

Name _____

Date _____

Exercises for Tutorial 31. Logical Method

Notes

Instructions: Write notes to answer the following questions. *Type or write in the answer boxes.*

1. Name the two steps involved in putting ideas together.

2. How does each step work?

3. What is inductive reasoning?

4. What are the two main characteristics of inductive reasoning?

5. What do you note about the pattern of inductive arguments, when you see them written down?

6. What are the three ways in which inductive reasoning can yield unsound conclusions?

7. What are the three characteristics of a good generalization?

8. What is deductive reasoning?

9. What are the three characteristics of deductive reasoning?

10. What is a syllogism?

11. What is a hypothetical chain?

12. What do we mean by a "valid" deductive argument?

13. Describe the most common logical error we make with syllogisms.

14. Describe the most common logical error we make with hypothetical chains.

15. Think of an example of how you've used induction and deduction in ordinary life. For example, perhaps you avoid a food you're allergic to: describe how this involves inductive and deductive reasoning. Or perhaps you refused to watch a movie because you believed you wouldn't like it. Describe the example, and how it shows your reasoning.

Exercise 1

Instructions: Decide whether the following represent inductive and deductive patterns of reasoning.

REMEMBER:

- just because an argument begins with a general statement doesn't mean that it's inductive; deductive arguments also contain general statements—
- just because an argument isn't necessarily true doesn't mean that it's inductive--many deductive arguments are guesses;
- you are looking at the train of thought, not just the words on the page;
- some of these may be open to interpretation, so read the explanation carefully to make sure you made the same choice for the right reasons!

Click a checkbox below each statement to make your choice. Then check the "Answer Key" at the end of this file.

1. I know Joe is a terrible cook, because I've eaten at his house three times and each time the food has been awful.
☐ Induction ☐ Deduction
2. Francois was French, so like all Frenchmen, we knew he would enjoy fine dining.
☐ Induction ☐ Deduction
3. Having seen three of Jackie Chan's movies, I can testify that he's brilliant.
☐ Induction ☐ Deduction
4. My cat must be angry with me for buying a kitten. He hisses every time I get near him, and he's started spraying around the living room
☐ Induction ☐ Deduction
5. The car's battery provides power to the engine, so if the battery is dead, the car won't start.
☐ Induction ☐ Deduction
6. If you really loved me, you would have known what I wanted without having to ask me. And since you ask me, I guess you just don't love me.
☐ Induction ☐ Deduction
7. Every time I've eaten oysters I've been sick--I must be allergic to oysters.
☐ Induction ☐ Deduction
8. Sanjay is a mountaineer, and since mountaineers are very fit, Sanjay must be very fit too.
☐ Induction ☐ Deduction
9. The bank won't be open tonight at nine o'clock, because all banks close by six.
☐ Induction ☐ Deduction
10. Margery is a bad carpenter. She built some shelves that fell down, and then she built a bed that collapsed as soon as I sat on it.
☐ Induction ☐ Deduction

Click here to check the answer key.

Exercise 2

Instructions: What do you think of the following generalizations? Read the arguments, and decide if each seems **sound or not sound**. *Click on one of the checkboxes below each statement to make your choice.* Then check the **"Answer Key"** at the end of this file.

1. The carpet is ruined, the walls are unpainted and the building needs a new roof. The owners are not taking care of the building.
☐ Sound ☐ Unsound
2. Well, Jenny hasn't answered my call and she didn't respond to my email. So it looks like she doesn't want to talk to me.
☐ Sound ☐ Unsound
3. The diary found by Mike Barrett, and published by Shirley Harrison, is supposed to be the diary of James Maybrick, a Victorian cotton merchant. But it cannot possibly be his diary. The handwriting doesn't match any other samples of Maybrick's writing, and there hasn't been enough forensic testing to draw any strong conclusions. Its origins are also fishy.
☐ Sound ☐ Unsound
4. Well, the mysterious diary that is supposed to be by James Maybrick, the Victorian cotton merchant, might well be real and certainly merits further investigation. After all, it has passed a number of forensic and historical tests.
☐ Sound ☐ Unsound
5. We surveyed 5000 heroin addicts to ask what illegal drug they had tried first. Almost 95% replied that they had started with marijuana. We concluded that using marijuana leads to heroin addiction
☐ Sound ☐ Unsound

[Click here to check the answer key.](#)

Exercise 3

Instructions: What do you think of the following deductive arguments? Read them, and decide if each is valid or invalid. Remember: you're not evaluating whether the argument is reasonable, or whether the premises are true. You are only trying to establish whether the conclusion does follow from the premises, if the premises are true. *Click on one of the checkboxes below each statement to make your choice.* Then check the **"Answer Key"** at the end of this file.

