Chapter 12

Deductive Reasoning:
How Do I Reason from Premises?

"I was a good boy, grandpa was a good boy, his father was a good boy. In fact, since the dawn of history, there have only been good boys in this family. That's why you have to be a good boy."

In this cartoon, the father uses both inductive and deductive reasoning to make his point. Yet his son looks more dismayed than convinced. If the son could defend himself, what logical error would he find in his father's reasoning? The answer to this question comes with the study of deductive reasoning, also known as logic. This chapter will explain the fundamental standards that govern deductive reasoning. It will introduce

you to logic's basic vocabulary and explain how deduction and induction interplay in our thinking.

DISCOVERY EXERCISES

What Is Deductive Reasoning?

Using at least two dictionaries, look up the terms *deduction*, *deductive logic*, and *reasoning*. Then write out in your own words a definition of deductive reasoning.

Evaluating Deductive Arguments

Study the following short deductive arguments. Which of these seem to you to be based on good reasoning and which do not? Explain the basis for your decision in each case.

1. Most Americans under age thirty don't believe Social Security will be there for them when they retire. Therefore, most Americans under age thirty favor private accounts.
2. God made men to serve women. Therefore, men should obey their women.
3. People get warts from touching toads. This child has a wart on her finger. This child has touched a toad.
4. The Supreme Court's *Miranda* ruling (giving defendants the right to have a lawyer present during questioning) is wrong and only helps guilty defendants. Suspects who are innocent of a crime should be able to have a lawyer present before police questioning. But the thing is you don't have many suspects who are innocent of a crime. That's contradictory. If a person is innocent of a crime, then he is not a suspect. (Attorney General Edwin Meese, quoted in the *Oakland Tribune*, October 6, 1985)
5. If she had been the last person to leave the house, she would have locked the door. However, the door was unlocked. Therefore, she was not the last person to leave the house.
6. If the temperature goes below freezing, the orange crop will be lost. The temperature went below freezing. The orange crop will be lost.

Now write down your answers to the following questions in preparation for class discussion:

1. Which of the preceding arguments contain statements that are false?
2. In the examples with the false statements, are the inferences nevertheless reasonable?

3. Are there any that may contain true statements but seem illogical in their reasoning?
4. Are there any that contain statements that are true and seem well reasoned?
5. Can you infer any rules for deductive reasoning from what you have learned here?

Critical Thinking Heroes: Mohandas K. Gandhi and Martin Luther King, Jr.

Deductive Reasoning

Deductive reasoning usually begins with a statement of belief. Both Mohandas K. Gandhi (1869–1948) and Martin Luther King, Jr. (1929–1968) used deductive reasoning as writers and orators to explain and argue for the principles of nonviolent resistance. Most important, their lives and actions were congruent with their words; they literally demonstrated how to put these spiritual principles into social and political action. Because of their leadership, millions have been able to liberate themselves from oppression through nonviolent revolution. Although both were assassinated, their words continue to inspire nonviolent revolutions, ranging in this century from those initiated in Georgia, the Ukraine, Russia, Tunisia, and Egypt.

Here are some quotations that express a few of Gandhi and King's beliefs from which they reasoned deductively about specific issues.

Mohandas 'Mahatma' Gandhi

- "Nonviolence is the greatest force at the disposal of mankind. It is mightier than the mightiest weapon of destruction devised by the ingenuity of man."
- "An unjust law is itself a species of violence. Arrest for its breach is more so."
- "Anger and intolerance are the enemies of correct understanding."
- "I am prepared to die but there is no cause for which I am prepared to kill."

Martin Luther King, Jr.

- "At the center of nonviolence stands the principle of love."
- "Nonviolence means avoiding not only external physical violence but also internal violence of spirit. You not only refuse to shoot a man, but you refuse to hate him."

Writing and Discussion

Study the lives of Gandhi and King. What other quotes do you find that summed up the beliefs they lived by and defended?

About Deductive Reasoning

Deduction is taught through the study of formal logic, or the science of correct reasoning.

Deduct comes from the Latin *deducere*, to lead away. In deductive reasoning we infer, or lead away, from a general principle in order to apply that principle to a specific instance.

Logic is the science of correct reasoning. Both **inductive logic** and **deductive logic** offer rules for correct reasoning.

