Logic, Reasoning, and Persuasion 07; Deductive Reasoning Midterm
Monday, October 20th, 2025. 100 points. Closed book, one sheet (double-sided) of notes allowed. No other resources allowed.

Please write answers in the Blue Book!

1. Please print your name and the date on the outside of the blue book.
2. Please write out, in the first page of your blue book, the Rutgers Honor Code, signing your name and including the current date below: *"On my honor, I have neither received nor given any unauthorized assistance on this examination."*

1 | Statements (15 points)

For each of the following, identify (a) whether it is a statement, and (b) if you said "yes" to (a), whether or not the statement is **simple**. You may give a brief explanation of your reasoning, but you don't have to.

1. What would I give up if I went into the experience machine?
   (a) This is **not** a statement. It is a question.
   (b) (not a statement.)
2. You should not enter the experience machine, because you would not be truly experiencing your real life.
   (a) This **is** a statement.
   (b) It is **not** a simple statement: it can be split into the simpler statements "You should not enter the experience machine" and "you would not be truly experiencing your real life."
3. If every premise in an argument map is a simple statement, then the argument map better captures the structure of the argument it diagrams.
   (a) This **is** a statement.
   (b) It is **not** a simple statement: it can be split into the simpler statements "Every premise in an argument map is a simple statement" and "The argument map better captures the structure of the argument it diagrams."

2 | Truth-Preservation (15 points)

Determine whether each of these arguments is truth-preserving:

First Argument

1. A tentative agreement was reached after the governor threatened to end the strike.
2. Therefore, the governor's threat to end the strike caused the tentative agreement to be reached.

Not truth-preserving. The fact that the tentative agreement was reached *after* the governor threatened to end the strike doesn't mean that the governor's threat *caused* the tentative agreement to be reached. For example, it could be that the tentative agreement was reached after the governor made the threat, but before any of the negotiators heard about the threat. Or it might have been that the agreement was going to be reached either way.

Second Argument

1. It will rain next week in Princeton, so you'll need to bring an umbrella.

Not truth-preserving. Maybe you don't mind getting wet, so you don't need an umbrella. Or maybe you'll be inside all day. Or maybe you won't even be in Princeton next week, so whether it's raining in Princeton is irrelevant to you.

Third Argument:

1. When immigration policy is restrictive, gross domestic product is high.
2. Right now, immigration policy is not restrictive.
3. So gross domestic product will not be high.

Not truth-preserving. It could be that gross domestic product is sometimes high even when immigration policy is not restrictive. This is an example of the *non-truth-preserving* machine

1. Not P
2. If P, then Q
3. Therefore, not Q.

3 | Missing Premises (15 points)

For each argument: supply a premise that makes the argument more complete: I'm giving examples of good premises. But there are a number of options and I gave points to most!

1. Chuck claims he has a physical sensitivity to electronics. But this cell phone battery was in his shirt pocket for an hour and forty-three minutes without him noticing. So his claimed sensitivity must be psychological.
   If Chuck had a physical sensitivity to electronics, then he would have noticed the cell phone battery in his pocket.
2. Olaf drank too much Guinness and fell out of his second story apartment window. Therefore, drinking too much Guinness caused Olaf to injure himself.[1]
   Olaf fell out of the second story apartment window because he was drunk from too much Guinness.
3. The Democrats are in the minority, and they could end the shutdown at any time by agreeing to Republican continuing resolutions. So the Democrats are solely responsible for the shutdown.
   If a party in the minority does not agree to majority continuing resolutions during a shutdown, then they bear the full responsibility for the shutdown.

4 | Deductive and Inductive Arguments (15 points)

Recall that an argument is **deductive/truth-preserving** if whenever the premises are true, the conclusion is guaranteed to be true, and an argument is **inductive/probability-raising** if whenever the premises are true, the conclusion is *more likely* to be true.

Identify if each is the following arguments is intended to be deductive or inductive:

1. The administration has been gutting union protections, so the administration must recognize the threat of a strong union presence.
   Inductive. We know the admnistration has been gutting union protections, and we want to know why. The hypothesis that the administration recognizes the threat of a strong union presence is a good hypothesis. But maybe the administration is gutting union protections for other reasons, like pressure from wealthy interests, even if they do not feel any sense of threat from strong union presence.

