

Evaluating an Argument in Action

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WHAT'S COVERED

In this tutorial, we will use what we've learned about arguments to evaluate an argument. We will review the types of arguments and related terminology, and evaluate several sample arguments in context.

This tutorial considers the evaluation of arguments in three parts:

1. Determining if Argument is Deductive and Inductive
2. Evaluating Inductive and Deductive Arguments
 - 2a. Valid, Invalid, Strong, or Weak
 - 2b. Sound, Unsound, Cogent, or Uncogent
3. Practice Evaluating an Argument

1. Determining if Argument is Deductive and Inductive

Recall the definitions of **inductive** and **deductive**, as they relate to arguments.

When determining whether an argument is inductive or deductive, ask this question: "Is the inferential claim a claim of logical certainty?" If the answer is yes, the argument is deductive. If the answer is no, the argument is inductive.

You *cannot* properly evaluate a sophisticated argument without first identifying whether it is deductive or inductive.



TERMS TO KNOW

Deductive

An argument in which the inferential claim is a claim of logical certainty

Inductive

An argument in which the inferential claim is a claim of less than logical certainty

2. Evaluating Inductive and Deductive Arguments

Once you have determined whether an argument is inductive or deductive, ask this question: “Assuming all premises are true, do they support the conclusion?” For deductive arguments, is it possible for all of the premises to be true, and the conclusion false? For inductive arguments, is it probable for all premises to be true and the conclusion false? You are essentially trying to determine whether the premises guarantee the conclusion, or not.

2a. Valid, Invalid, Strong, or Weak

For deductive arguments, we use the terms valid and invalid:

- **Valid:** A deductive argument in which the premise(s) logically guarantee their conclusion.
- **Invalid:** A deductive argument in which the premise(s) do not logically guarantee their conclusion.

For inductive arguments, we use the terms strong and weak:

- **Strong:** In inductive argument in which the premises render the conclusion probable.
- **Weak:** An inductive argument in which the premises do not render the conclusion probable.

A valid argument has a good deductive structure, and an invalid argument has a bad deductive structure *and that is all*. Whether the premises are true or false (i.e., whether the factual claim is a good one or not), does not have anything to do with validity. Likewise, a strong argument is one that has good inductive structure; a weak one has bad inductive structure *and that is all*. Whether the premises are true or false does not have anything to do with strength.

Here are some examples:

Sample Argument	Deductive or Inductive?	Valid, Invalid, Strong, or Weak?
All reptiles are dinosaurs. Hamsters are reptiles. Therefore, hamsters are dinosaurs.	Deductive.	Valid. Ask yourself, “If it is true that all reptiles are dinosaurs, and it is true that hamsters are reptiles, does that guarantee that hamsters are dinosaurs?” The answer is <i>yes</i> . The argument is valid.
LeBron James is over five feet tall. Therefore, LeBron James is over seven feet tall.	Deductive.	Invalid. Ask yourself, “If it is true that LeBron James is over five feet tall, does it guarantee that he is over seven feet tall?” The answer is <i>no</i> , so this is an invalid argument.
Some people got sick eating at the restaurant. Therefore, I	Inductive.	Weak. This argument is weak because the conclusion is possible, but it is not probable.

will get sick eating there.		
The Browns have played terribly all season. Therefore, they will lose this week.	Inductive.	Strong. Ask yourself, "Is it probable for all of the premises to be true and the conclusion to be false?" The answer is <i>no</i> , so it is a strong argument. If it was true that the Browns have played terribly all season, I would bet they would lose. it is a good bet. If I lose my bet, it's because induction involves chance, not because I have done something irrational.

The last step in evaluating an argument is to check the factual claims. Whether the premises or conclusion are true or not does *not* enter into the determination of validity (deductive arguments) or strength (inductive arguments). However, validity and strength are important because they indicate that the premises *lead to* the conclusion.



TERMS TO KNOW

Valid

A deductive argument in which the premise(s) logically guarantee their conclusion

Invalid

A deductive argument in which the premise(s) do not logically guarantee their conclusion

Strong

An inductive argument in which the premises render the conclusion probable

Weak

An inductive argument in which the premises do not render the conclusion probable

