Name:

Building Strong Arguments
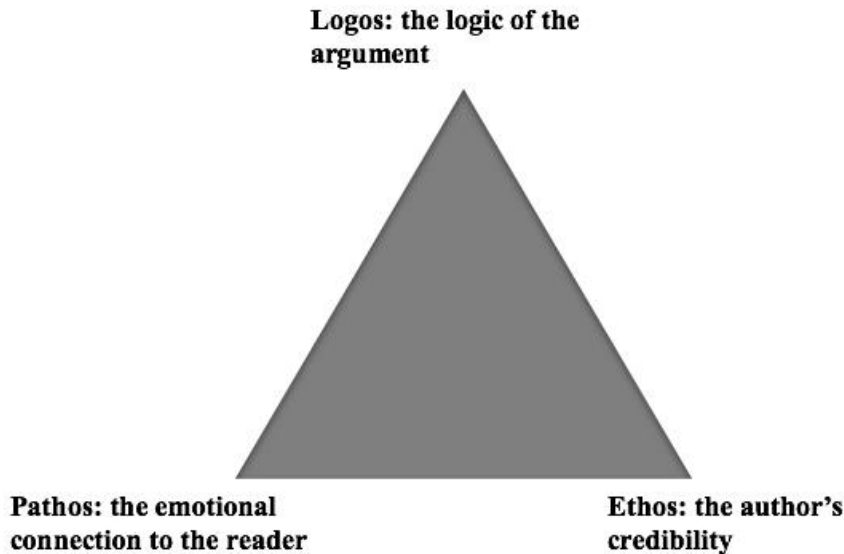
A Logical Reasoning Workbook
Created by Karin Spirn

Unit 1: The Rhetorical Triangle

The rhetorical triangle sums up three areas of argumentation described by the Greek philosopher Aristotle. These three areas—logos, ethos, and pathos—are important to consider when writing or evaluating an argument.

Rhetoric means the art or craft of argumentation. Example: "I don't agree with that speaker's argument, but she did use excellent rhetoric to make her points persuasive."

Logos: the logic of the argument

Pathos: the emotional connection to the reader

Ethos: the author's credibility

Logos is the **logic and reasoning** of the argument. An argument has strong logos when all the points and evidence connect together to support the main point. Authors can create a logical argument by not making assumptions or skipping steps needed to support their main point and by avoiding faulty or misleading reasoning. They can also provide strong evidence and examples. This packet will discuss specific strategies for creating strong logos, including the following: supporting main points (conclusions) with strong supporting arguments (premises), avoiding hidden assumptions and logical mistakes (fallacies).

Ethos is the **credibility** of the author. An argument has strong ethos when readers have confidence that the author is qualified to discuss the subject matter. Authors can establish their credibility by providing credentials and information about their background knowledge on the topic. For example, an experienced lawyer would have strong ethos when writing on a topic concerning the law, whereas an experienced car mechanic would have strong ethos writing on an automotive topic. Authors can also establish credibility by including strong evidence, quoting experts on the topic, showing awareness of the different sides of the argument, and using an appropriate writing tone.

Pathos is the use of **emotion** in an argument. An argument has strong pathos when it leads readers to feel emotionally invested. Authors frequently appeal to readers' emotions by including individual examples of people affected by the issue. For example, an argument about ending homelessness would have more emotional power if it included specific examples of people who are homeless, the challenges they face, and how the proposed solution would help them. If an author has been personally affected by the issue, they can include personal examples to increase pathos. Authors can also create an emotional appeal by explaining how an argument will affect their readers lives.

Example: The Rhetorical Triangle in Advertising

Below are some examples of logos, ethos and pathos from the following advertisement for Crest toothpaste.

https://www.youtube.com/results?search_query=crest+toothpaste+advertisement

Notice that some examples fit into more than one category.

Element	Tells Us	Examples
Logos/ Logic	Why is this toothpaste the best?	"Only Crest proves it works on top of our dentist's fluoride treatments." "Crest with flouristan has more proof it prevents cavities than any other toothpaste."
Ethos/ Credibility	Why should I believe this advertisement?	"More dentists' families use Crest than any other toothpaste." "Crest with flouristan has more proof it prevents cavities than any other toothpaste."
Pathos/ Emotion	Why should I care personally about what this advertisement says?	"Excuse me, but do you buy Crest for everyone in your family?" "Always." "Toothpastes don't excite me. Good checkups—*that* excites me."

