

Name: \_\_\_\_\_

# How to Argue Without Cheating

Arguing is fun. Whether it's a persuasive essay, a formal debate, or an enthusiastic discussion with a parent over the precise moment at which the garbage should be removed, we humans like to argue. You probably argue at least once a day, if not twice, twenty, or a few hundred times.

Generally, these arguments don't seem to have much method. You say this, they say that, and you go back and forth until somebody storms away. Little do you suspect that underneath this chaos, there is (or should be) a structure. There are whole *sciences* devoted to making a good argument, and one of them, **logic**, gets down to the nitty-gritty of proving even a single point.

## I. A First Look At Logic

In the world of logic, you can make a point (called the **conclusion**) by using two sentences called **premises**. Like so:

*premise:* All dogs have a liver.  
*premise:* Froofi is a dog.  
*conclusion:* Therefore, Froofi has a liver.

You may not be thrilled by this perky factoid, but in the world of logic, this **sylogism** is a slam dunk. It's **valid**. *If* the two premises are true, the conclusion *must* be true. That's the joy of logic.

Of course, those premises do have to be true. *If* the syllogism is valid *and* the conclusion is actually true, the argument is **sound**. But how about this:

All dogs have wings.  
Froofi is a dog.  
Therefore, Froofi has wings.

*If* all dogs had wings, Froofi *would* have wings. The syllogism is valid. But dogs don't have wings. So although the syllogism is valid, the conclusion is false. When the error is in the facts, not the logic, the argument is **unsound**. When the facts are right, but the logic isn't, the syllogism has a **fallacy**.

A **fallacy** is an error in an argument.

Cheryl jumped inside the house.  
Then the house collapsed.  
Therefore, Cheryl made the house collapse.

Let's say that happened. The premises are true, but is the syllogism valid? No. Even if Cheryl is a bit overweight, it's unlikely she *caused* the house to collapse. The syllogism is **invalid**. It's **fallacious** (it has a fallacy). Your teacher won't be happy. Nor will Cheryl.

In this unit, you'll learn a few common fallacies.

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## Exercise A: Scrutinizing Syllogisms

For each premise (the first two sentences), circle whether the facts are right (“fact”) or not (“error”). Then circle whether each syllogism is valid or invalid. Finally, circle whether each argument is sound or unsound. (Note that an invalid syllogism, like a factual error, makes the argument unsound.) If the argument is unsound because of a fallacy, write “fallacy” on the line. If it has one or more incorrect facts, write one corrected fact on the line.

- |  |  |
|--|--|
| 1. Trees have roots.<br>This maple is a tree.<br>Therefore, this maple has roots.<br><br>_____                                 | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |
| 2. Birds can fly.<br>Airplanes can fly.<br>Therefore, airplanes are birds.<br><br>_____  | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |
| 3. Gravel is crushed rock.<br>Some rocks are emeralds.<br>Therefore, gravel is crushed emerald.<br><br>_____                   | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |
| 4. All rain is wet.<br>All rain is weather.<br>Therefore, all weather is wet.<br><br>_____                                     | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |
| 5. Kangaroos have pouches.<br>All pouches are made of denim.<br>Therefore, kangaroos pouches are denim.<br><br>_____           | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |
| 6. Iron dissolves in orange juice.<br>This sword is iron.<br>Therefore, this sword will dissolve in orange juice.<br><br>_____ | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |
| 7. The moon is made of tofu.<br>Tofu is made of old socks.<br>Therefore, the moon is made of old socks.<br><br>_____           | fact / error<br>fact / error<br>valid / invalid<br><br>sound / unsound |

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## II. Non Sequitur: Stop Following Me!

Remember Cheryl and the jump that supposedly smashed the house? That fallacy is called **post hoc, ergo propter hoc**, which is Latin for *after this, therefore because of this*. Just because Thing 1 happened before Thing 2, it doesn't mean Thing 1 *caused* Thing 2.

**post hoc, ergo propter hoc:** after this, therefore because of this

Another common fallacy is called **non sequitur**, meaning *it doesn't follow*. It's so common it comes in several flavors.

**non sequitur:** it doesn't follow

### Affirming the Consequent

If Dan's feet became banana-flavored gelatin, he'd be in a bad mood.  
Dan's in a bad mood.  
Therefore, Dan's feet must have turned into banana-flavored gelatin.