We learn *deduction* through the study of formal logic. It is called *formal* because its main concern is with creating *forms* that serve as models to demonstrate both correct and incorrect reasoning. Unlike induction, in which an inference is drawn from an accumulation of evidence, deduction is a process that reasons, in carefully worded statements, about relationships between classes, characteristics, and individuals. You will notice that these statements seem obvious, even childlike, in their simplicity:

All humans are mammals.
Jane is a human.
Jane is a mammal.

All horses are herbivorous.
This animal is a horse.
This animal is herbivorous.

All cats are night animals.
This creature is a cat.
This creature is a night animal.

In these examples, the first statement is about all members of a class; here the classes were humans, horses, and cats. The second statement identifies something or someone as belonging to that class:

- Jane is a human.
- This animal is a horse.
- This creature is a cat.

At this point, the two statements lead to an inference that becomes the conclusion:

- Jane is a mammal.
- This animal is herbivorous.
- This creature is a night animal.

Here you will notice that the conclusion is inevitable. The only inference one could possibly draw from the two statements "All humans are mammals" and "Jane is a human" is that Jane is a mammal. In contrast to the inductive hypothesis, which always remains open, the deductive conclusion is unavoidable. The only objective of deductive reasoning is to draw a correct inference from a group of claims. And that inference is a final conclusion. Nevertheless, deduction often begins with a generalization that has been derived from inductive reasoning. Such is the generalization "All horses are herbivorous." This is a conclusion based on inductive observations repeatedly confirmed.

Deduction also works with generalizations not necessarily derived from inductive reasoning. For instance, it can begin with a belief:

- Horses are Martians.

Indeed, deduction starts with any statement that makes a claim. And a claim, which is an assertion about something, can be worked logically, regardless of whether the claim is true or not. This is possible because deduction's main concern is not with sorting out evidence and searching for truth; its main concern is studying implications. The focus of deduction is on logic, or the rules of reasoning. Nevertheless, the truth of a statement is important in logic, and the objective of deductive reasoning is to arrive at conclusions that cannot be false.

To summarize, the purpose of deductive logic is to help us reason well with the information we have already acquired. It offers us models, guidelines, and rules for correct reasoning that can lead us to draw reliable conclusions from that information. Thus, *logic*, by definition, is the science of correct reasoning. Logic is also called the science of inference as well as the science that evaluates arguments.

One major barrier to understanding logic is its technical vocabulary. This vocabulary is needed to identify the components of deductive arguments and to convey its rules for correct usage. However, for the student, the task of mastering this terminology can seem formidable at first.

The Basic Vocabulary of Logic

The following are key terms needed to understand the basics of logic: *argument, reasoning, syllogism, premise* (major and minor), *conclusion, validity, soundness*. They will be defined and explained one at a time.

Argument

Arguments appear in both deductive and inductive forms. As we have seen before, deductive arguments involve one or more claims (also called premises) that lead to a conclusion and provide support for or reasons to support that conclusion.

All people who flirt are showing interest in someone.
She is flirting with me.
She is showing interest in me.

Inductive arguments also establish claims through reasoning based on experiences, analogies, samples, and general evidence. Compare the following example to the preceding deductive argument:

This woman seeks me out whenever she sees me having my lunch on the lawn. She comes over and sits next to me. She asks for a sip of my coffee.
She teases me and makes me laugh a lot.
She is interested in me.

Reasoning

Both arguments use reasoning to arrive at a conclusion. Reasoning draws conclusions, judgments, or inferences from facts or premises. Deductive arguments start with one or more premises, then reason to consider what conclusions must necessarily follow from them.

If I flirt back, she will encourage me further.
I will flirt back.
She will encourage me further.

Sometimes these premises appear in long chains of reasoning:

If I am nice to her, she'll think I'm flirting.
And if she thinks I'm flirting, she'll come on to me.
And if she comes on to me, I'll have to reject her.
And if I reject her, she'll be hurt.
I don't want her to be hurt.
Therefore, I won't be nice to her.

Sometimes there is deductive reasoning from the words *"either . . . or"*:

Either I am encouraging or discouraging.
I am not encouraging.
I am discouraging.

Argument is a set of claims in the form of reasons offered to support a conclusion.

Reasoning is to draw conclusions, judgments, or inferences from facts or premises.

Syllogism

Logic arranges deductive arguments in standardized forms that make the structure of the argument clearly visible for study and review. These forms are called syllogisms. We do not speak in syllogisms, which sound awkward and redundant, but they are useful constructs for testing the reliability of a deduction according to the rules of logic. In this chapter we have been studying several types of syllogisms consisting of two or more premises and a conclusion. The first is called the **categorical** whose first premise begins with the words *all, no,* and *some,* followed by *are* or *are not.*

All flirts are friendly.

