Solutions to Workbook Exercises

Unit 1:

Basic Concepts

Exercise "Propositions"

Which of the following sentences express a proposition?

- ☑ Dick Cheney overcooked the cauliflower.
- ☒ There is no force that could stop <mark>you</mark>.
- ☒ It was very dark <mark>there</mark>.
- ☒ <mark>My</mark> friends went to the forest to pick mushrooms.
- ☑ Henry Fonda has sneaked into the kitchen.
- ☑ Hillary Clinton has attached herself to the newly painted wall.
- ☑ If Fred Astaire were not a dancer, Greta Garbo would not be an actress.
- ☒ If only children knew more than their parents<mark>!</mark>
- ☒ Will Henry ever come to like girls<mark>?</mark>
- ☑ Bill Clinton is a woman.

<mark>Marked</mark> are those fragments that are responsible for a sentence not expressing a proposition.

Exercise "Arguments"

Which of the following sentences are true? Which are false?

☐ **True** ☑ **False**   All arguments have exactly one premise.

☑ **True** ☐ **False**   All arguments have at least one premise.

☐ **True** ☑ **False**   All arguments have at least two premises.

☐ **True** ☑ **False**   It is possible for an argument to have no premises.

☑ **True** ☐ **False**   It is possible for an argument to have only one premise.

☑ **True** ☐ **False**   It is possible for an argument to have only two premises.

☑ **True** ☐ **False**   It is possible for an argument to have one hundred premises.

☑ **True** ☐ **False**   It is impossible for an argument to have no premises.

☐ **True** ☑ **False**   It is impossible for an argument to have exactly seven premises.

☑ **True** ☐ **False**   All arguments have exactly one conclusion.

☐ **True** ☑ **False**   All arguments have at least two conclusions.

☐ **True** ☑ **False**   It is possible for an argument to have no conclusions.

☐ **True** ☑ **False**   It is possible for an argument to have two conclusions.

☑ **True** ☐ **False**   In an argument one accepts one proposition on the basis of others.

☐ **True** ☑ **False**   In an argument one accepts one sentence on the basis of others.

Exercise "Argument Recognition"

In each of the following arguments, identify the premise(s) and the conclusion.

(a) If the stock market never fluctuated, then stock would have no market risk. Of course, the market does fluctuate, so market risk is present.

> If the stock market never fluctuated, then stock would have no market risk.
> The market does fluctuate.
> _____
> So, market risk is present.

(b) If utilitarianism is true, …then it is better that people should not believe in utilitarianism. If, on the other hand, it is false, then it is certainly better that people should not believe in it. So either way, it is better that people should not believe in it.
> (B. Williams, *Morality: Introduction to Ethics*)

> If utilitarianism is true, …then it is better that people should not believe in it.
> If utilitarianism is false then it is better that people should not believe in it.
> _____
> So, it is better that people should not believe in utilitarianism.

(c) Pregnant women should never use experimental drugs for such a use may have a detrimental impact on the development of the fetus.

> The use of experimental drugs by pregnant women may have a detrimental impact on the development of the fetus.
> _____
> So, pregnant women should never use experimental drugs.

(d) Since the good, according to Plato, is that which furthers a person's real interests, it follows that in any given case when the good is known, people will seek it.
> (A. Stroll, R. Popkin, *Philosophy and the Human Spirit*)

> The good is that which furthers a person's real interests.
> _____
> So, in any given case when people know the good, they will seek it.

(e) Artists and poets look at the world and seek relationships and order. But they translate their ideas to canvas, or to marble, or into poetic images. Scientists try to find relationships between different objects and events. To express the order they find, they create hypotheses and theories. Thus the great scientific theories are easily compared to great art and great literature.   (D.C. Giancoli, *The Idea of Physics*)

> Artists and poets look at the world and seek relationships and order.
> But they translate their ideas to canvas, or to marble, or into poetic images.
> Scientists try to find relationships between different objects and events.
> To express the order they find, they create hypotheses and theories.
> ___
> So, the great scientific theories are easily compared to great art and great literature.

(f) The fact that there was never a land bridge between Australia and mainland Asia is evidenced by the fact that the animal species in the two areas are very different.
                    (T. D. Price, G.M. Feinman, *Images of the Past*)

> The animal species in Australia and mainland Asia are very different.
> ___
> So, there was never a land bridge between Australia and mainland Asia.

(g) The classroom teacher is crucial to the development and academic success of the average student, and administrators simply are ancillary to this effort. For this reason, classroom teachers ought to be paid at least the equivalent of the administrators at all levels.

> The classroom teacher is crucial to the development and academic success of the average student, and administrators simply are ancillary to this effort.
> ___
> So, classroom teachers ought to be paid at least the equivalent of the administrators at all levels.

(h) It would be immoral and selfish not to use animals in research today, given the harm that could accrue to future generations if such research were halted.

