

1. Arguments & Issues

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Focus

With diligent study of this guide, you will learn...

Ideas	issues, statements, arguments, premises, conclusions, deduction, induction
Skills	recognizing arguments, identifying issues, using evidence to support claims

1.1 What Is Critical Thinking?

Skeptical habits of thought are essential for nothing less than our survival because baloney, bamboozles, bunk, careless thinking, flimflam and wishes disguised as facts are not restricted to parlor magic and ambiguous advice on matters of the heart.— Carl Sagan

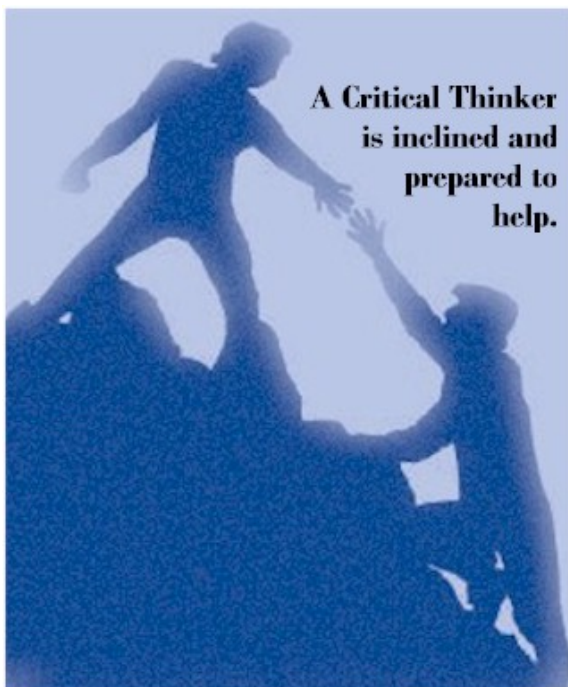
1.1.1 Key Ideas / Terms

Key Ideas/Terms	Definition
argument	A group of <i>statements</i> , one or more of which (the <i>premises</i>) are claimed to provide support for, or reasons to believe, one of the others (the <i>conclusion</i>). Every argument may be placed in either of two basic groups: those in which the premises really do support the conclusion (good arguments), and those in which they do not, even though they are claimed to (bad arguments).
conclusion	The <i>statement</i> that is claimed to follow from (supported by or inferred from) the <i>premises</i> .
critical thinker	Someone who uses specific criteria to evaluate reasoning, form opinions, and make decisions. Critical thinkers also develop and exhibit specific personal traits like intellectual humility, fair-mindedness, and empathy.
evidence	Synonyms: reasons, premises, support, justification
inference	In the narrow sense of the term, the reasoning process expressed by an <i>argument</i> . In the broad sense of the term, <i>inference</i> is used interchangeably with <i>argument</i> .
issue	What an <i>argument</i> is about. Issues are often framed as questions, for example: <ul style="list-style-type: none"> • Should vaping products be regulated? • Should all politicians be given periodic drug tests? • Should the minimum wage be increased?

Key Ideas/Terms	Definition
logic	The organized body of knowledge, or science, that evaluates <i>arguments</i> . As the science that evaluates arguments, the aim of logic is to develop methods and techniques that enable us to distinguish good arguments from bad ones.
premise(s)	The <i>statement(s)</i> that set forth the reasons or evidence for the <i>conclusion</i> .
statement	A sentence that is either true or false, typically a declarative sentence or a sentence component that could stand as a declarative sentence. The following sentences are statements (synonym: <i>propositions</i>): <ul style="list-style-type: none"> • Chocolate truffles are loaded with calories. • Melatonin helps relieve jet lag. • Tiger Woods plays golf and Maria Sharapova plays tennis.
truth values	Truth (T) and falsity (F) are called the two possible truth values of a <i>statement</i> .

We need critical thinking to deal with the decisions we are always confronting in our lives and in the fast-paced world of the 21st century. Mature critical thinking requires logic for discerning the accuracy and import of arguments that we have with others and with ourselves. So, we will cover a lot of logic along our hike here. Logic gives us "confidence that we are making sense when we criticize the arguments of others and when we advance arguments of our own." (Hurley)

What Lewis Carroll said about symbolic logic applies to logic generally:



Once master the machinery of Symbolic Logic, and you have a mental occupation always at hand, of absorbing interest, and one that will be of real use to you in any subject you may take up. It will give you clearness of thought - the ability to see your way through a puzzle - the habit of arranging your ideas in an orderly and get-at-able form - and, more valuable than all, the power to detect fallacies, and to tear to pieces the flimsy illogical arguments, which you will so continually encounter in books, in newspapers, in speeches, and even in sermons, and which so easily delude those who have never taken the trouble to master this fascinating Art. — Lewis Carroll

But we will also learn that logic can lead us to understanding its own limits. Good habits of reasoning are necessary, but not sufficient, for mature critical thinking. There are also particular habits of self-reflection and self-assessment that characterize the thinking and doing of flourishing humans.