Invalid. Both premises are true, but the conclusion doesn't follow. Fortunately for Dan, there is *more than one possible reason* for why he's in a bad mood. If you can think of another possible cause for the consequent (the bad mood), it proves this syllogism has a fallacy.

### Denying the Antecedent

If Tabitha spent all night learning to disco, she'd fail this test.  
But Tabitha did not spend all night learning to disco.  
Therefore, Tabitha will not fail this test.

Invalid. Again, the premises are fine, the conclusion isn't. Can't you think of *other* reasons she might fail the test besides the given antecedent (the all-night disco session)? If so, the syllogism fails too.

### Inconsistency

I only have ten toes.  
I only have eleven toes.  
Therefore, I only have eleven toes.

Seems weird, and it should. The premises can't *both* be true, so your conclusion doesn't have a chance.

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### Exercise B: Find That Fallacy.

So you have a few fallacies under your belt: *post hoc*, *ergo propter hoc* and three variations of *non sequitur*. You're well on your way to embarrassing a lawyer.

1. Identify each syllogism below as an example of one of the following:

V (valid)

PH (post hoc) AC (affirming consequent) DA (denying antecedent) I (inconsistent)

- a. If Snow White eats the apple, she'll be full.  
Snow White is full.  
Therefore, Snow White ate the apple. \_\_\_\_\_
- b. Barbara opened Grimm's Fairy Tales.  
Then Barbara sneezed.  
Therefore, Barbara is allergic to fairy tales. \_\_\_\_\_
- c. The glass slipper will only fit the missing lady.  
The glass slipper fits Cinderella.  
Therefore, Cinderella is the missing lady. \_\_\_\_\_
- d. Rumpelstiltskin kept his name secret.  
Rumpelstiltskin wore a name tag.  
Therefore, Rumpelstiltskin revealed his name. \_\_\_\_\_
- e. If Larry dyed his hair pink, he wouldn't look like Prince Charming.  
But Larry didn't dye his hair pink!  
Therefore, Larry looks like Prince Charming. \_\_\_\_\_
- f. If the princess kisses the enchanted frog, he'll turn into a prince.  
She kissed the enchanted frog.  
Therefore, he turned into a prince. \_\_\_\_\_

2. Write an example of the *post hoc* fallacy below.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Write an example of the *non sequitur* fallacy below.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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### III. Ad Hominem: You're Wrong Because You're Stupid

One terror of logic is that it is unanswerable, *no matter the source*. Whether it's your younger brother, a snappish waiter, or an annoying pamphlet, if the syllogism is sound, that's that. Logic is logic. The clear and fair mind must answer the *argument*, not get distracted by the imperfections of the *person* who happened to say the argument.

Sadly, clear and fair minds seem to be an endangered resource. Often, if we can't prove our point, we instead resort to an **ad hominem** (*against the man*) attack. They can't be right, we claim; they're stupid.

**ad hominem:** against the man

#### Character

Mr. Blight says that 2 plus 2 equal 4.  
But Mr. Blight dresses like a mannequin in a thrift store.  
Therefore, 2 plus 2 does not equal 4.

What does Mr. Blight's wardrobe have to do with math? Nothing. Criticizing someone doesn't prove him wrong. (If this fallacy sounds very, very, familiar, maybe you watch too many campaign speeches.)

#### Circumstantiem (*circumstance*)

Mr. Blight says those construction workers should wear hard hats.  
But Mr. Blight sells hard hats!  
Therefore, Mr. Blight is lying: those workers need no hats.

Even if someone's selling you something or gives some other reason for suspicion, you must still judge his argument on its own merits. Of course, you can be extra *cautious* (commercials, for instance, tend to be an absolute festival of fallacies), but no matter what the circumstances, an argument deserves consideration.

#### Tu quoque (*you also!*)

Mr. Blight says that tweed and polka dots do not match.  
But on special occasions, Mr. Blight wears a kilt with a polka dot vest!  
Therefore, tweed and polka dots are dandy.

Ugh. In logic, you even have to listen to hypocrites. Mr. Blight's *behavior* doesn't prove anything. Principles are principles, no matter who states them, no matter who breaks them.

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### Exercise C: Find That Fallacy, Again.