Reflection: What do you think about the use of logos, ethos, and pathos in this advertisement to persuade viewers to purchase Crest toothpaste? Are any elements used too much or not enough? Explain why you think the advertisement does or does not use the rhetorical triangle effectively. You can also comment on any other aspects of argumentation and persuasion that you noticed in the advertisement.

Practice: The Rhetorical Triangle in Political Advertisements

As you watch the following political advertisements, take notes about the use of logos, ethos and pathos. Remember that the same example might fit into more than one category.

Advertisement 1: https://www.youtube.com/watch?v=rq3QXIVR0bs

Advertisement 2: https://www.youtube.com/watch?v=rq3QXIVR0bs

Element	Tells Us	Advertisement 1	Advertisement 2
Logos/ Logic	What does this candidate want to accomplish?		
Ethos/ Credibility	What are the candidate's credentials or qualifications?		
Pathos/ Emotion	Why should I get excited about this candidate?		

Reflection 1: What do you think about the use of logos, ethos, and pathos in these advertisements to persuade viewers to vote for the candidates? Are any elements used too much or not enough? You can also comment on any other aspects of argumentation and persuasion that you noticed in the advertisements.

Reflection 2 (Choose ONE of the following questions):

a. Imagine you are running for political office, either now or in ten years (with some future achievements under your belt!). What type of advertisement would you create to promote yourself? What elements of logos, ethos and pathos would you use to persuade people to vote for you? Why would you include these elements?

b. Imagine you are creating an advertisement for your ideal political candidate. What type of advertisement would you create? What elements of logos, ethos and pathos would you include in the advertisement? Why would you include these elements?

Unit 2: Question at Issue

When developing or analyzing an argument, we need to be aware of what precisely is being debated and what main point is being made. The term **question at issue** refers to the precise issue that is being discussed.

You probably know what an **issue** is: a topic that is debatable. Some examples of issues are gun laws, pollution, immigration, taxation, drug legalization and disability rights.

A question at issue is a particular question being debated in relation to an issue. Some examples of questions at issue are below.

Issue	Questions at Issue
gun laws	Should there be a waiting period to buy a gun? Should safety training be required for gun owners? Would arming teachers reduce school shootings?
pollution	Are electric cars better for the environment than gas-fueled cars? Should plastic straws be outlawed? Is nuclear energy an environmentally sound source for power?
immigration	Should the US create a temporary work visa for farmworkers? Do immigrants add to or subtract from the overall American economy? Are sanctuary city laws helpful or harmful to public safety?
taxation	Should taxation percentages be progressive (higher percentages for those who make more money)? Should corporations pay high rates of taxes? Should inherited wealth be taxed at a higher rate than earned income?
drug legalization	Should marijuana be federally legalized for recreational purposes? Should the age to buy cigarettes be raised to twenty-one? Would legalizing heroin lower the number of overdoses and deaths?
disability rights	Should euthanasia be allowed for terminally ill patients? Should runners with prosthetic limbs be allowed in the Paralympics? Are students with learning disabilities more successful in segregated or integrated classrooms?

Reflection

Part 1: What issues are you interested in? List **at least four issues** that you either know a lot about or would like to learn more about.

Part 2: Choose one of the issues above, and write **at least three questions at issue** that might fall under that issue. If you can't think of questions at issue for the topic that interests you most, ask your instructor for help. Remember that a question at issue should be **a debatable topic** that has at least two sides.

Not a question at issue: How can child abuse be prevented?
Question at issue: Should spanking be considered child abuse?

Part 3: Choose one of the questions at issue from Part 2, and write at least two possible premises in support of each side of the issue.

Example:

> Premise 1: Physical punishments teach children to use violence to solve problems.
> Premise 2: Many parents spank in anger and it may feel scary or painful to the child.
> Premise 3: There are more effective tools for disciplining children.
> Conclusion: Spanking should be outlawed as child abuse.

> Premise 1: Spanking has been used historically and some parents rely on it.
> Premise 2: People who have been spanked haven't had long-term negative effects.
> Premise 3: Some childhood behaviors may be very dangerous and require a physical punishment as a deterrent.
> Conclusion: Spanking is not child abuse and should be legal.

Part 4: In order to decide your position on this issue, what other questions would you need to find answers for through research? Write at least three research questions that would be important to answer regarding this question at issue.

Examples: Have studies shown the long-term effects of spanking?
              Are there effective alternatives to spanking?
              How do child-development experts feel about the effectiveness of spanking?

Unit 3: Standard Form/Premises and Conclusions

Arguments can be divided into two types of information: premises and conclusions.

A **conclusion** is the main point the author is trying to prove. An argument often only has one conclusion.

Premises are the reasons and evidence supporting the conclusion. An argument usually has many premises.