Becoming a more mature critical thinker requires you to examine your current intellectual and emotional habits. On this quest, you will seek to strengthen your current good

habits, practice new ones, and unlearn the old ones that interfere with your flourishing on the planet Earth in the 21st. century.

**If you are diligent in your quest to become a better critical thinker,
you will succeed.**

1.2 What Is an Argument?

In common discourse, the word *argument* often refers to a dispute or disagreement between people. These kinds of arguments can devolve into name-calling, angry words, and other forms of violence. Verbal fights are often lacking in both logic and a common focus on finding the truth about some state of affairs (*issue*).

In Philosophy, we consider arguments as instruments of rational persuasion.

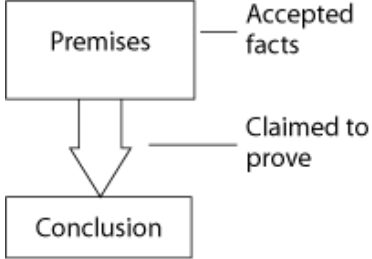
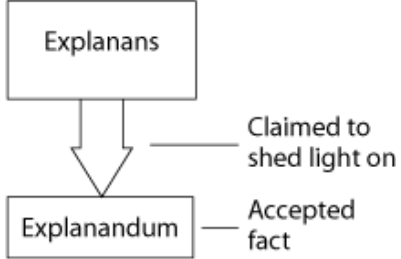
We define a *logical argument* as a group of *statements*, one or more of which (the *premises*) are claimed to provide support for, or reasons to believe, one of the others (the *conclusion*). Every argument may be placed in either of two basic groups: those in which the premises really do support the conclusion (good arguments), and those in which they do not, even though they are claimed to (bad arguments). Examples of arguments for study are typically brief, but an argument can be as long as a whole book.

Good Arguments	Bad "Arguments"
All humans make mistakes. Wendy is human. Therefore, Wendy makes mistakes.	The sky is blue. The turkeys are frisky. Therefore, the train is late.
If we get the password, we can hack into the Grades database. Alphonse just found the password on Professor Nobody's desk. So, we can hack our grades!	My mother thinks I am a genius. So just do as I say.

1.2.1 Recognizing Arguments

First, consider that there are many textual passages that are not arguments.

Key Ideas/Terms	Definition
simple, non-inferential passages	<p>Passages (texts) that lack a claim that anything is being proved. Such passages contain statements that could be premises or conclusions (or both), but what is missing is a claim that any potential premise supports a conclusion or that any potential conclusion is supported by premises. Passages of this sort include:</p> <ul style="list-style-type: none"> • warnings • pieces of advice • statements of belief or opinion • loosely associated statements • reports

Key Ideas/Terms	Definition
expository passages	A kind of discourse that begins with a topic sentence followed by one or more sentences that develop the topic sentence. If the objective is not to prove the topic sentence but only to expand it or elaborate it, then there is no argument
illustrations	Expression involving one or more examples that is intended to show what something means or how it is done. Often confused with an argument because many illustrations contain indicator words such as <i>thus</i> .
explanation	<p>An expression that purports to shed light on some event or phenomenon. The event or phenomenon in question is usually accepted as a matter of fact.</p> <p>An <i>argument</i> intends to establish <i>that</i> some state of affairs is the case. An <i>explanation</i> intends to establish <i>why</i> some state of affairs is the case:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Argument</p>  </div> <div style="text-align: center;"> <p>Explanation</p>  </div> </div>
conditional statements	Statements of the form: <i>If p then q</i> are called conditional statements. By themselves they are not arguments. They merely assert a conditional relation between the antecedent (<i>p</i>), and the consequent (<i>q</i>).
ambiguous and non-contextualized passages	"Yesterday was Monday. Today is Tuesday" Is this an argument? If so, which statement is the premise, and which is the conclusion?