No flirts are mean.

Some flirts are serious.

Some flirts are not serious.

Secondly, we have seen **hypothetical** syllogisms that begin with the phrase *"If . . . then"*:

If I flirt back, then she will encourage me.

Thirdly, we have the **disjunctive** syllogisms that begin with the phrase "Either . . . or":

Either I am encouraging or discouraging.

Premises and Conclusion

A syllogism usually contains two premises and a conclusion. The first statement is called the major premise and the second is called the minor premise.

No flirts are cross and mean. (major premise)

This man is cross and mean. (minor premise)

This man is not a flirt. (conclusion)

In deduction, the reasoning "leads away" from a generalization about a class to identify a specific member belonging to that class—or it can lead to a generalization about another class. In the preceding deductive argument, the major premise states a generalization about the class of flirts: none is cross and mean. The minor premise asserts that a specific individual does not belong to that class: *because* he is cross and mean, he *must* not be a flirt. Between the word *because* and the word *must* lie the inference and the logic. Such reasoning can be checked for reliability by outlining the argument in the strict form of the syllogism.

Syllogism is a standardized form that makes the structure of a deductive argument visible. A syllogism consists of two or more premises and a conclusion. From the Greek *syllogismos*, a reckoning together.

Premises are the claims made in an argument that provide the reasons for believing in the conclusion. In a syllogism, they usually appear as two statements that precede the conclusion. *Premise* comes from the Latin *praemittere*, to set in front.

Validity

The standards used for testing reliability are based on some specific rules that determine an argument's validity and soundness. Validity has to do with correct reasoning; soundness combines both correct reasoning and truth. A deductive argument is said to be valid when the inference follows inevitably from the premises:

All fathers are males.
Jose is a father.
Jose is a male.

Here, because Jose is a member of the class of fathers, and all members of that class are males, it follows logically that Jose must be a male. Moreover, even if we only *assume* these premises are true, it is entirely reasonable to infer that he is a male. We do not have to ponder the matter any further.

On the other hand, invalid reasoning might proceed like this:

All fathers are males.
Jose is a male.
Jose is a father.

In this argument, the first two premises do not imply this conclusion. The conclusion may be true or it may not be true. But we cannot make that determination on the basis of this line of reasoning. Even if we are certain that all fathers are males and that Jose is a male, we still cannot infer from these premises alone that Jose is a father. The conclusion could be false. Therefore, this argument is invalid.

Soundness

Standards for judging arguments refer not only to correct reasoning but also to the truth of the premises. These standards are conveyed by the use of the word *sound*. A deductive argument is sound if the premises are

true and the argument is valid. A sound argument is one that uses true premises and correct reasoning to arrive at a conclusion that cannot be false. By this definition, this argument is sound because its premises are true and its reasoning is valid:

All fathers are males.
Jose is a father.
Jose is a male.

However, the following argument is not sound because, although it contains true premises, the reasoning is invalid, leading to a conclusion that could be false.

All fathers are males.
Jose is a male.
Jose is a father.

So far, so good. Yet there are some other complexities. An argument can be valid *even though the premises are not true*:

All men are fathers.
All fathers are married.
All men are married.

In this case, if all men are fathers and all fathers are married, then it would follow that all men are married. Yet common sense tells us that both the premises and the conclusion are false. Here is another such example:

All fathers are baseball fans.
All baseball fans like beer.
All fathers like beer.

Thus, the logician makes a distinction between the truth or falseness of statements in an argument and the validity of the entire argument. The term *sound* is used to signify that an argument is valid and the premises are true. The rule for determining soundness is that if the premises are both true and the argument is valid, the conclusion cannot be false.

An argument can be valid even though the premises are not true. The **rule for determining soundness** is that if the premises are both true and the argument is valid, the conclusion cannot be false.

To summarize, deductive arguments can be structured into a unit for the purposes of simplicity, clarity, and analysis according to standards

for good reasoning. With this understanding of the basic vocabulary of logic, we can now consider in greater detail the unit of deductive argumentation—the syllogism.

A **valid** argument is one in which the conclusion has been correctly inferred from its premises. *Valid* comes from the Latin *valere*, to be strong.

A **sound** argument is one in which *the reasoning is valid and the premises are both true.* The word *sound* comes from an Old English word, *gesund*, which means healthy.