When an argument is written out as a list of premises and a conclusion, this is known as **standard form.**

Here are some short arguments rewritten in standard form:

Americans should switch to driving electric cars because they are less expensive to maintain and better for the environment than fuel-powered cars.

Premise 1:   Electric cars are less expensive to maintain than fuel-powered cars.
Premise 2:   Electric cars are better for the environment than fuel-powered cars.
Conclusion: Americans should switch to driving electric cars.

The current cafeteria is overcrowded, so Las Positas should build a second one.

Premise 1: The current cafeteria is overcrowded.
Conclusion: Las Positas should build a second cafeteria.

Elections are important for determining the policies and direction of the government, but many young adults are not registered to vote. Without the vote of young people, only older people get a voice in determining our country's future. Therefore, everyone who is eligible to vote should make sure they are registered by the voting deadline.

Premise 1:   Elections are important for determining the policies and direction of our government.
Premise 2:   Many young adults are not registered to vote.
Premise 3:   Without the vote of young people, only older people get a voice in determining our country's future.
Conclusion: Everyone who is eligible to vote should make sure they are registered by the voting deadline.

Words in the sentence can help identify premises and conclusions.

Words that come before premises: because, since, for

Words that come before conclusions: therefore, since, so

Practice 1

Rewrite the following sentences in standard form.

1. Everyone should take the opportunity to travel to other countries, because traveling outside of one's home country allows people to make new friends and opens our eyes to other cultures.

2. Chain stores such as Target and Walmart don't preserve the individual character of a small town. They drive smaller shops out of business because they can offer lower prices due to their large national scale. Smaller shops serve the community in a more individualized way and provide better jobs for local community members. Therefore, chain stores should not be allowed in downtown Livermore

3. Video games can be much more educational than people realize. They teach problem-solving skills and critical thinking. Some games have also been developed to teach real-world skills like math and art.

4. Studies have shown that children are highly influenced by what they see on television. Most young children go to bed early; therefore, shows featuring violence should only be aired after 10pm.

Practice 2

a. Write down **one argument you support**—something you believe should happen, a law that should be passed, a change that should occur, or a policy you support. It could be related to any topic. (Examples: I believe all drugs should be legalized. I believe Brazilian jiujitsu rules should be changed to allow reaping). Mark this argument as a "conclusion."

b. Write at least three reasons supporting your conclusion. Mark each of these reasons as a "premise."

c. Share your standard form argument (premises and conclusions) with a group of classmates. What questions do they have about your premises?

d. Write two additional premises to support your conclusion, based on the feedback from your group.

Unit 4: Unstated Premises

Once we list the premises supporting a conclusion, it is easier to see if the premises truly support the conclusion. Some arguments have missing steps that are assumed but not stated outright. For example, consider the following argument:

> Frankie won't do well on the math section of the Graduate Record Exam, since he is an English major.

Here is the argument written in standard form:

> Premise: Frankie is an English major.
> Conclusion: Frankie won't do well on the math section of the Graduate Record Exam.

This premise doesn't seem to support the conclusion. What does Frankie being an English major have to do with how he will do on the math section of the exam? This argument relies on additional premises that aren't being stated outright, marked with brackets below.

> Premise: Frankie is an English major.
> [Premise: English majors aren't good at math.]
> Conclusion: Frankie won't do well on the math section of the Graduate Record Exam.

Unstated premises such as the one above can weaken your argument; for example, many English majors are good at math, so the unstated premise is not strong and many people will disagree with it.

After noticing the problematic unstated premise, if the writer stands by this argument, they will need to explain that premise outright and in more detail. They could also add "probably" to the conclusion to clarify that there is no way to tell for sure that Frankie won't do well.

> Premise: Frankie is an English major.
> Premise: Frankie attended UC Berkeley.
> Premise: English majors at UC Berkeley aren't required to take any math classes.
> Conclusion: Frankie probably won't do well on the math section of the Graduate Record Exam.

The final argument might read:

> Frankie probably won't do well on the math section of the Graduate Record Exam, since his English major at UC Berkeley didn't require him take any math courses.

This is a much stronger and more well-supported argument than the original version.

Practice

Write each of the following statements in standard form. Add any premises that are not stated outright and put them in brackets.

Example:

Rates of diabetes have been rising in our city, so there should be a tax on sodas.

Premise: Rates of diabetes have been rising in our city.
[Premise: Soda is a cause of diabetes.]
[Premise: Taxing soda would cause people to drink less of it.]
Conclusion: There should be a tax on sodas.