1.2.2 Premises

Premises are statements that offer evidence, support, or justification for inferring or reasoning to the conclusion of an argument. Note that without reasons for making a claim, there is no argument.

► Locating premises in an argument

Any statement following one of these indicators can usually be identified as a *premise*:

since	in that	seeing that
as indicated by	may be inferred from	for the reason that
because	as	in as much as
for	given that	owing to

1.2.3 Conclusions

A *conclusion* is the position or stand that someone takes on an issue, or the claim they make about an issue. When a claim is supported by evidence or reasons (*premises*), it is the conclusion of an argument.

► Locating conclusions in an argument

Any statement following one of these indicators can usually be identified as a *conclusion*:

therefore	accordingly	entails that
wherefore	we may conclude	hence
thus	it must be that	it follows that
consequently	for this reason	implies that
we may infer	so	as a result

1.2.4 Unstated Premises & Conclusions (*enthymemes*)

Sometimes, arguments have premises or conclusions that are implicit—they are not explicitly stated. For example, consider this well-known marketing argument:

The bigger the burger, the better the burger.
The burgers are bigger at Burger Czar.

It is clear that the intended, but unstated, conclusion is:

Therefore, the burgers are better at Burger Czar.

An argument that has an implicit premise or conclusion is called an *enthymeme*. An implicit premise or conclusion should be considered as part of an argument if it is reasonable to assume that is what the person presenting the argument intended. For example:

Felicia was not the person who robbed the Socks R Us Emporium

because Felicia does not have a cobra tattoo on her left arm.

Again, it is clear there is an unstated premise, namely:

The robber at the Socks R Us Emporium had a cobra tattoo on a left arm.

In general, it is the responsibility of the author of an argument to be clear and complete. To that end, it is common practice to structure an argument as a set of complete premises, followed by the conclusion. This is the basic argument form we will use throughout this course of study.

1.2.5 Simple & Complex Arguments

Many arguments are as simple as the ones above, and many are constructed with only a few premises that support a single conclusion (single inference). But some extended arguments are more complex and have more than a single conclusion. For example, consider this complex argument:

Everyone who has read Karl Marx knows that capitalism is doomed to fail in the 21st century. And we all know that Emilio has read more than his share of Marx. So, he certainly believes that. And if he believes that, he's lying to you when he says you should open a chain of vaping boutiques. The man is a liar.

On careful inspection, we see that this argument has two inferences:

1.

Premise 1a	Everyone who has read Karl Marx knows that capitalism is doomed to fail in the 21st century.
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Premise 1b	Emilio has read more than his share of Marx.
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Conclusion 1	Emilio certainly believes that capitalism is doomed to fail in the 21st century.
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2.



Premise 2a	Emilio certainly believes that capitalism is doomed to fail in the 21st century.
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Premise 2b	And if he believes that, he's lying to you when he says you should open a chain of vaping boutiques.
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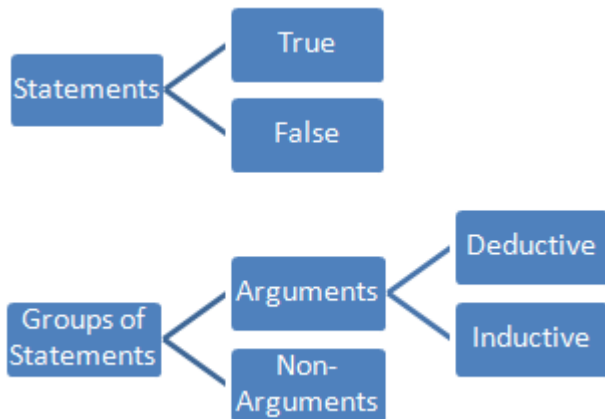
Conclusion 2	Emilio is a liar.
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This is an example where the intention of the original argument is to present a single, uninterrupted chain of reasoning that leads to concluding that Emilio is a liar. And it is easy to see that Conclusion 1 is an *intermediate conclusion* that provides a premise that supports the *final conclusion*. Note that a *final conclusion* in a complex argument is not itself a premise for anything else—it is the final point.

Reports, essays and non-fiction books often are cases of a complex argument, where many intermediate conclusions support a final conclusion. In all cases, no argument can have more than one final conclusion.