Standardized Forms in Syllogisms

Syllogisms have been discussed as a standardized form that makes the structure of a deductive argument visible. A syllogism presents claims concerning a relationship between the terms (classes or individuals) given in the premises and those in the conclusion. A standardized language, which makes these relationships clearer, has also been developed for phrasing the premises within the syllogism. Here are six examples of the standardized phrase forms used for expressing premises in two types of syllogisms:

1. All _____ are _____.
2. All _____ are not _____.
3. No _____ are _____.
4. Some _____ are _____.
5. Some _____ are not _____.
6. If _____, then _____.

You will notice that in the first five forms, each of the blanks offers space for nouns or pronouns connected by forms of the verb *to be*. This simplification allows a reduction of everyday language into verbal equations, thus making the task of argument analysis much easier. Now let's see how natural language has to be translated into this kind of standardized language for use in syllogisms. Compare the following translations:

Natural Language	Standardized Language
Ice cream always tastes sweet.	All ice cream food is sweet food.
Cats never take baths.	No cats are animals that take baths.

Some airlines have lower fares.	Some airlines are lower-fare transport.
If she is over seventy, she must be retired.	If she is a person over seventy, then she is a retired person.

DISCOVERY EXERCISE

Practice in Constructing Syllogisms*

1. Rephrase each of the following sentences, if necessary, into a standard major premise. Then see if you can add a minor premise and a conclusion.
   a. All horses have exactly four legs.
   b. Everybody's got needs.
   c. Many eighteen-year-olds are college students.
   d. Lead is poisonous.
   e. If he's late, he'll be sorry.

2. Fill in the blanks in the following sentences so that all the syllogisms are valid.
   a. All horses are mammals.
      All _____ are animals.
      All horses are animals.
   b. All horses are living things.
      All living things are things that reproduce.
      All _____ are things that reproduce.
   c. No sheep are creatures that sleep in beds.
      This creature is sleeping in a bed.
      Therefore, this creature is _____.
   d. If today is Tuesday, this must be a weekday.
      This is _____.
      This must be _____.

*For the style and method used in these exercises, I am indebted to Matthew Lipman's *Philosophical Inquiry: An Instructional Manual to Accompany Harry Stottlemeier's Discovery*, 2nd edition. Published by the Institute for the Advancement of Philosophy for Children. Upper Montclair, NJ, 1979.

3. Choose the correct answer in each of the following cases.
   a. All beers are liquids.
      It therefore follows that:
      (1) All liquids are beers.
      (2) No liquids are beers.
      (3) Neither (1) nor (2).
   b. Florida is next to Georgia.
      Georgia is next to South Carolina.
      It therefore follows that:
      (1) Florida is next to South Carolina.
      (2) South Carolina is next to Florida.
      (3) Neither (1) nor (2).
   c. Ruth is shorter than Margaret.
      Margaret is shorter than Rosie.
      It therefore follows that:
      (1) Ruth is shorter than Rosie.
      (2) Margaret is shorter than Ruth.
      (3) Ruth is taller than Rosie.

What Syllogisms Do

The logician accomplishes a number of purposes by standardizing the phrasing of arguments in syllogisms. Syllogisms help us:

1. Clarify the claims of the premises
2. Discover and expose any hidden premises
3. Find out if one thought follows logically from another

Each of these objectives will be discussed in turn.

What Is Said and Is It True?

Of course John is cheating on his wife. Doesn't he always come home late?

You will sense that something is wrong with this statement, but where do you begin? Here is where a syllogism helps, because a translation into a syllogism exposes an argument's structure:

All husbands who always come home late are wife cheaters.
John is a husband who always comes home late.

John is a wife cheater.

Here the syllogism reveals a stereotype or hasty generalization in a *hidden major premise*. The words *all* and *always* make the claim in this hidden premise false. We could easily point out exceptions, such as "wife cheaters" who are punctual or loyal mates who work late. But in addition, *wife cheater* is an ambiguous term. What actions constitute wife cheating? The second premise also contains the vague terms *always* and *late*, which could be exaggerations. Does *late* mean one minute or four hours? Is *late* according to one person's expectations or according to a mutual agreement? Then there is the vague term *always*. If the person accused came home early only once, the generalization would not hold. Thus, although the reasoning may be valid, the argument's use of vague terms and false generalizations makes it unsound.

Now, let's consider another example:

> Our guest is Japanese. We had better cook rice rather than potatoes for dinner.