1. All Americans should buy electric cars, since the environment is one of the most pressing issues facing our country.

2. Considering the increasing numbers of mass shootings over the past decade, there should be a ban on assault weapons.

3. I don't have kids, so I shouldn't have to pay taxes to support local public schools.

4. Community colleges are supposed to have enough classes for all students who want to attend, so Las Positas needs to build several new classroom buildings.

5. The drinking age should be raised to twenty-five, since studies show that the cerebral cortex, the area of the brain controlling good judgment, isn't fully developed until the mid-twenties.

6. The speed limit should be raised from 65mph to 75mph, since everyone drives at eighty miles an hour anyway.

Unit 5: Facts, Inferences and Judgments

Information supporting an argument can be divided into three types: facts, inferences and judgements.

Facts are pieces of information that could be easily proven true or false. Statistics, dates, locations, and laws are examples of factual information. In common speech, the word "fact" is used to mean information that is true, but in argumentation, a fact might be false. Facts are simply the type of information that can be proven true (or not true).

Examples of Facts:

> The Bay Bridge is 4.4614 miles long.
> Milk cartons can be recycled in Oakland but not in Palo Alto.
> About twenty percent of California residents own guns.
> The city of Oakland spends 44% of its budget on police services.
> Water is made of hydrogen and oxygen.

Inferences are conclusions based on evidence. A common term for "inference" is "educated guess." Many court cases are decided on the basis of inference: looking at all available evidence, the jurors infer that the defendant did or did not commit the crime. Inferences are strongest when they are based on strong reasoning and factual evidence.

Examples of Inferences:

> The jury found Mr. Smith guilty of the murder based on the fact that he had recently threatened the victim, had written in his journal that he wished to kill the victim, and that fingerprints matching his were found on the murder weapon.
> Kendra had missed her period for two months, had gained five pounds and was feeling queasy in the mornings, so she went to the doctor to take a pregnancy test.
> Hiroshi was fairly certain a clever mouse had outsmarted his mousetrap, since the trap had been sprung and the cheese was missing but there was no mouse in it.
> The Bay Bridge is in need of repairs to keep it safe.

Judgments are opinions or evaluations. They concern issues such as what is right and wrong, what actions should be taken, what is preferable and less preferable. Judgments are an important part of argumentation, but they must be supported with evidence.

Examples of Judgments:

> The purpose of life is to help others.
> The city of Oakland spends too much money on police services.
> The First Amendment is the most important amendment in the Bill of Rights.
> Ricardo Montez is the most qualified candidate running for mayor.
> Housing should be the first priority for the next governor of California.
> The plight of refugees is quite heartbreaking.

Practice

For each of the following statements, circle fact, inference or judgment and explain why.

1. The American war in Afghanistan started in 2001.

circle one: fact   inference   judgment

Explanation:

2. The effects of the war seem to have increased the export of illegal opium from Afghanistan.

circle one: fact   inference   judgment

Explanation:

3. War should always be a last resort for resolving conflict.

circle one: fact   inference   judgment

Explanation:

4. The next American presidential elections will be held in 2020.

circle one: fact   inference   judgment

Explanation:

5. Democrats are weaker presidential candidates than Republicans.

circle one: fact   inference   judgment

Explanation:

6. If the Republicans lose their majority in the House of Representatives, they will probably have more difficulty getting laws passed.

circle one: fact   inference   judgment

Explanation:

7. Humans should protect wildlife by keeping plastics and other wastes out of the oceans.

circle one: fact   inference   judgment

Explanation:

8. Scientists measured a 600,000 square-mile patch of garbage floating in the Pacific Ocean.

circle one: fact   inference   judgment

Explanation:

9. Evidence suggests that eighty percent of the plastic floating in the ocean probably comes from Asian countries.

circle one: fact   inference   judgment

Explanation:

Unit 6: Counterarguments

When writing an argument, authors usually include premises that support the opposing side. These opposing arguments are called **counterarguments.** For example, an article *in favor* of legalizing marijuana will also discuss some of the common reasons *against* legalization. The article might include sentences such as:

> Although it is not safe to drive under the influence of marijuana, stoned driving would still be illegal if marijuana were to be legalized.

> Opponents of marijuana legalization worry that marijuana would become more easily available to children, and this is a serious concern.

It might seem strange to include arguments that contradict an author's main point, but there are many reasons to do so. In fact, discussing counterarguments is considered a necessary part of strong argumentation, for the following reasons:

- It shows the author is familiar with all sides of the issue.
- It anticipates and addresses objections that readers might have.
- It allows the author to admit and explain any obvious weaknesses in their own argument.
- It allows the author to disprove opposing arguments or explain why they are incorrect.