1. From Van Cleave, "Missing Premises" section

2. The fact that we wouldn't go into the experience machine indicates that we value something more than just how our life seems.
   Inductive. The fact that we wouldn't go into the experience machine is evidence about our values and preferences. Arguably, it's good evidence that we value something more than just experience. But perhaps for some of us it's just that we're not convinced the experience machine could make our live seem a particular way, or perhaps we don't know how we would want our life to seem, so we wouldn't know how to program the experience machine. These hypotheses are compatible with the thought that we wouldn't go into the experience machine even though we only care about how our life seems.
3. Chuck claims he has a physical sensitivity to electronics. But this cell phone battery was in his shirt pocket for an hour and forty-three minutes without him noticing. So his claimed sensitivity must be psychological.
   Inductive. It's highly likely that Chuck's sensitivity is psychological. But we can't rule out other explanations: perhaps Chuck has a physical sensitivity, but it is only to some electronics and not others. Or perhaps the physical sensitivity only flares up at some times. Or maybe the battery is actually dead. We can't be sure of the conclusion unless we've ruled out the other possibilities.

5 | Simplifying Statements (15 points)

The following are complex statements. For each,

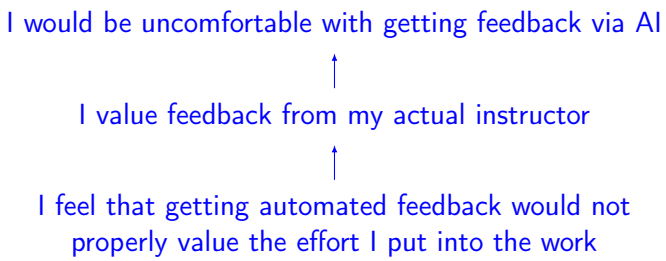
1. Split up the statement, rephrasing if needed, until it is some number of smaller, simple statements.
2. Draw the support relations of the statements, where applicable.

Questions (5 points each)

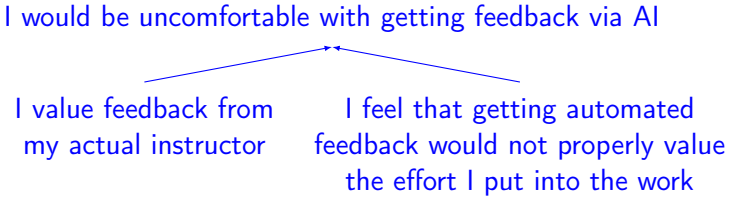
5.1: I would be uncomfortable with getting feedback via AI, because I value feedback from my actual instructor, and because I feel that getting automated feedback would not properly value the effort I put into the work.

5.1

One possibility:



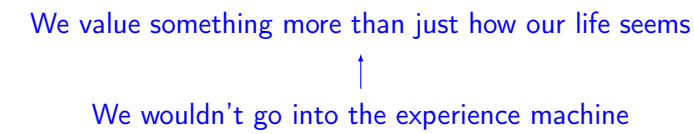
Another (different) possibility:



Note: I gave points to some other plausible maps as well, but they are *less* correct than this one.

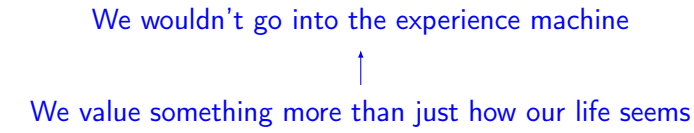
5.2: The fact that we wouldn't go into the experience machine indicates that we value something more than just how our life seems.

5.2



5.3: We value something more than just how our life seems, so we wouldn't go into the experience machine.

5.3

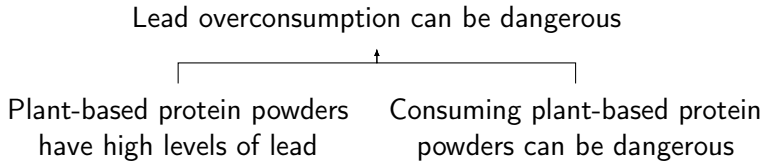


6 | Mistakes in Argument Mapping (10 points)

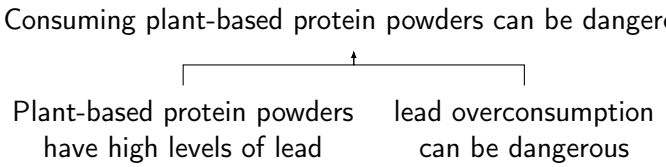
For each box (A, B, C), identify the option in the box that gives the most correct argument (the other ones makes mistakes about argument mapping)

A

Option 1:



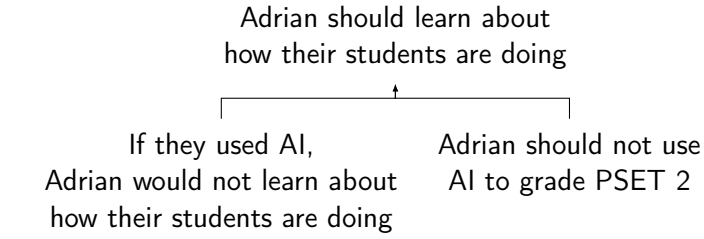
Option 2:



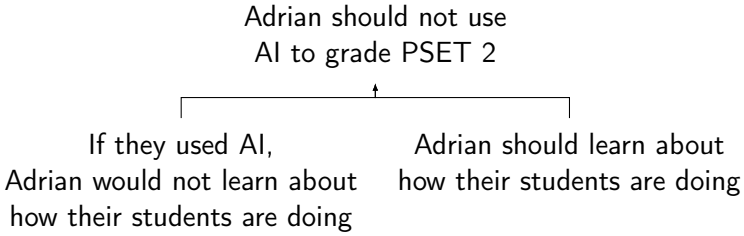
Both work! But they make different types of argument. I originally intended Option 2 to be the correct argument, but Option 1 also makes a *decent* inductive argument. So I'm giving points for both.

B

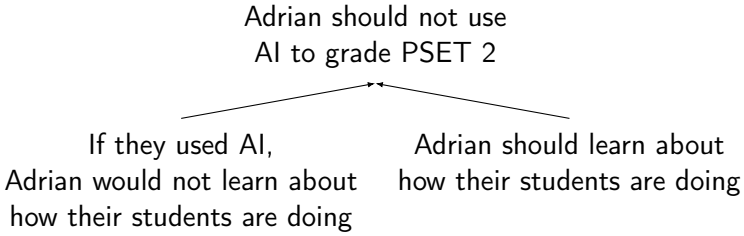
Option 1:



Option 2:



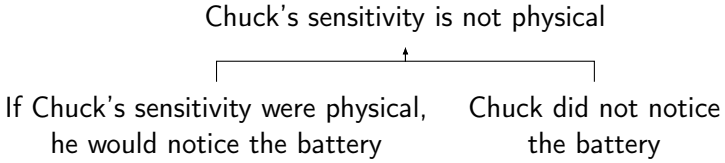
Option 3:



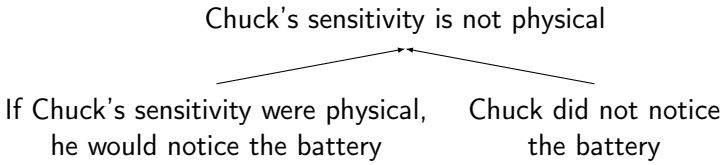
Option 2 is correct. In Option 1, the reasoning doesn't make a lot of sense. In Option 3, the arrows suggest that the premises are two *different* arguments for the conclusion. But they only work as a pair.

C (Question 6 Continued)

Option 1:



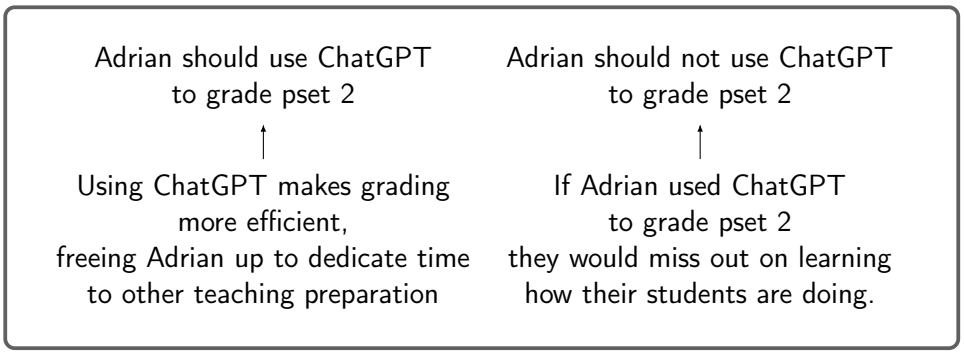
Option 2:



Option 1 is correct. In Option 2, the arrows suggest that the premises are two *different* arguments for the conclusion. But they only work as a pair.