Here is the syllogism that such reasoning is based upon:

> No Japanese person is a potato eater.
>
> Our guest is Japanese.
>
> ---
>
> **Our guest is not a potato eater.**

The syllogism shows the reasoning is valid, but again the major premise, which had been hidden, is revealed as containing too broad a generalization to be true. For this reason, the conclusion is uncertain. Therefore, the argument is unsound.

Here is another example. You may have seen this claim on billboards:

> Milk does a body good.

Because the billboard supplements this claim with attractive happy people, you may well conclude that you should remember to drink more milk. However, a syllogism will reveal some hidden aspects in this claim worth studying. First there is the ambiguity of the word *good*. *Good* has at least two meanings in this context: healthy and tasty. But a syllogism cannot function with ambiguous words with double meanings. In poetry, double meanings are effective. But in arguments, double meanings can be manipulative: they encourage assumptions and escape accountability. If the milk cooperative that paid for the ad were sued, its attorney could claim in court that the company was not claiming that its product was healthy, but only tasty. Nevertheless, suppose you assume that *good* means healthy in this case. You would write out the syllogism thus:

> People who drink milk are people made healthy.
>
> I am a person who drinks milk.
>
> ---
>
> **I am made healthy.**

Thus, if you assume that the premises are true, the reasoning is valid. But when you want to know whether the argument is sound, you must

ask questions to test the truth of the generalization in the major premise. Are there exceptions that would challenge its universality? What if my brother is allergic to milk? What about nutritionists who say that cow's milk is good only for cows? Again, as this syllogism shows, we have a false generalization, leading to an uncertain conclusion, and therefore the whole is an unsound argument.

Is There a Hidden Premise?

A major advantage of using syllogisms is that they reveal hidden premises—as you found in the major premises of the preceding examples. Consider the following examples, which contain questionable hidden premises. Note how the form of the syllogisms requires that they be exposed.

Senator Jones is a Democrat. Expect him to tax and spend.

All Democrats are taxers and spenders. (hidden premise)
Senator Jones is a Democrat.

Senator Jones is a taxer and spender.

Do I think he's sexy? Well, he drives a truck, doesn't he?

All those who drive trucks are sexy. (hidden premise)
He drives a truck.

He is sexy. (implied conclusion)

In the second example, both the major premise and the conclusion are hidden or implied. This often happens in advertising slogans:

The burgers are bigger at Burger John's!

As a syllogism, this reads as follows:

Bigger burgers are better burgers. (hidden premise)
Burger John's burgers are bigger.

Burger John's burgers are better. (hidden conclusion)

You should buy Burger John's burgers. (implicit conclusion)

Is the Reasoning Correct?

Here the logician is concerned with validity, or correct reasoning. The following argument is obviously valid:

She is either married or single.
She is married.

Therefore, she is not single.

The inference expressed in the conclusion automatically follows: she cannot be both married and single at the same time. Therefore if she is married, she cannot be single. The syllogism makes the validity of the reasoning transparent.

Now let's consider a more difficult example, one that appeared in a discovery exercise that opened this chapter.

> Suspects who are innocent of a crime should be able to have a lawyer present before police questioning. But the thing is you don't have many suspects who are innocent of a crime . . . If a person is innocent of a crime, then he is not a suspect.

Here is a translation of that statement into a syllogism:

All innocents are not suspects.
You are a suspect.

You are not innocent.

In this case the reasoning is valid if you assume that both of the premises are true. It follows logically that if the categories of innocents and suspects are mutually exclusive, then if you belong in the category of suspects, you cannot belong in the category of innocents. However, the argument is not sound, because the major premise "All innocents are not suspects" is not true even though the minor premise "You are a suspect" might be.

Now let's take this argument a step further.

If you are a suspect, then you are questioned by the police.
You were questioned by the police.

You are a suspect.

Here, even if both the major and the minor premises were true, the conclusion could still be false. Suspects are not the only category of individuals questioned by the police. Police also question witnesses and bystanders. (Moreover, the implication of this line of reasoning is that if you are a suspect, you are guilty. But police do not make judgments about guilt or innocence; this is the function of a judge and jury.) However, simply on the basis of what is stated, the argument is invalid because the premises do not imply the conclusion "You are a suspect." Suspects are not necessarily always questioned by the police, and not all people questioned by the police are suspects. The illogic of the reasoning here can be recognized intuitively, but the syllogism exposes the way in which it is illogical.

