than necessary — include probably, likely, possibly and reasonably.

It may seem that inductive arguments are weaker than deductive arguments because there must always remain the possibility of their arriving at false conclusions, but that is not entirely true. With deductive arguments, our conclusions are already contained, even if implicitly, in our premises. This means that we don't arrive at new information — at best, we are shown information which was obscured or unrecognized previously. Thus, the sure truth-preserving nature of deductive arguments comes at a cost.

Inductive arguments, on the other hand, do provide us with new ideas and thus may expand our knowledge about the world in a way that is impossible for deductive arguments to achieve. Thus, while deductive arguments may be used most often with mathematics, most other fields of research make extensive use of inductive arguments.

It's all a matter of necessary vs probabilistic.

Deductive = sure thing, no question, absolutely!

Inductive = probably, likely, possibly, reasonably, BUT I'm not staking my life on it being true!!!!