7 | Improving an Argument Map (5 points)

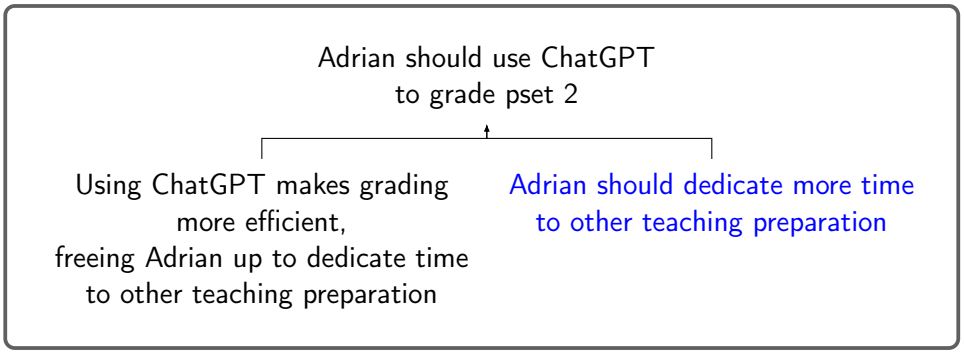
Here are two arguments, one for the conclusion that Adrian *should* use AI to grade pset 2, and one for the conclusion that Adrian *should not*:



For **one** of these arguments, do **both of** the following:

1. Add a co-premise that makes the argument stronger.
2. Formulate an *objection* to this argument: a statement/consideration that makes this argument less convincing.

[Answers Vary: I've given an example].



Objection: Even if ChatGPT makes grading more efficient, ChatGPT may not give feedback in as comprehensive a way.

8 | Making an Argument Map (10 points)

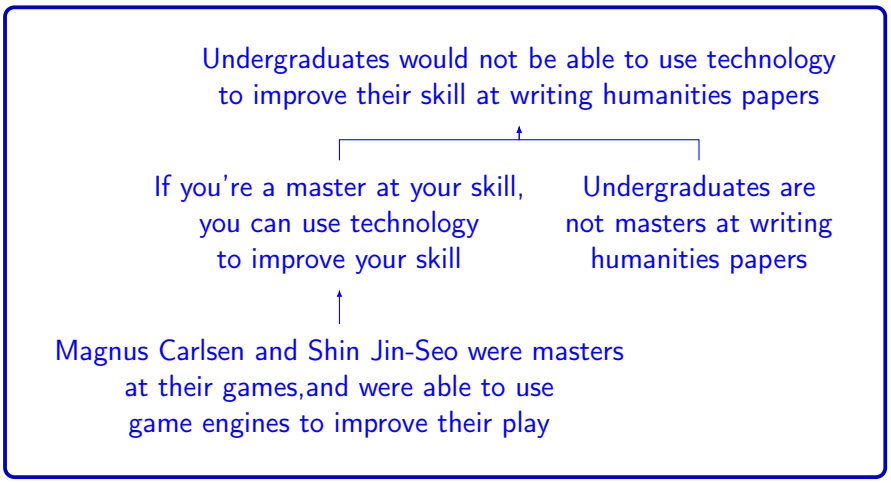
Here is an argument we could extract from Aylsworth and Castro, §4 ¶5:

- P1 Magnus Carlsen and Shin Jin-Seo were masters at their games, and were able to use game engines to improve their play.
- P2 If you're a master at your skill, you can use technology to improve your skill.
- P3 Undergraduates are not masters at writing humanities papers.
- C Undergraduates would not be able to use technology to improve their skill at writing humanities papers.

§8 Making an Argument Map (10 points)

For this argument:

1. Give an informal argument map of the three premises and conclusion.



2. One of the support relations (arrows) is inductive. The other is deductive. Which is which? The arrow from P1 to P2 is inductive. The fact about Magnus Carlsen and Shin Jin-Seo gives us evidence about what masters at skill can do. But it is not necessarily supposed to be truth-preserving. The arrow from P2 and P3 to C is deductive. It's intended to be truth-preserving (but it isn't)
3. Write out the form of the logic machine that the deductive support uses.
   (a) If P then Q (P2)
   (b) NOT P (P3)
   (c) Therefore, NOT Q (C)
4. Is the deductive argument truth-preserving? Why or why not? **It's *not* truth preserving.** It looks like the implication machine, or the reverse implication machine, but it's neither. It could be that if you're a master at your skill, you can use technology to improve it, but if you're not a master, you can *still* use technology to improve your skill.