> A great deal of harm could accrue to future generations if research on animals were halted.
> ___
> So, it would be immoral and selfish not to use animals in research today.

(i) Changes are real. Now, changes are only possible in time, and therefore time must be something real. (I. Kant, *The Critique of Pure Reason*)

Changes are real.
Changes are only possible in time.

So, time is real.

(j) …Wagner's music [is] better than anybody's. It is so loud that one can talk the whole time without people hearing what one says. (O. Wilde, *The Picture of Dorian Gray*)

Wagner's music is so loud that one can talk the whole time without people hearing what one says.

So, Wagner's music [is] better than anybody's.

(k) To name causes for a state of affairs is not to excuse it. Things are justified or condemned by their consequences, not by their antecedents.
(J. Dewey, "The Liberal College and Its Enemies")

Things are justified or condemned by their consequences, not by their antecedents.

So, to name causes for a state of affairs is not to excuse it..

Comment on case (k). This is an interesting argument because it does not use any premise- or conclusion-indicators! The only thing that indicates the "direction" of the inference is the content, coupled perhaps with the hidden premise. (For further explanation, wait until the "Hidden Premises" exercise.)

Exercise "Deductive Validity in Practice"

Fill in the conclusions of the following arguments. If a question is asked (in square brackets), answer it.

(a) If Philadelphia Eagles win the game with Dallas Cowboys they will enter the playoffs.
The Eagles did not enter the playoffs.

So, Philadelphia Eagles did not win the game with Dallas Cowboys.

(b) All spaniels have long ears.
Missy is a spaniel.

So, Missy has long ears.

(c) You can't go wrong on this salad: if you follow the recipe, it will be perfect.
The salad did not turn out perfect.

So, you did not follow the recipe.

(d) If it rains, Abe always takes an umbrella.
If Abe takes an umbrella, he's uncomfortable.
Yesterday, Abe was not uncomfortable.

So, it did not rain.

(e) If you get either 85 or 86 points on a quiz you get a B.
Al got 85 points on a quiz.

So, Al got a B.

(f) If it either rains or snows, Joe never goes out.
Joe did go out yesterday.

So, it neither rained nor snowed.

(g) All metals conduct electricity.
But no sotones conduct electricity.

So, No sotones are metals.

Exercise "Hidden Premises"

Identify the conclusion and all the (including the hidden) premises in the following arguments. (Hidden premises appear in bold print, below.)

(a) Sally has never received a violation from the Federal Aviation Administration during her 16-year flying career. Sally must be a great pilot.

> Sally has never received a violation from the Federal Aviation Administration during her 16-year flying career.
> **Anybody who has never in their career received a violation from the FAA is a great pilot.**
> ___
> So, Sally is a great pilot.

(b) The government of Zunimagua has refused to schedule free elections, release political prisoners, or restore freedom of speech; therefore, no more financial aid from the United States should be provided to Zunimagua.

> The government of Zunimagua has refused to schedule free elections, release political prisoners, or restore freedom of speech.
> **The United States should only provide financial aid to governments abiding by democratic principles: allowing free elections and free speech.**
> ___
> So, no more financial aid from the United States should be provided to Zunimagua.

(c) Pregnant women should never use experimental drugs for such a use may have a detrimental impact on the development of the fetus.

> The use of experimental drugs by pregnant women may have a detrimental impact on the development of the fetus.
> **Pregnant women should never do anything that they know may have a detrimental impact on the development of the fetus.**
> ___
> So, pregnant women should never use experimental drugs.

(d) Since the good, according to Plato, is that which furthers a person's real interests, it follows that in any given case when the good is known, people will seek it.
> (A. Stroll, R. Popkin, *Philosophy and the Human Spirit*)

> The good is that which furthers a person's real interests.
> **People seek their real interests provided that they know them.**
> ___
> So, in any given case when people know the good, they will seek it.

(e) …Wagner's music [is] better than anybody's. It is so loud that one can talk the whole time without people hearing what one says. (O. Wilde, *The Picture of Dorian Gray*)

Wagner's music is so loud that one can talk the whole time without people hearing what one says.

What makes one music better than another is that it is loud enough so one can talk without people hearing what one says.

So, Wagner's music [is] better than anybody's.

(f) To name causes for a state of affairs is not to excuse it. Things are justified or condemned by their consequences, not by their antecedents.

(J. Dewey, "The Liberal College and Its Enemies")

Things are justified or condemned by their consequences, not by their antecedents.
Any causes of a given state of affairs are antecedent to that state of affairs.