Refutation and Concession

There are two ways to address a counterargument.

Refutation (or to refute) is demonstrating that the counterargument is incorrect, providing evidence and reasons to discredit it.

> Many opponents of legalization argue that it will cause increased rates of use, but this has not been the case in states such as Colorado and Washington, where several studies have shown that the rates have stayed the same as before.

Concession (or to concede) is agreeing with some aspect of the counterargument, while explaining why the author's main point is still stronger.

> Opponents of marijuana claim that it can be a dangerous drug, and this is true. Like any mind-altering substance, marijuana can be abused and can cause physical and psychological harm. However, alcohol has more dangerous effects than marijuana, including violent behavior and deaths from overdose, yet it is legal and commonly used.

Reflection: Why would an author want to concede a counterargument rather than just argue against it? In what situations might it be helpful for an author to admit the flaws in their own side of the issue?

Practice

Imagine that each of the following statements is a conclusion you are trying to prove in your essay. For each statement, write at least three counterarguments you would need to address. The counterarguments should **disagree with** the statements provided. Mark arguments you would concede with a (C) and arguments you would refute with an (R). You would concede counterarguments that are strong and refute counterarguments that contain weaknesses or can be disproven.

Example: Everyone should buy a hybrid or electric car to help reduce pollution.

Counterarguments: Hybrid and electric cars are too expensive for many people. (R)
                                       Electric cars can't drive as far as gasoline-fueled cars. (R)
                                       Electric cars are fueled by power plants that also cause pollution. (C)

1. Vaccinations should be required for all children who attend public schools.

2. Teenagers should not be allowed to purchase violent videogames.

3. The legal drinking age should be lowered to eighteen years old.

4. Basic medical care should be free for all Americans.

Unit 7: Logical Fallacies

The word **fallacy** refers to a mistake or error.

Logical fallacies are mistakes in logic that are common and follow a pattern. Arguments that use logical fallacies (also called **fallacious arguments)** are frequently persuasive but contain logical errors.

For example:

> Ninety percent of American heroin users started out smoking marijuana. Therefore, marijuana leads to heroin use.

This sounds persuasive but both of the following statements are probably equally correct:

> Ninety percent of American heroin users started out going to kindergarten. Therefore, kindergarten leads to heroin use.

> Seventy percent of American college students smoked marijuana at least once during high school. Therefore, marijuana leads to going to college.

The statement above represents one of the most common fallacies, **false cause.** In this fallacy, the speaker assumes that because Event A happened before event B, Event A *caused* Event B. In this case, people smoked marijuana before they became heroin users, but smoking marijuana did not necessarily cause people to try heroin. People who are interested in trying drugs would likely try a common and weaker drug before trying a less common and stronger drug. Also, marijuana use is extremely common in America, so the odds are high that a heroin user would have previously tried marijuana. In order to show that marijuana use caused heroin use, the speaker would need to show further evidence (such as more in-depth studies).

An important note about logical fallacies is that they operate independently from the correctness of an argument. It could be true that marijuana use does cause heroin use, but the statement above is not sufficient to prove this conclusion. Also, while some instances of fallacious reasoning are very clear-cut and obvious, many fallacies are a matter of judgment. One listener may find an argument to be a personal attack, while another feels the personal information is relevant to the speaker's credibility. Therefore, it is not a strong critique to simply accuse an author of committing a particular fallacy; you must also explain *why* their argument fits into that fallacy.

The next pages describe some common logical fallacies with examples. If you'd like to learn about other fallacies (there are many!), here are two extensive lists:

> https://en.wikipedia.org/wiki/List_of_fallacies

> https://www.logicallyfallacious.com

Common Logical Fallacies

Appeal to Fear

In this fallacy, the speaker attempts to frighten the audience rather than presenting a well-reasoned argument. While some arguments do have frightening consequences, fear should not be the main technique used to support a conclusion. Sometimes appeals to fear can appear as threats that coerce the listener into a particular action.

Examples: We need to take steps against global warming or life on Earth will face certain doom.
Vote for Martha Smith or you will lose your healthcare.

Argument from Ignorance

This fallacy argues that a proposition must be true because it has never been proven false, or that a proposition must be false because it has never been proven true. Of course, if a proposition has not been proven true or false, then the issue cannot be answered conclusively. For example, since nobody knows if life exists in outer space, both of the following statements are fallacious:

There must be life in outer space, since nobody has proven it doesn't exist.
There must not be life in outer space, since nobody has proven it exists.