1. Identify each syllogism below as an example of one of the following:

V (valid) CH (character) CI (circumstance) TQ (tu quoque)

- a. Mr. Blight says that water quenches thirst.  
But Mr. Blight sells bottled water at the local chess match!  
Therefore, he's lying: water does not quench thirst.

\_\_\_\_\_

- b. Mr. Blight says that trees have roots.  
But Mr. Blight still listens to 1980s bands like *Journey*.  
Therefore, he's lying: trees don't have roots.

\_\_\_\_\_

- c. Mr. Blight says you should wear goggles when you shatter rocks.  
But there he is now, shattering rocks without his goggles on!  
Therefore, he's lying: you don't need to wear goggles when  
shattering rocks.

\_\_\_\_\_

2. Write three examples of *ad hominem* fallacies below. Identify each.

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## IV. Distraction: Don't Look Over Here!

Life is complex. While some issues are straightforward (child sacrifice: right or wrong?) others aren't easily simplified. Some fallacies attempt to prove their point by distracting you from other possible answers. Find another possible conclusion, and the syllogism sinks.

### False Dilemma

Ronald, you're either in love with Sheila or you hate her guts.  
You don't hate her guts?  
Then you're *in love!*

Doesn't Sheila's friend awaken fond childhood memories? How hard it can be to convince certain people that there are more than two human emotions. Show that Ronald and Sheila are just friends, or even just members of the same tic-tac-toe club, and the syllogism crumbles.

### Argument From Ignorance

Abraham Lincoln could secretly have been a shape-changing alien whose real parents often resembled jelly doughnuts.  
No one has ever proved he was *not* an alien.  
Therefore, Abraham Lincoln *was* an alien!

Before you get excited, think: can you prove this *wrong*? Not so easy, is it? Common sense, while wonderful for everyday life, is not logical proof. You can't *prove* that Lincoln didn't have the secret ability to morph into a pastry, because a secret ability would have been secret! But that doesn't prove the opposite is true. Ignorance is ignorance. It works both ways and proves nothing.

### Slippery Slope

If I let you make me clean my room, next you'll make me clean the whole house with a toothbrush.  
Then you'll think I'm such a great cleaner that you'll make me hire myself out as professional maid who works 80 hours a week!  
Therefore, I won't clean my room, otherwise you'll make me work 80 hours a week.

This could happen—but it might not. For instance, the parents might not ask for anything else because they'll be too busy weeping with joy at the sight of the carpet. Thus, the syllogism is invalid. If there are any other possible results of cleaning the room, the "slippery slope" of events is bogus. It doesn't have to happen that way.

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### Exercise D: **You Guessed It. Find That Fallacy.**

1. Identify each syllogism below as an example of one of the following:

**V** (valid)   **FD** (false dilemma)   **AI** (argument from ignorance)   **SS** (slippery slope)

a. Citizens, if we take the parking meters off Main Street, you'll want us to reduce other taxes too, maybe get rid of taxes altogether. Before you know it, the whole government will be bankrupt, all agencies will shut down, including Pest Control, and wild gerbils will run rampant! Therefore, we cannot remove the parking meters, or else gerbils will conquer America.

\_\_\_\_\_

b. Either you vote for me or you hate America. You're not voting for me. Therefore, you're an un-American stupidhead.

\_\_\_\_\_

c. Some scientists think that time will one day flow backwards. No one has proven that time will never flow backwards. Therefore, time will one day flow backwards.

\_\_\_\_\_

2. Write three examples of fallacies of distraction below. Identify each.

\_\_\_\_\_

\_\_\_\_\_

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## V. Conclusions That Don't Go Anywhere

Sometimes a syllogism just doesn't accomplish much.

### Begging the Question

Some people think that Ralph was lying about the Invading Melons.  
But Ralph explained that he's no liar.  
Therefore, Ralph was right: Mutant melons are attacking our town!

Don't believe Ralph? You must not have been listening. He *said* he was telling the truth! But then, that's the whole question. Since the syllogism gives no evidence besides what we knew (Ralph says he's honest), the conclusion is invalid. You can only accept it if you'd already answered the question beforehand, so there's no logical proof.

### Irrelevant Conclusion

We need to make bananas illegal.  
When jerks leave banana peels on the sidewalk, other people trip.  
Therefore, we need to make bananas illegal.

Here, all that's *proven* is that there's a peel problem. No case is given for *this* solution. Others might want to make jerks illegal, or eating. What does the evidence actually prove? If the conclusion isn't proved by the premises, it's irrelevant.