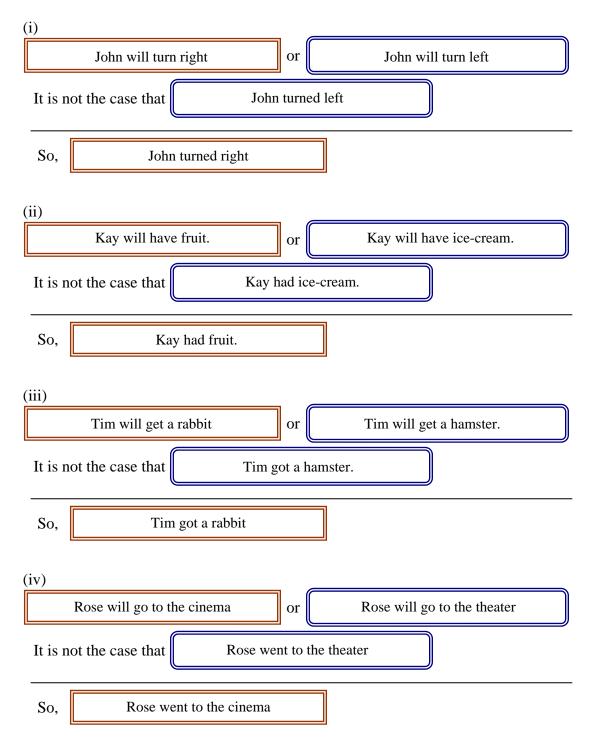So, to name causes for a state of affairs is not to excuse it.

(f) Russia's aggressive fishing in the prime fishing grounds of the Northern Pacific has led to a sharp decline in the populations of many fish and a general increase in the retail price of fish. This same pattern has occurred with far too many of our scarce vital natural resources, resulting in high prices for many products. It is likely then, that fish prices will continue to rise in the near future.
In making the argument above, the author relies on all of the following assumptions *except*:
(i) The scarcity of fish is a determining factor in its price.
(ii) The decline in the number of fish available will result in higher prices for fish in stores.
(iii) There will not be any substantial decrease in other costs involved in the fishing process that could keep the price of fish from increasing.
(iv) Fish populations will not recover in the near future.
(v) Fishing practices can substantially influence the demand for fish.

Exercise "Logical Form – Disjunctive Syllogism"

(a) Color the square boxes in red, the round boxes in blue. (b) Write in the expanded versions of the arguments (i)-(iv) in the boxes, making sure that each box contains a proposition. You will thus need to rephrase the statement "John will turn right or left" into the logically more perspicuous "John will turn right or John will turn left."

(i)

| John will turn right | or | John will turn left |

It is not the case that | John turned left |

So, | John turned right |

(ii)

| Kay will have fruit. | or | Kay will have ice-cream. |

It is not the case that | Kay had ice-cream. |

So, | Kay had fruit. |

(iii)

| Tim will get a rabbit | or | Tim will get a hamster. |

It is not the case that | Tim got a hamster. |

So, | Tim got a rabbit |

(iv)

| Rose will go to the cinema | or | Rose will go to the theater |

It is not the case that | Rose went to the theater |

So, | Rose went to the cinema |

Exercise "Soundness"*

Using the definition of validity and the definition of soundness, explain why the conclusion of a sound argument must be true.

A sound argument is an argument that is valid and whose premises are true. To say that an argument is valid is to say that it is impossible for its conclusion to be true given that its premises are false. Take an arbitrary argument, call it α, which is sound. To say that α is sound is to say that α is valid and α's premises are true (from the Definition of Soundness). To say that α is valid is to say that it is impossible for α's conclusion to be false if α's premises are true (from the Definition of Validity). But we know that α's premises are true (because the argument is sound). So, it is impossible for α's conclusion to be false. So, α's conclusion must be true. This reasoning establishes that the conclusion of any sound argument must be true.

Exercises "Fallacies – equivocations"

For each of the following equivocations, explain what 'word' is used ambiguously.

(a) Only men are rational creatures. No woman is a man. So, no woman is rational.

'Man' is used in the sense of 'human being' in the first premise. It is used in the sense of 'male human being' in the second premise.

(b) We are made of over 90% of water. Water is worth approx. $1 a gallon. So, a normal person is worth less than $20.

'Worth' is used in the sense of 'monetary value' in the second premise. It is used in the sense of 'moral value' in the conclusion.

(c) Happiness is the end of life. The end of life is death. So, happiness is death.

'End' is used in the sense of 'aim' or 'goal' in the first premise. It is used in the sense of 'finish' in the second premise.

(d) "Let's discuss that bane of modern liberalism, *discrimination*. Frankly, I'm getting tired of the word — at least the way it is used most of the time today. The fact of the matter is that I've been discriminating a lot lately. Sometimes discrimination is a good thing.
"For instance, I've been searching for a new place to live… I have loved some and I have found others to be lacking. In other words, I have discriminated… Therefore, discrimination is not always bad, is it? …[But] liberals have … the idea that discriminating among people, places, and things for any reason is wrong." (Limbaugh, p. 172)

'Discrimination' is used in two senses: 'unjust treatment' and 'distinguishing'.