We can argue for or against the likelihood of life in outer space by examining relevant evidence, but we cannot use ignorance as a strong premise for either side.

One sub-type of this fallacy relates to the author's own ignorance, when an author argues that because they haven't experienced something or don't know about it, it must not be true. For example, some able-bodied people may say they don't believe discrimination exists against disabled people, since they themselves have never experienced or witnessed this type of discrimination.

Examples: If there were a cure for cancer, it would have been discovered by now.
Nobody has been able to prove that the World Trade Center bombing wasn't carried out by the US government.

Circular Argument

In this fallacy, the premise and conclusion of an argument are identical or highly similar in meaning. The speaker tries to prove a conclusion by repeating it in different words.

Examples: I never trust politicians because they are all unethical.
We know the Bible is true because it says so in the Bible.

Double Standard

This fallacy judges the same action differently depending on who did it. Double standards frequently exist between men and women, as well as between any type of "us" and "them." For example, Americans may have double standards regarding people from other countries, judging the foreign behaviors negatively even though Americans commit similar actions.

In some situations, there may be valid reasons to judge the same act differently—for example, a parent can punish their child but a stranger cannot. But when no valid reason exists for the differential treatment, it is a double standard.

      Examples: Phil prefers his forceful, authoritative male supervisor to his female supervisor, who is too bitchy and controlling.
    Sentencing laws for crack cocaine, mainly used in African-American communities, were ten times as strict as for powdered cocaine, mostly used in white communities.

False Analogy

This fallacy makes a misleading comparison. An analogy is the comparison of two different subjects in order to make a point. Analogies can be useful in arguments, but any analogy must be examined to make sure it is truly a valid support for the conclusion. An analogy is strong when the similarity between the two items being compared is accurate and supports the main point of the argument.

The strength of an analogy in an argument is frequently a matter of debate. For example, consider the following analogy:

    Just as prohibiting alcohol did not prevent people from drinking, outlawing assault rifles will not prevent people from buying them.

Some people will find this analogy to be strong, since gun prohibition may be similar in some ways to alcohol prohibition; it is true that people don't always follow the law regarding banned items. Other people will find this analogy to be weak, arguing that most Americans drank alcohol before prohibition whereas most Americans do not own assault rifles, so the alcohol ban may be more inconvenient and thus more likely to be violated. Any time you critique an analogy (whether strong or weak), make sure to explain your assessment thoroughly.

    Examples: Just as high schools don't hand out marijuana or other harmful substances, they shouldn't provide free condoms.
    People aren't allowed to urinate in public, so they shouldn't be allowed to breastfeed in public either.

False Cause

Also known as: Post hoc ergo propter hoc (after this, therefore because of this)

In this fallacy, the speaker assumes that because Event A happened before Event B, Event A caused Event B. In such cases, Event A may have caused Event B, but just the fact that Event A happened first is not enough to prove causation.

This fallacy often appears as a prediction about the future based on past events. One common type of false cause reasoning that falls into this category is superstitions; for example, we believe a broken mirror caused us to get a parking ticket the next day.

Examples: Governor Robinson was elected in 2009, and the economy crashed in 2010; therefore, he caused the poor economic conditions.
Paula wore her lucky socks on the day she pitched a perfect game, so now she wears them to every game to make sure her team wins.

False Cause: Corellation vs. Causation

This is a particular type of false cause fallacy. In a correlation vs. causation fallacy, the speaker assumes that because event A happened at the same time as Event B, Event A caused Event B.

The word *correlation* refers to two events that increase or decrease together. For example, poverty rates in a city might correlate with higher crime in that city; as poverty rises, crime rises, and as poverty drops, crime drops. While this correlation suggests some relationship between poverty and crime, it is impossible to determine a causal relationship without further evidence. Does poverty cause crime? Does crime cause poverty? Does some other factor cause both crime and poverty? Or is this correlation a coincidence? Only further evidence and investigation can help us determine causes and effects.

This website shows humorous correlations that are probably just coincidences (CW: references to violence and death): http://www.tylervigen.com/spurious-correlations

Examples: Aluminum has been found in the brains of people with Alzheimer's disease; therefore, aluminum causes Alzheimer's and should be removed from consumer products.
Gun buy-back programs would lower murder rates, since cities with more guns have higher murder rates.

Hasty Generalization

A generalization is a conclusion about a large group of people or things. The hasty generalization fallacy creates a generalization based on a sample that is too small or does not represent the larger group. Hasty generalizations often occur a single example or a few limited examples are used as evidence for a conclusion. A writer might argue that her mother was an excellent homemaker who didn't want a career; therefore, women are better suited to parenting and domestic labor than professional jobs.