1. If you really cared about me, you'd buy me flowers. But since you haven't, I guess you just don't care about me
☐ Valid ☐ Invalid
2. People with shaved heads and swastika tattoos are racists; but Tony has a regular haircut and no tattoos, so he's obviously not a racist.
☐ Valid ☐ Invalid

3. If BigCorp was responsible for polluting the well water, it is also responsible for the deaths and illness of the local families. The jury concluded that BigCorp was, indeed, responsible for polluting the well water. Thus, BigCorp was responsible for the deaths and illnesses in the local families,
☐ Valid ☐ Invalid
4. Big corporations are always guilty of whatever they're accused of. BigCorp and HugeCorp are big corporations, so they must be guilty of what they're accused of here: namely, poisoning the village well.
☐ Valid ☐ Invalid
5. Seeing as a family history of heart disease leads to an increased risk of heart attack, I can be comfortable knowing that I don't have an increased risk, since none of my family has such a history
☐ Valid ☐ Invalid

[Click here to check the answer key.](#)

Answer Key for Exercise 1

1. Induction. The speaker assumes from your experience of his cooking.
2. Deduction. The speaker assumes that Francois will possess a quality because the group he belongs to does (according to the speaker!)
3. Induction. The speaker makes a generalization about Chan's movies based on three examples.
4. Either! It's induction if you see the argument as an accumulation of details leading to a tentative conclusion. But perhaps you see this argument implying the idea that any time a cat behaves like this, it must be angry. If so, you have reconfigured it as a deductive argument.
5. Deductive. It's a hypothetical chain: if A, then B.
6. Deductive. It's another hypothetical chain (if A, then B). You may have wanted to say it was inductive because it seems pretty silly. But remember that any kind of reasoning, deductive or inductive, can be sensible or silly. What matters here is the way the premises are put together to form a conclusion, not the value of the premises themselves.
7. Induction. The speaker has put together a number of oyster experiences, and drawn a general cause-effect conclusion.
8. Deductive. It's a syllogism: if the premises are true, the conclusion must be true.
9. Deductive. It's another syllogism; the speaker draws a conclusion about this specific bank based on a quality shared by all banks.
10. Induction. The speaker has drawn a general conclusion about Margery based on these two carpeting incidents.

[Click here to return to exercise.](#)

Answer Key for Exercise 2

1. Sound. It may not be correct--perhaps the owners are simply away, or the building has been recently flooded--but the speaker produces a lot of detail and draws a reasonable conclusion.
2. Unsound. For all we know, Jenny may have left town, or her phone isn't working. Without any other information, it sounds like the speaker is leaping to conclusions.
3. Unsound. If you thought it was sound, you gave a reasonable answer; the speaker does provide lots of evidence. However, the conclusion seems too confident. The diary may well be a forgery, or probably a forgery. But it's not really possible to say for certain that it IS a forgery.
4. Sound. The speaker draws a reasonable conclusion from a spread of evidence.
5. Unsound. The speaker is generalizing from a biased sample. Everyone in the group he interviewed ended up as a heroin addict.

[Click here to return to exercise.](#)

Answer Key for Exercise 3

1. Valid. Remember, even a silly argument can be valid. Here, the premises are silly--of course loving someone doesn't make you able to read their minds! But if they were true, the conclusion would be true. The method of reasoning is not mistaken.
2. Invalid. "All" isn't the same as "only." Even if it were true that every shaven-headed, tattooed person were a racist (which it isn't), that doesn't mean that ONLY shaven-headed tattooed people are racists. Hitler had no tattoos and a thick head of hair.
3. Valid. If A, then B. A; therefore, B. If A always causes B, then we know that the presence of A must mean eventually that we will see B.
4. Valid. If the statement about all corporations is true, then it must be true for one member of that group (namely BigCorp and HugeCorp).
5. Invalid. Perhaps A (genetics) always causes B (heart disease). But it's not the only thing to cause it. Perhaps this person smokes 100 cigarettes a day--more than enough to offset his or her genetic advantages.

[Click here to return to exercise.](#)