1.3 Deduction and Induction

Key Ideas/Terms	Definition
deductive argument	An <i>argument</i> incorporating the claim that it is impossible for the <i>conclusion</i> to be false if the <i>premises</i> are true.
inductive argument	An <i>argument</i> incorporating the claim that it is improbable that the <i>conclusion</i> is false if the premises are true.



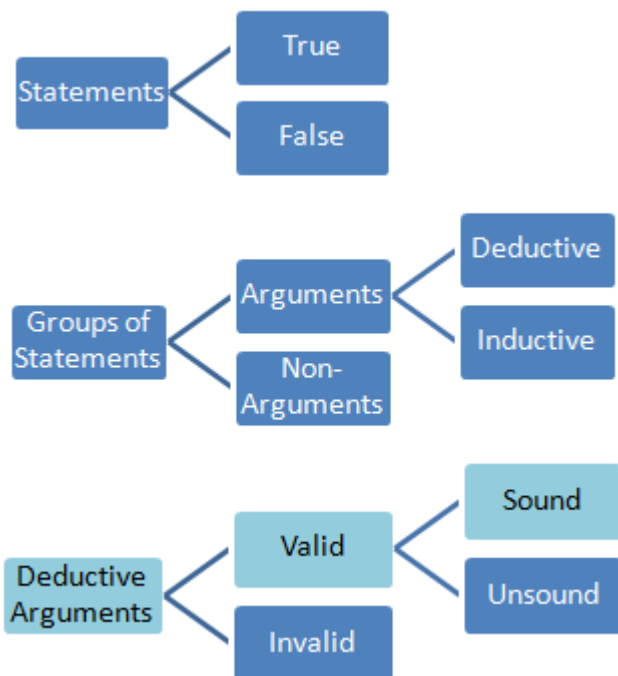
This simple "concept map" shows that all arguments are either deductive or inductive. But note that extended or complex arguments are often sets or arrangements of different arguments of both types. That is, complex arguments often use both deductive and inductive arguments to support the main conclusion.

1.3.1 Deductive Argument Forms

We will study deductive arguments in detail in Study Guides 3 and 4, followed by a detailed look at inductive arguments.

Key Ideas/Terms	Definition
Argument based on mathematics	An argument based on mathematics is an argument in which the conclusion depends on some purely arithmetic or geometric computation or measurement. For example, a shopper might place two apples and three oranges into a paper bag and then conclude that the bag contains five pieces of fruit. Or a surveyor might measure a square piece of land and, after determining that it is on each side, conclude that it contains . Since all arguments in pure mathematics are deductive, we can usually consider arguments that depend on mathematics to be deductive as well. However, arguments that depend on statistics are a noteworthy exception and are usually best interpreted as inductive.
argument from definition	An argument in which the conclusion is claimed to depend merely on the definition of some word or phrase used in the premise or conclusion. For

Key Ideas/Terms	Definition
	example, someone might argue that because Claudia is mendacious, it follows that she tells lies, or that because a certain paragraph is prolix, it follows that it is excessively wordy. These arguments are deductive because their conclusions follow with necessity from the definitions of <i>mendacious</i> and <i>prolix</i> .
syllogism	In general, an argument consisting of exactly two premises and one conclusion.
categorical syllogism	Each statement in a <i>categorical syllogism</i> begins with one of the words “all,” “no,” or “some.” All As are Bs. All Bs are Cs Therefore, all As are Cs.



1.3.3 Evaluating Arguments

Regardless of the type of argument, whether deductive or inductive, the evaluation of any argument involves answering two distinct questions:

1. Do the premises support the conclusion?
2. Are all the premises true?

The answer to the first question is the more important one, because if the premises fail to support the conclusion (that is, if the reasoning is bad), the argument is worthless.

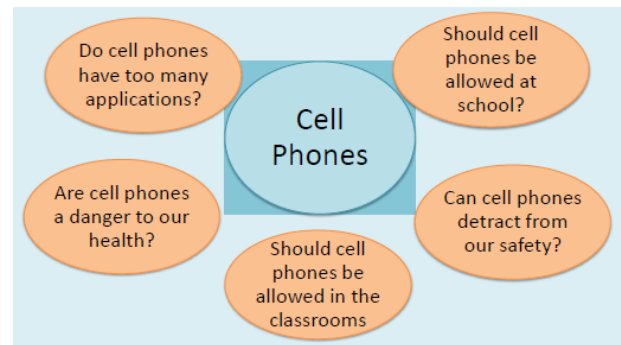
1.4 Arguments Are About Issues

**The aim of argument, or of discussion, should not be victory,
but progress. — Joseph Joubert, *Pensees* (1842)**

1.4.1 Topics

Topics are ideas or subjects for discussion. Topics become issues when a question or controversy is introduced. For example, a discussion of cell phones (the general topic), can involve many issues.