EXERCISE

Reviewing the Vocabulary of Logic

Work with a classmate to write down the definitions you can remember of the following words: *logic, reasoning, deductive* and *inductive reasoning, premise* (major and minor), *conclusion, argument, syllogism, true statement, valid argument, sound argument, hidden premise, hidden conclusion*. When you have finished, compare your definitions with those in the chapter summary on pages 349–350. If there is a discrepancy, or if any of the definitions are still unclear to you, review the text discussion until you can explain the terms to your partner.

The Interplay of Inductive and Deductive Reasoning

Whether you are aware of it or not, our thinking moves back and forth between inductive and deductive reasoning all the time.

Inductive and deductive thinking are not isolated modes. They interweave in our minds constantly throughout the day as we confront both serious problems, such as environmental degradation, and mundane ones, such as daily transportation. Let's consider the latter for illustration purposes.

Suppose you have an apartment in the Boston suburb of Needham and commute to Boston University downtown. You have a car, but you prefer to commute by the T train. You made this decision by reasoning deductively:

All public trains are faster than car transport.
I want faster-than-car transport.
I will take public trains.

Suppose this reasoning stands you in good stead for some months. However, one morning you arrive at the station to find an unusually large crowd of people waiting there. You wonder what this means. Are there fewer trains today? Has there been an accident? Will everyone be delayed? You form hypotheses through inductive reasoning. You seek to test each hypothesis by searching for more information from those waiting. But all they can tell you is that their expected train has been delayed. Therefore you reason deductively:

Delayed trains are unpredictable in schedule.
This train is delayed.
This train is unpredictable in schedule.

Then you reason inductively again in order to decide whether to wait or go home and get your car. You weigh the unknown factor of when the

train will arrive against the time it might take to go home, get your car, and drive through heavy traffic. You decide that although the delayed train *may* make you late, driving your car will *certainly* make you late. And so, on the basis of your estimate of time and probability, you choose to wait in the station. Because you made this decision carefully, you will not get upset if the train is delayed for yet another thirty minutes. Moreover, you can be glad you did not impulsively run home to get your car without thinking the matter through, only to feel your blood pressure go up when you found yourself stuck in traffic with the train passing you by. You made a conscious decision to take the consequences with responsibility.

In college we study deduction and induction separately both for convenience and because of their different structures and standards (see Table 12.1). But whether we are aware of it or not, in our thinking we move back and forth between the two modes all the time. Yet, taking conscious notice of how our thinking moves between deductive and inductive modes has considerable advantages; we then can purposely direct our thinking to the mode that is more appropriate. This awareness

TABLE 12.1 Comparing Inductive and Deductive Reasoning

Inductive Reasoning	Deductive Reasoning
Purpose is to reach a conclusion for testing and application.	Purpose is to reach a conclusion that cannot be false.
Discovers new laws.	Applies known laws to specific circumstances.
Thinking guided by theories, observation, research, and investigation.	Thinking makes inferences about the relationship of claims.
Data are collected and analyzed.	
Sudden insights and unexpected discoveries can occur.	
Tests verify measure of truth in terms of reliability, accuracy, applicability, and their ability to be replicated.	Truth of premises is assumed or determined by reasoning.
Even if the premises are true, the conclusion is only probable and could even be false. More data or major changes could call for further testing.	If the premises are true, or assumed to be true, and the reasoning valid, the conclusion cannot be false.

also allows us to use the different standards of the two modes to evaluate what we are doing. Thus, we have a greater probability of arriving at better decisions. And even if we are disappointed with the results of our decisions, at least we know that we made a conscious choice that we can learn from.

Composition Writing Application

Writing a Deductive Argument

Write a deductive argument within the following parameters:

1. *Topic:* Application of an aphorism, or wise saying, to life.
2. *Approach:*
   a. Explain the aphorism.
   b. Define its terms.
   c. Illustrate it.
   d. Choose to agree, disagree, or both.
3. *Form:* Exposition and argumentation—explain, justify, and persuade through logic, reasoning, and example.
4. *Length:* Concise two pages.
5. *Subject:* Choose your own aphorism or select one of the following:
   a. "The only thing that interferes with my learning is my education." (Albert Einstein)
   b. "Eighty percent of success is showing up." (Woody Allen)
   c. "I would rather regret the things I have done than regret the things I haven't done." (Lucille Ball)
   d. "Remembering that you are going to die is the best way I know to avoid the trap of thinking you have something to lose. You are already naked. There is no reason not to follow your heart." (Steve Jobs)
   e. "Excellence is the best deterrent to racism or sexism." (Oprah Winfrey)
   f. "But we would say to the workers, you have power. And they would say, what kind of power do we have? It's in your person. And you, together with other people, other workers, you can make the difference. But you have to remember that nobody is going to do it for you. If you don't get out there and try to solve your own problems, it's never going to change." (Dolores Huerta)

BUILDING ARGUMENTS

Deductive Reasoning

Aside from their commitment to nonviolence, Mohandas Gandhi and Martin Luther King, Jr. shared the belief that poverty was evil. Both developed deductive arguments on the basis of this idea.