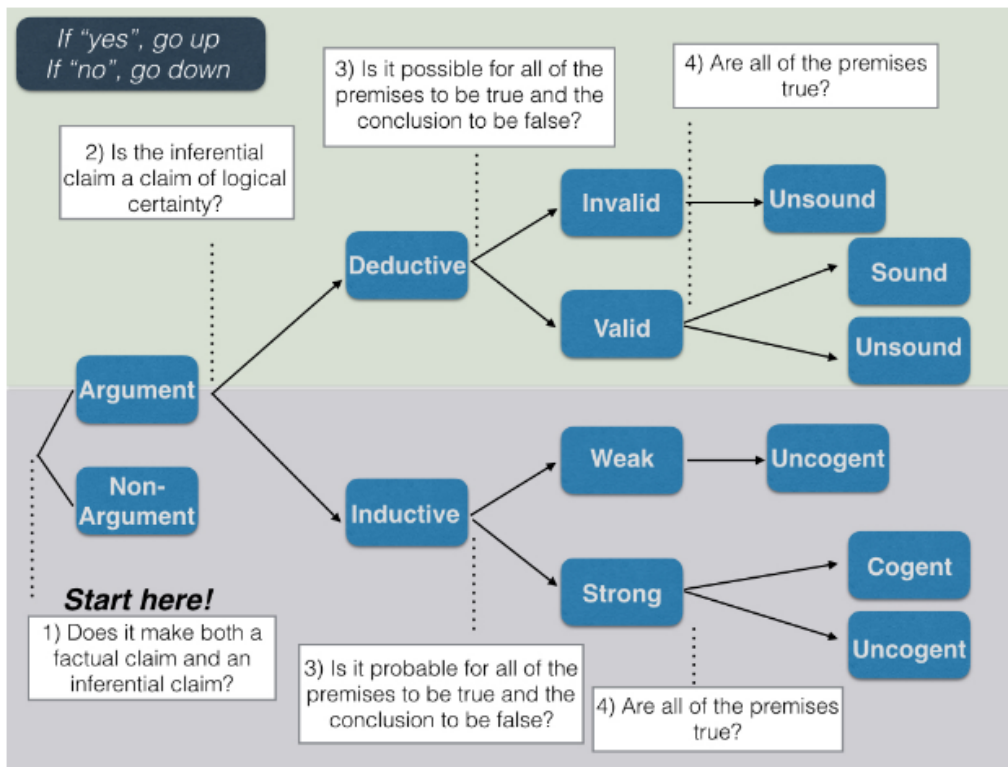
2b. Sound, Unsound, Cogent, or Uncogent

After that, we simply have to decide whether we accept the premises. If the argument has been determined to be valid or strong, we simply need to ask our question of fact: "Are all of the premises true?" This will determine whether a valid argument is sound or unsound (deductive arguments), or a strong argument is cogent or uncogent (inductive arguments).

Let's make these evaluations more precise.

- A **sound** argument is a deductively valid argument with all true premises, while an **unsound** argument is simply any deductive argument that is not sound.
- Similarly, a **cogent** argument is an inductively strong argument with all true premises, while an **uncogent** argument is any inductive argument that is not cogent.

The following flow chart can be a helpful tool when evaluating an argument



TERMS TO KNOW

Sound

A deductively valid argument in which all premises are true

Unsound

A deductive argument that is not sound

Cogent

An inductively strong argument in which all premises are true

Uncogent

An inductive argument that is not cogent

3. Practice Evaluating an Argument

Let's apply what you've learned to a few examples. In these examples evaluate the argument by determining if it is:

1. Inductive or deductive
2. Valid, invalid, weak, or strong
3. Sound, unsound, cogent, or uncogent



TRY IT

Evaluate the following argument by first determining whether it is deductive or inductive, then evaluating its inferential claim, and, finally, evaluating its factual claims.

If you are in Texas, you are in the United States. You are in the United States. Therefore, you are in Texas.

This is a deductive argument. The conclusion follows from the meaning of an if-then statement, not from facts about geography. Note that the argument includes nothing related to causation. It is about definition. Next, evaluate the inferential claim: does the inference attain logical certainty, or can you imagine the premises being true, and the conclusion false? For most students, both premises are true and the conclusion is false (e.g., if you are in Michigan). This means that it is invalid because even if you happen to be in Texas, that is not *entailed* by the premises. Since it is invalid, it must be unsound because it is not a satisfactory deductive argument.



TRY IT

Evaluate the following argument by first determining whether it is deductive or inductive, then evaluating its inferential claim, and, finally, evaluating its factual claims.

In the past, when I have had more than five drinks, I have become ill. Therefore, if I have ten drinks, I will become extremely ill.

This argument is inductive because it relies on cause and effect (it is a prediction because it is forecasting a similar cause and effect in the future). When we ask our inference question, we see that the conclusion is *likely*, given the premise. Therefore, the argument is strong. *If* the single premise is true, it is cogent; otherwise, it is uncogent.



TRY IT

Evaluate the following argument by first determining whether it is deductive or inductive, then evaluating its inferential claim, and finally evaluating its factual claims.

All birds can fly. Polly is a bird. Therefore, Polly can fly.

This is a deductive argument because it proceeds from the definition of “all” rather than facts about biology. Next, evaluate the inferential claim. Can you imagine an instance in which the premises are true, but the conclusion is false? The answer is no, therefore, this argument is valid. Finally, evaluate the factual claims. While “Polly is a bird” might be true, the statement that “all birds can fly” is not. There are several species of flightless birds (penguins, ostriches, kiwis, etc.). Therefore, this argument is unsound.



SUMMARY

Before evaluating an argument, we must determine whether it tries to establish its conclusion using logical certainty (which makes it a **deductive argument**), or something less (which makes it an **inductive argument**). Once we have made this determination, we check the inferential claim in a more refined way, using the concepts of **valid and invalid** for deduction, and **strong and weak** for induction. We then consider the factual claim to render a final evaluation of the argument: sound or unsound for deductive arguments; **cogent or uncogent** for inductive arguments.

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TERMS TO KNOW

Cogent

An inductively strong argument with all true premises

Deductive

An argument whose inferential claim is a claim of logical certainty

Inductive

An argument whose inferential claim is a claim less than logical certainty

Invalid

A deductive argument in which the premise(s) do not logically guarantee their conclusion

Sound

A deductively valid argument with all true premises

Strong

An inductive argument in which the premises render the conclusion probable

Uncogent

An inductive argument that is not cogent

Unsound

A deductive argument that is not sound

Valid

A deductive argument whose premise(s) logically guarantee their conclusion

Weak

An inductive argument in which the premises do not render the conclusion probable