

Critical Thinking
Tutorial 2: Criteria for evaluating arguments
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Exercise 1: Assessing support

For each of the following arguments, say whether the premises support the conclusion. That is, assuming the premises are all true, would they provide a good reason to accept the conclusion as true? Explain your answer.

(1) Joab was the son of Zeruiah. Therefore, Zeruiah was the father of Joab.

Invalid – Zeruiah could have been (and in fact was) Joab’s mother!

(2) Advertisement: HomeGlo Paints Inc. has won the prestigious ‘Golden Paintbrush’ Award given to the one paint manufacturer in the country that has increased the environmental safety of its product most over the past three years for HomeGlo Exterior Enamel. The Golden Paintbrush is awarded only on the basis of thorough tests by independent testing laboratories. So when you choose HomeGlo Exterior Enamel, you will know that you have chosen the most environmentally safe brand of paint manufactured in this country today.

1 HomeGlo Paints Inc. has won the prestigious ‘Golden Paintbrush’ Award given to the one paint manufacturer in the country that has increased the environmental safety of its product most over the past three years for HomeGlo Exterior Enamel.

2 The Golden Paintbrush is awarded only on the basis of thorough tests by independent testing laboratories.

Therefore,

C HomeGlo Exterior Enamel is the most environmentally safe brand of paint manufactured in this country today.

The premises imply that HomeGlo Exterior Enamel has improved its environmental safety more than other companies. But the conclusion is that it is therefore now the most environmentally safe brand does not follow. Just because something has improved the most does not imply it is now the best. A paint that was initially very bad for the environment might improve the most, but might still be less safe than other paints.

The argument is actually more complex:

1 HomeGlo Paints Inc. has won the ‘Golden Paintbrush’ Award for HomeGlo Exterior Enamel.

2. The ‘Golden Paintbrush’ Award is given to the one paint manufacturer in the country that has increased the environmental safety of its product most over the past three years.

Therefore,

3 HomeGlo Paints Inc is the one paint manufacturer in the country to have most increased the environmental safety of its product over the past three years.

4 The Golden Paintbrush is awarded only on the basis of thorough tests by independent testing laboratories.

Therefore,

C HomeGlo Exterior Enamel is the most environmentally safe brand of paint manufactured in this country today.

(3) Democracy will only function well if the majority of citizens are well-informed about current issues. Unfortunately the majority of citizens are not well informed about current issues. Therefore, democracy will not function well.

The premises support the conclusion. If citizens are not well informed and this is required for democracy to function well, then democracy will not function well. So assuming the premises are true, the conclusion follows.

The argument is deductively valid.

(4) Irrigation runoff from neighbouring farms may well have increased the concentration of phosphorus in the local swamp above previous levels, but the claim that the increase in phosphorus is harming the swamp's native aquatic wildlife is false. In fact, the phosphorus concentration in the swamp is actually less than that found in certain kinds of bottled water that some people drink every day.

1 Irrigation runoff from neighbouring farms has increased the concentration of phosphorus in the local swamp above previous levels.

2 The phosphorus concentration in the swamp is actually less than that found in certain kinds of bottled water that some people drink every day.

Therefore,

C. The claim that the increase in phosphorus is harming the swamp's native aquatic wildlife is false.

Invalid: the premises do not support the conclusion. A safe level of phosphorous for human beings might not be safe for the aquatic wildlife in the swamp.

But even so, it doesn't even follow that those phosphorus levels are safe for humans – the premise tells us that people drink this water, but that doesn't mean it is safe.

Exercise 2: Drawing conclusions

Identify the conclusions that can be drawn from the following statements (in some there may be more than one conclusion that can be validly drawn).

(1) Johannes is either in Hong Kong or in Thailand. But according to his family, he is not in Hong Kong. Therefore

Johannes is in Thailand.

(2) Countries that do not have a great deal of water need to be careful about how much they use. Australia does not have a great deal of water. Therefore

Australia needs to be careful about how much water it uses.

(3) If God is perfect, then God knows what people intend to do in the future. If God knows what people intend to do in the future, then God can stop people from doing evil. Therefore

If God is perfect, then God can stop people from doing evil.