Gandhi

- "Poverty is the worst form of violence."
- "There is a sufficiency in the world for man's need but not for man's greed."

King

- "The curse of poverty has no justification in our age . . . The time has come for us to civilize ourselves by the total, direct, and immediate abolition of poverty. . . ."

Writing or Class Activity

1. Write out one of Gandhi's beliefs quoted above and create from that a syllogism.
2. Do the same with the quote from King.
3. You can find King's full argument about poverty with his recommended remedy in the 1967 SCLC Presidential Address, http://www.hartford-hwp.com/archives/45a/628.html. If you choose to work with this argument, extract his proposal, state his conclusion, and list his premises.

READINGS

The Declaration of Independence (excerpt)

Thomas Jefferson

Based on a clear line of deductive reasoning, this great historical document written in 1776 is also an enduring work of literature. Jefferson begins by stating some "self-evident truths," or axioms, which set off a revolution and formed the ideological basis for the laws of a new government. This document can be studied as a structure of reasoning in four parts. Following are the first and last parts. Notice as

you read how they function as the major premise and conclusion of an argument.

When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed. That whenever any Form of Government becomes destructive of these ends it is the Right of the People to alter or to abolish it, and to institute a new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness. Prudence, indeed, will dictate that Governments long established should not be changed for light and transient causes; and accordingly all experience has shown, that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same Object evinces a design to reduce them under absolute Despotism, it is their right, it is their duty, to throw off such Government, and to provide new Guards for their future security. Such has been the patient sufferance of these Colonies; and such is now the necessity which constrains them to alter their former Systems of Government. The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world . . .

We, therefore, the Representatives of the United States of America, in General Congress, Assembled, appealing to the Supreme Judge of the world for the rectitude of our intentions, do, in the Name, and by Authority of the good People of these Colonies, solemnly publish and declare, That these United Colonies are, and of Right ought to be Free and Independent States; that they are absolved from all Allegiance to the British Crown, and that all political connection between them and the State of Great Britain, is and ought to be totally dissolved; and that as Free and Independent States, they have full Power to levy War, conclude Peace, contract Alliances, establish Commerce, and to do all other Acts and Things

which Independent States may of right do. And for the support of this Declaration, with a firm reliance on the protection of divine Providence, we mutually pledge to each other our Lives, our Fortunes and our sacred Honor.

Study/Writing/Discussion Questions

1. In the first sentence it is stated that people are entitled by "the Laws of Nature and of Nature's God" to separate and equal stations. What does this mean? Is there any evidence offered to back this claim?
2. Outline the deductive reasoning offered in the second paragraph. Which truths does Jefferson claim to be self-evident? What is the purpose of governments? From where do they derive their power?
3. How does Jefferson anticipate the argument that this kind of reasoning would allow people to overthrow governments "for light and transient causes"?
4. In the last paragraph, in the name of what authorities does he make the declaration?
5. Compare this document, and the reasoning used therein, with two of its offspring, *The Seneca Falls Declaration* written by Elizabeth Cady Stanton (1848) and the *Universal Declaration of Human Rights* (1948), which was, in large part, authored by Eleanor Roosevelt.

Are Women Persons?

Susan B. Anthony

Susan B. Anthony (1820–1906) delivered this speech in 1873, a year after she was arrested for casting a vote in the Presidential election. She was tried and fined $100—an amount she refused to pay and an amount that was never collected. Ms. Anthony did not live to see U.S. women get the right to vote in 1920, but she always insisted the cause could not fail. As you can see from this 1873 speech, Ms. Anthony was very skilful in deductive argument and legal reasoning. Ms. Anthony received a formal education in a time when few women were allowed this privilege.

This was because her Quaker father believed in equal education for both boys and girls. Her parent's example as Quaker activists led her also into a lifetime of social service as an abolitionist, educational reformer, labor and women's rights activist, temperance worker, and suffragist.