Many stereotypes use this fallacy: for example, just because there are many African Americans in the NBA doesn't mean that all African Americans are good at basketball.

Examples: From working in a retirement home, I've concluded that people over the age of seventy are horrible at using the internet.
Men are very egotistical since they have always gotten everything they want in life.

False Dilemma

This fallacy presents two options and suggests that they are the only possible options. The word dilemma means a choice between two options. In most cases, dividing an issue into only two possibilities is an oversimplification. A classic false dilemma is, "You are either for us or you are against us." False dilemmas such as this one are often combined with appeals to fear—if you don't take my side, something bad will happen to you.

Examples: Our government can either give more money to schools or waste it on the military.
Are those aggressive protestors outlaws or champions of freedom?

Personal Attack

Also known as: ad hominem (towards the person)

This fallacy argues against an opponent by attacking the opponent's personality or character rather than the argument itself. Pointing out an opponent's lack of credibility may be relevant in some situations, such as in a political campaign where the opponent's ethics and background are related to the issue of who is the stronger candidate). But usually there is not a strong reason to attack the person making an argument, and such attacks are a distraction from the issue under discussion. For example, in a debate about gun control legislation, it would not make sense to attack an opponent's accent or their lack of a college degree.

Examples: We shouldn't support Senator Brown's environmental bill because he cheated on his wife last year.
George W. Bush shouldn't be president because he can't pronounce "nuclear" correctly.

Slippery Slope

This fallacy argues that one action will lead to a series of unproven catastrophic outcomes. Occasionally there is evidence to support such a dire prediction, such as when an environmental scientist argues that the loss of a particular lizard could lead to the collapse of the entire ecosystem that relies on the lizard as a food source. This type of argument becomes a fallacy when no evidence is given to support the extreme prediction.

Examples: If we outlaw some types of guns, soon all guns will be illegal, which will lead to a loss of all of our rights and eventually dictatorship.
Colleges that allow more freshman students to go directly to English 1A will soon have to allow everyone to enter college English, even people who are illiterate or who don't speak English.

Straw Man

This fallacy attacks a distorted version of the opponent's argument or the weakest version of that argument (attacking a scarecrow or "straw man" rather than a real person). This fallacy makes the writer sound one-sided and ignorant of the opponent's views, and it will not persuade people who are sympathetic to both sides of the arguent. When addressing counterarguments, it is important to accurately reflect the opponent's position and to make sure to address and hopefully refute any strong arguments made by the opposing side.

Examples: I do not identify as a feminist because feminists hate men and want woman to have more rights than men in society.
You should not support Black Lives Matter because they don't believe any other lives matter except those of African Americans; that's why I prefer to say, "All lives matter."

Practice: For each statement below, write which fallacy it represents and explain why.

1. Every business that has opened at 243 Main Street in the past five years has failed. If you rent that building for your business, it will certainly also fail.

Fallacy:

Explanation:

2. I can't change your grade. If I do that, everyone will want a grade change and I'll have to give everybody an A in all my classes.

Fallacy:

Explanation:

3. The best professions are those that help others, since helping others is the most important activity humans can do.

Fallacy:

Explanation:

4. Students had forty percent higher success rates when they took an English class before they took a history class. Therefore, English should be required as a prerequisite that must be taken before any history course.

Fallacy:

Explanation:

5. Sabrina won't read any book about the health care system written by a man.

Fallacy:

Explanation:

6. Proponents of physician-assisted suicide believe that anyone should be able to end their lives for any reason. This is dangerous, since depressed people may opt for suicide to end their mental anguish.

Fallacy:

Explanation:

7. Americans feel safe taking medicines created by scientists, so they should feel equally safe eating genetically modified foods created by scientists.

Fallacy:

Explanation:

8. Vegetables have feelings; no one can prove that they don't.

Fallacy:

Explanation:

9. There are only two types of people: vegetarians and people who don't care about animals.

Fallacy:

Explanation:

10. American intelligence agents were furious to discover that the Chinese government was spying on the U.S.

Fallacy:

Explanation:

11. If you don't switch to a more efficient website management system such as the one my company is offering, your client numbers will continue to drop over the next few years.

Fallacy:

Explanation:

12. As my interviews with Bill Gates and Steve Jobs show, nobody succeeds all on their own; every successful person benefits from luck and outside help.