(4) The fault is either in the filter, the modem, or the extension cable. We have tested the modem and the filter and both are working fine. Therefore ...

The fault is in the extension cable.

(5) People with lupus always have a rash on their face. But this patient has no rash on her face. Therefore

This patient does not have lupus.

(6) All the students in my class are good critical thinkers. Only people with flexible minds are good critical thinkers. Therefore

All the students in my class have flexible minds.

(7) If the patient is dead, then there will be no pulse. If there is no pulse, then the red light will turn on. But the red light is not on. Therefore

The patient has a pulse. Therefore, the patient is not dead.

Exercise 3: Construct your own argument

Take the following statements:

- (1) All authors are philosophers. (false)
- (2) All philosophers are readers. (true)
- (3) All philosophers are Greeks. (false)
- (4) All authors are Greeks. (false)
- (5) All Greeks are authors. (false)
- (6) All philosophers are authors. (true)
- (7) All readers are authors. (false)

Now construct arguments fulfilling the following conditions. Each argument should have two premises and one conclusion.

- a) The argument is valid, both premises are false and the conclusion is false.

Premise 1: All authors are philosophers. (false)

Premise 2: All philosophers are Greeks. (false)

Conclusion: All authors are Greeks. (false)

- b) The argument is valid, both premises are false and the conclusion is true.

Premise 1: All philosophers are Greeks. (false)

Premise 2: All Greeks are authors. (false)

Conclusion: All philosophers are authors. (true)

- c) The argument is valid, one premise is true, the other false, and the conclusion is false.

Premise 1: All philosophers are authors. (true)

Premise 2: All authors are Greeks. (false)

Conclusion: All philosophers are Greeks. (false)

- d) The argument is valid, one premise is true, the other is false, and the conclusion is true.

Premise 1: All philosophers are readers. (true)
Premise 2: All readers are authors. (false)
Conclusion: All philosophers are authors. (true)

Exercise 4: The philosophical argument of the week – What kind of argument is it and what does it tell us?

God is, or He is not. Reason can decide nothing here. [...] A game is being played at the extremity of this infinite distance where heads or tails will turn up. [...] Let us weigh the gain and the loss in wagering that God is. [...] If you gain, you gain all; if you lose, you lose nothing. Wager, then, without hesitation that He is. (Blaise Pascal, 1670, *Pensées*, §233)

Some of the premises of the argument are hidden. Fill in the following decision table, which helps make them explicit. If we accept Pascal's reasoning, what are the potential gains and losses in these scenarios?

	Christian God exists	Christian God doesn't exist
Lead Christian life and believe Christian God exists	Gain: all; loss: nothing	Gain: nothing; loss: nothing
Don't lead Christian life and don't believe Christian God exists	Gain: nothing; loss: infinite	Gain: nothing; loss: nothing

- **What does this argument tell us about God's existence?**

Nothing – the argument tells us what we should believe, but it doesn't tell us anything about God's existence.

- **And is it inductively or deductively valid?**

If the premises are true (and the information in the table is complete), then it follows, with deductive validity, that we should wager that the Christian God exists. But note that God's existence is not even made probable by the argument; the argument only assesses probable gains and losses. (Compare: if by playing the lottery, there was no way you could lose and there would be absolutely no costs, but only a way to win – wouldn't it be rational to play? In practice, of course, there is always a cost associated with playing – and that in itself may be a reason against doing so. But if there were no cost whatsoever, it would be rational to play.)

Note also that the premises could be false. For instance, would the Christian God reward such a wager? Do we really lose (or gain) nothing in the case where the Christian God doesn't exist and we lead a Christian life? Is the table complete, or are there other possibilities that Pascal doesn't take into account? For instance, what if a non-Christian God exists, or some other all-powerful entity – wouldn't this change the possible outcomes of the wager? (Note that the argument implicitly assumes that the information in the table is not just true, but also complete). And so on. So there are many ways this argument could fail – but if we reconstruct it the way we do here, and assume that there are no further options, then it will still be valid. Its failure will have to do with the truth of the premises.

This reconstruction follows Bruce & Barbone (2011): *Just the Argument*. Wiley-Blackwell.