### Straw Man

They say you have to drive on the right side of the road, but that's only because most people are right-handed.  
Isn't it unfair to discriminate against lefties?  
Therefore, people should be free to choose to drive on either side.

If you can't beat an opponent's argument, you can always make up a fake, stupid one, and beat that, right? Sorry. There are other, better reasons for sticking to one side of the road, and these must be dealt with. Beating a flimsy "straw man" argument doesn't get you any closer to winning the debate. It might get you elected, but the logicians in your life will frown and click their tongues. Not worth it, is it?

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Congratulations! You've had a pleasant introduction to the world of fallacies. There are many, many more.

Armed with your new knowledge, you now have a choice. You can either prey on weak minds and end up as a highly-paid executive, or you can go happily about your days, confident that advertisers and politicians alike are mere putty in your hands. Choose well. (False dilemma? Not so much as you might think.)

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## Exercise E: **Surprise! Find that Fallacy.**

Identify each syllogism below as an example of one of the following:

	<b>V</b> (valid)	<b>IC</b> (irrelevant conclusion)	<b>SM</b> (straw man)
<i>non sequitur</i> :	<b>AC</b> (affirming consequent)	<b>DA</b> (denying antecedent)	<b>I</b> (inconsistent)
<i>ad hominem</i> :	<b>CH</b> (character)	<b>CI</b> (circumstance)	<b>TQ</b> (tu quoque)
	<b>FD</b> (false dilemma)	<b>AI</b> (argument from ignorance)	<b>SS</b> (slippery slope)
	<b>PH</b> (post hoc)	<b>BQ</b> (begging the question)	

1. Harriet thinks people should eat vegetables at least once a day.  
But Harriet eats every meal at Big Biff's Carnivore Café.  
Therefore, people don't need vegetables once a day.  
\_\_\_\_\_
2. We elected Georgiana as Official Mossburg Street Cleaner last week.  
Then a hurricane filled the streets with broken appliances.  
Therefore, Georgiana made our streets a mess.  
\_\_\_\_\_
3. I bet the government knows how to make gold from used toasters.  
Well, has anyone proven they can't? Of course not. It's a state secret!  
Therefore, they can make gold from toasters.  
\_\_\_\_\_
4. Mr. Fredson thinks the new mall will sell junk made in sweatshops.  
But Mr. Fredson has sold his own hand-carved furniture for 38 years.  
Therefore, he's biased and he's lying; the mall will feature only  
quality items.  
\_\_\_\_\_
5. Some people accuse Hercule of falsifying the evidence.  
Fortunately, Hercule assures us that he did no such thing.  
Therefore, Hercule did not falsify the evidence.  
\_\_\_\_\_
6. Either you support the proposed Second Bottle of Root Beer Tax, or you  
despise the unemployed hairdressers whom this tax will support.  
You say you don't support this tax?  
Therefore, you are full of hate and probably bald.  
\_\_\_\_\_
7. Winnifred jumped and banged her head on a passing hawk.  
The jolted hawk careened into a well-placed bucket of guava juice.  
Therefore, Winnifred soaked the hawk in juice.  
\_\_\_\_\_
8. If you finish this unit, you'll be happy.  
You're happy. Really happy.  
Therefore, you finished this unit!  
\_\_\_\_\_

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Answer Key:

**Exercise A**

1. fact, fact, valid, sound
2. fact, fact, invalid, unsound, "fallacy"
3. fact, fact, invalid, unsound, "fallacy"
4. fact, fact, invalid, unsound, "fallacy"
5. fact, error, valid, unsound, "Not all pouches are denim."
6. error, fact, invalid, unsound, "Iron doesn't dissolve in orange juice."
7. error, error, valid, unsound, "The moon isn't made of tofu." or "Tofu isn't made of old socks."

**Exercise B**

1. a. AC  
b. PH  
c. V  
d. I  
e. DA  
f. V
2. *Answers vary.*
3. *Answers vary.*

**Exercise C**

1. a. CI  
b. CH  
c. TQ
2. *Answers vary.*

**Exercise D**

1. a. SS  
b. FD  
c. AI
2. *Answers vary.*

**Exercise E**

1. TQ
2. PH
3. AI
4. CI
5. BQ
6. FD
7. V
8. AC