Fallacy:

Explanation:

Appendix A: Logical Fallacies Chart

Fallacy	Definition	Examples
Appeal to Fear	Attempts to frighten the audience rather than presenting a well-reasoned argument.	We need to take steps against global warming or life on Earth will face certain doom. Vote for Martha Smith or you will lose your healthcare.
Argument from Ignorance	Argues that a proposition must be true because it has never been proven false, or that a proposition must be false because it has never been proven true.	If there were a cure for cancer, it would have been discovered by now. Nobody has been able to prove that the World Trade Center bombing wasn't carried out by the US government.
Circular Argument	The premise and conclusion of an argument are identical or highly similar in meaning.	I never trust politicians because they are all unethical. We know the Bible is true because it says so in the Bible.
Double Standard	Judging the same act differently depending on who did it.	Phil prefers his forceful, authoritative male supervisor to his female supervisor, who is too bitchy and controlling. Sentencing laws for crack cocaine, mainly used in African-American communities, were ten times as strict as for powdered cocaine, mostly used in white communities.
False Analogy	Compares two situations in a misleading way.	Just as high schools don't hand out marijuana or other harmful substances, they shouldn't provide free condoms. People aren't allowed to urinate in public, so they shouldn't be allowed to breastfeed in public either.
False Cause	Assumes that because Event A happened before Event B, Event A caused Event B.	Governor Robinson was elected in 2009, and the economy crashed in 2010; therefore, he caused the poor economic conditions. Paula wore her lucky socks on the day she pitched a perfect game, so now she wears them to every game to make sure her team wins.
False Cause: Corellation vs. Causation	Assumes that because event A happened at the same time as Event B, Event A caused Event B.	Aluminum has been found in the brains of people with Alzheimer's disease; therefore, aluminum causes Alzheimer's and should be removed from consumer products. Gun buy-back programs would lower murder rates, since cities with more guns have higher murder rates.

Fallacy	Definition	Examples
Hasty Generalization	Creates a generalization based on a sample that is too small or does not represent the larger group.	From working in a retirement home, I've concluded that people over the age of seventy are horrible at using the internet. Men are very egotistical since they have always gotten everything they want in life.
False Dilemma	Presents two options and suggests that they are the only possible options	Our government can either give more money to schools or waste it on the military. Are those aggressive protestors outlaws or champions of freedom?
Personal Attack	Argues against an opponent by attacking the opponent's personality or character rather than the argument itself.	We shouldn't support Senator Brown's environmental bill because he cheated on his wife last year. George W. Bush shouldn't be president because he can't pronounce "nuclear" correctly.
Slippery Slope	Argues that one action will lead to a series of unproven catastrophic outcomes.	If we outlaw some types of guns, soon all guns will be illegal which will lead to a loss of all of our rights and eventually dictatorship. Colleges that allow more freshman students to go directly to English 1A will soon have to allow everyone to enter college English, even people who are illiterate or who don't speak English.
Straw Man	Attacks a distorted version of the opponent's argument or the weakest version of that argument	I do not identify as a feminist because feminists hate men and want woman to have more rights than men in society. You should not support Black Lives Matter because they don't believe any other lives matter except those of African Americans; that's why I prefer to say, "All lives matter."

Term	Definition
Concession	One way to address a counterargument. Concession is agreeing with some aspect of the counterargument, while explaining why your main point is still stronger.
Conclusion	Part of the standard form of an argument. The conclusion is the main point an author is trying to prove.
Counterargument	A premise that supports the opposing side of an argument. Counterarguments can be conceded (concession) or refuted (refutation).
Ethos	Part of the rhetorical triangle. Ethos refers to the credibility of the author.
Facts	Information that could be easily proven true or false, such as statistics, dates, locations, and laws.
Inferences	Conclusions based on evidence. A common term for "inference" is "educated guess."
Judgments	Opinions or evaluations. They concern issues such as what is right and wrong, what actions should be taken, or what is preferable and less preferable.
Logical Fallacy	A common mistake in logic that follows a pattern (see Appendix A for a list of logical fallacies).
Logos	Part of the rhetorical triangle. Logos refers to the logic and reasoning of an argument.
Pathos	Part of the rhetorical triangle. Pathos refers to the use of emotion in an argument.
Premises	Part of the standard form of an argument. Premises are reasons supporting the main point of the argument (conclusion).
Question at Issue	A particular question being debated in relation to an issue.
Refutation	One way to address a counterargument. Refutation is demonstrating that the counterargument is incorrect, providing evidence and reasons to discredit it.
Rhetorical Triangle	Sums up three areas of argumentation described by the Greek philosopher: ethos, pathos and logos.
Standard Form of an Argument	An argument written out as a list of premises (supporting reasons) and a conclusion (main point).
Unstated Premises	Missing steps in an argument that are assumed but not stated outright.