Friends and fellow citizens: I stand before you tonight under indictment for the alleged crime of having voted at the last presidential election, without having a lawful right to vote. It shall be my work this evening to prove to you that in thus voting, I not only committed no crime, but, instead, simply exercised my citizen's rights, guaranteed to me and all United States citizens by the National Constitution, beyond the power of any state to deny.

The preamble of the Federal Constitution says: "We, the people of the United States, in order to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America."

It was we, the people; not we, the white male citizens; nor yet we, the male citizens; but we, the whole people, who formed the Union. And we formed it, not to give the blessings of liberty, but to secure them; not to the half of ourselves and the half of our posterity, but to the whole people - women as well as men. And it is a downright mockery to talk to women of their enjoyment of the blessings of liberty while they are denied the use of the only means of securing them provided by this democratic-republican government - the ballot.

For any state to make sex a qualification that must ever result in the disfranchisement of one entire half of the people, is to pass a bill of attainder, or, an *ex post facto* law, and is therefore a violation of the supreme law of the land. By it the blessings of liberty are forever withheld from women and their female posterity.

To them this government has no just powers derived from the consent of the governed. To them this government is not a democracy. It is not a republic. It is an odious aristocracy; a hateful oligarchy of sex; the most hateful aristocracy ever established on the face of the globe; an oligarchy of wealth, where the rich govern the poor. An oligarchy of learning, where the educated govern the ignorant, or even an oligarchy of race, where the Saxon rules the African, might be endured; but this oligarchy of sex, which makes father, brothers, husband, sons, the oligarchs over the mother and sisters, the wife and daughters, of every household - which ordains all men sovereigns, all women subjects, carries dissension, discord, and rebellion into every home of the nation.

Webster, Worcester, and Bouvier all define a citizen to be a person in the United States, entitled to vote and hold office. The only question left to be settled now is: Are women persons? And I hardly believe any of our opponents will have the hardihood to say they are not. Being persons, then, women are citizens; and no state has a right to make any law, or to enforce any old law, that shall abridge their privileges or immunities. Hence, every discrimination against women in the constitutions and laws of the several states is today null and void, precisely as is every one against Negroes.

Study/Writing/Discussion Questions

1. In 2012 *Time* magazine rated this speech by Susan B. Anthony as one of the ten greatest speeches. Yet Ms. Anthony lived in a century when women had first to assert their right to give public speeches. Make an outline of her speech and notice now each paragraph builds her argument toward a sound and inevitable conclusion.
2. Why does her argument center on the definition of the word "person"?
3. Write out the syllogism that she presents in her last paragraph.

Chapter Summary

1. Deductive reasoning is the process of starting with one or more statements called premises and investigating what conclusions necessarily follow from these premises.
2. Deduction is the subject of formal logic, whose main concern is with creating forms that demonstrate reasoning.
3. Logic has its own technical vocabulary. The following is a summary of the definitions of key terms:

Argument:	A conclusion supported by reasons.
Claim:	A true or false assertion about something.
Conclusion:	The last step in a reasoning process. It is a judgment based on evidence and reasoning, an inference derived from the premises of an argument.

Hidden premise or conclusion:	A premise or conclusion that is not stated but implied in an argument. When the argument is cast in a syllogism, the missing premise or conclusion is expressed.
Hypothesis:	A theory, explanation, or tentative conclusion derived through inductive reasoning based on a limited view of facts or events.
Inductive reasoning:	The process of noting particular facts and drawing a conclusion about them.
Logic:	The science of correct reasoning. Logic is also called the science of inference as well as the science that evaluates arguments.
Premises:	Statements, evidence, or assumptions offered to support a position.
Propositions:	Claims, statements, or assertions used in an argument. They can be either premises or conclusions and either true or false statements.
Reasoning:	The act or process of arriving at conclusions, judgments, or inferences from facts or premises.
Sound:	A sound argument is one in which all the premises are true and the reasoning is valid.
Syllogism:	The depiction of the structure of a deductive argument that states the conclusion and its supporting premises.
True:	Corresponding to reality.
Valid:	A valid argument is one in which the reasoning follows inevitably from the premises to the conclusion. An argument can be valid without the premises or conclusion being true.

4. The standardized language of syllogisms allows a reduction of everyday language into verbal equations.
5. Syllogisms allow us to determine what is being said, to identify hidden premises, and to find out if the argument makes sense.
6. Deductive and inductive reasoning are not isolated pursuits but are mentally interwoven both in major and mundane problem solving.
7. It is possible to infer the rules of valid and invalid reasoning from the study of models.