Statements about issues often take the general form: **The issue is whether.....**cell phones should be used during class for private communications.



1.4.2 Issues

An *issue* is what an argument is about. The conclusion of an argument states a position on an issue. Issues are commonly framed as questions:

Social Policy Issues	Argument Conclusions (Positions on the Issue)
Should the minimum wage be raised?	The minimum wage should/should not be raised.
Should energy drinks be regulated?	Energy drinks should/should not be regulated.
Should hip/hop music be banned?	Hip/hop music should/should not be banned.

Real world issues involve complex arguments about philosophical, scientific, social, and ethical matters. Questions about the meaning of human existence, the workings of quantum mechanics, the designs for better urban environments, and what is good for us in an interconnected world, are difficult questions that defy simple answers (conclusions).

Note that in these study guides, we will use simple argument examples to support learning. By practicing with simple arguments, you will gain new and strengthened skills to evaluate and use more complex and complete arguments.

Understanding the issue in an argument is a key factor for good critical thinking. Many arguments falter because, not everyone is discussing the same issue. Practice listening carefully and learn how to bring discussions back on target when necessary.

1.4.3 Types of Issues

Issue Type	Argument Conclusion
Factual issue	<p>Descriptive: Is it true or false? Eg: Are smog control devices effective in preventing pollution?</p> <p>Definitional: Does it fit into a certain category? Eg: Is a platypus a mammal?</p>
Value issue	<p>Prescriptive: good or bad? Eg: Is there too much violence on television?</p> <p>Prescriptive: correct or incorrect? Eg: Are salaries of executives of major corporations too high?</p>
Policy issue	<p>Policy Issues involve an action step for the conclusion of the argument. Eg:</p> <p>Premise 1: Smog-control devices help prevent pollution.</p> <p>Premise 2: Clean air should be available to everyone.</p> <p>Conclusion: Therefore you should support tax rebates for these devices.</p>

1.5 Assessing My Critical Thinking

Self-reflection is a necessary habit for critical thinkers. To be a strong critical thinker means to habitually reflect on, and evaluate one's experience. The process of self-reflection can be envisioned as a continuous learning cycle grounded in a person's experience.

Exercise 1	
<p>If a friend or fellow student is not available to help you with this exercise, simply imagine someone asking you to explain these ideas and answer these questions.</p> <p>▶ If you are confident in the clarity, accuracy, and completeness of your explanations, continue forward on the path. Otherwise, go back and study the areas where you have stumbled, and then return to this exercise.</p>	<ul style="list-style-type: none"> ▪ Is logic a <i>necessary</i> or <i>sufficient</i> condition for mature critical thinking? ▪ What is the difference between a <i>topic</i> and an <i>issue</i>? ▪ What is an <i>argument</i> and what kinds are there? Is there a <i>standard form</i>? ▪ How can I identify <i>premises</i> and <i>conclusions</i>? ▪ Describe the basic process of self-reflection. What is a good time and place for you for regular introspection?

Quiet Reflection 1

Self-reflection requires mental focus and personal honesty. At steps 2 and 3 especially, silence is very important. You must be able to hear your inner voice. Find a place that is quiet and comfortable. Turn off your phone and eliminate other distractions if possible.

1. Observe/Study	<ul style="list-style-type: none"> ▪ Study the Wikipedia entry for the term <i>Spherical Earth</i> https://en.wikipedia.org/wiki/Spherical_Earth
2. Judge/Evaluate	<ul style="list-style-type: none"> ▪ What is the difference between facts and feelings? ▪ How do we discover facts? ▪ Can our knowledge of what's real grow and expand? ▪ How does our knowledge of reality depend on logic and science?
3. Act/Decide	<ul style="list-style-type: none"> ▪ What is a decision that I have made or need to make for my short-term flourishing? For my long-term flourishing? ▪ What difference could my decisions make for my family and friends? ▪ How could my commitment to always seek the truth affect my neighborhood, my community, and the whole planet?



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Some material in the Integrative Critical Thinking Toolkit is based on, or adapted from material originally published elsewhere. Extended quotes are noted in quotation marks or as indented or highlighted text.

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