

1.

Put the following arguments in standard form. You may find that the argument forms we have named so far do not suffice to capture all the steps in the argument. If that happens, flag it and make some suggestions for possible argument patterns that could be used to fill the gap.

- a. If Sally has taken logic or has taken calculus, she has satisfied Pomona's area 5 requirements. She has taken calculus. So she has satisfied the area 5 requirements.

#### Answer Key

1. If Sally has taken logic or has taken calculus, then she has satisfied Pomona's area 5 requirements. .... premise
2. She has taken calculus. .... premise
3. Sally has taken logic or has taken calculus. .... from 2
4. Sally has satisfied Pomona's area 5 requirements. .... 1,3,MP

Note: It is tempting to skip line 3 and go straight to the conclusion. Notice that premise does not match the antecedent of the conditional in premise 1.

- b. Only the butler or the gardener could have killed the old man. The gardener did not do it. So the butler killed the old man.

#### Answer Key

1. The butler killed the old man or the gardener killed the old man. .... premise
2. The gardener did not kill the old man. .... premise
3. The butler killed the old man. .... 1,2, argument by elimination

The following general inference pattern seems fine:

1. A or B. .... premise
2. not A. .... premise
3. B. .... 1,2, argument by elimination

After all, if a disjunction is true and one of the disjuncts is false, the other disjunct must be true.

You might wonder what happened to the ‘only’ in the plain prose version of the reasoning. The ‘only’ signifies that the two options stated are exhaustive (no third suspect). You might worry whether this exhaustiveness has been fully captured. Here is an attempt at capturing it:

1. If someone killed the old man, then it was the butler or it was the gardener. .... premise
2. Someone killed the old man. .... premise
3. It was the butler or it was the gardener. .... 1,2,MP
4. It was not the butler. .... premise
5. It was the gardener. .... 3,4,argument by elimination

The ‘If A, then B’ construction in premise 1 can also be read as ‘A only if B’ which enables us to capture the ‘only’ in the plain prose version. But this rendering may feel less natural than the one above.

c. Only the butler or the gardener could have killed the old man. So if the butler didn’t do it, the gardener must have done it.

### Answer Key

Let’s take this literally and take the conclusion to be the conditional (if the butler didn’t kill the old man, then the gardener killed the old man).

1. The butler killed the old man or the gardener killed the old man. .... premise
2. The gardener did not kill the old man. .... assumption
3. The butler killed the old man. .... 1,2, argument by elimination
4. If the gardener did not kill the old man, then the butler killed the old man. .... 1,2,3, conditional weakening

If you stopped at 3 and accepted that the butler did it, you would accept something based on a mere assumption that the gardener is innocent. That is generally a bad idea. It makes sense, therefore, to weaken your position to just accepting the conditional in 4.

There is another fairly plausible way of reading the argument (one that I did not intend but I have to agree is acceptable), and that is to take it as a

way of saying:

1. The butler killed the old man or the gardener killed the old man.  
premise
2. The gardener did not kill the old man. .... premise
3. The butler killed the old man. .... 1,2, argument by elimination

Notice that 2 is now labeled a premise. So the idea is that it is taken as somehow known (not just assumed) that the gardener didn't do it.

2.

Put each of the following into a valid argument in standard form. Be creative (i.e., add unstated premises, extra steps, etc. as necessary).

- a. The new movie, which is directed by Christopher McQuarrie, runs for two hours and forty-three minutes, and its full title is "Mission: Impossible—Dead Reckoning Part One," which takes about half an hour to say. If Part Two, which is due to be released next June, is of similar dimensions, we'll be landed with a tale that is more than five hours in the telling. Concision junkies will have to look elsewhere.

### Answer Key

The first thing to do to identify the conclusion. It seems pretty clear that the point is that the movie is too long, so let's take that as the conclusion. The considerations offered in favor of that assessment of the movie are: part one runs for 2h43m and that with part two the whole story will more than five hours long. So here is a first stab:

1. Part 1 is 2h43m long..... premise
2. Part 2 is of similar length. .... premise
3. The whole is more than five hours long. .... 1,2, math
4. If the whole is more than five hours long, then it is too long. premise
5. It is too long. .... 3,4,MP

But we might wonder how the author gets to premise 2? What the author says is that *(if part 2 is similar dimensions as part 1, then the whole is*

more than five hours long}. But why think part 2 will be of similar dimensions? Here the remark about the lengthy title might help. How about the following to get support premise 2 above:

1. The title of part 1 is way too long. .... premise
2. If the title of the movie is too long, then the director is not interested in conciseness. .... premise
3. The director is not interested in conciseness. .... 1,2,MP
4. If the director is not interested in conciseness, then part 2 will be of similar length as part 1. .... premise
5. Part 2 will be of similar length as part 1. .... 3,4,MP

Putting the two arguments together, we get:

1. Part 1 is 2h43m long. .... premise
2. The title of part 1 is way too long. .... premise
3. If the title of the movie is too long, then the director is not interested in conciseness. .... premise
4. The director is not interested in conciseness. .... 2,3,MP
5. If the director is not interested in conciseness, then part 2 will be of similar length as part 1. .... premise
6. Part 2 will be of similar length as part 1. .... 4,5,MP
7. The whole is more than five hours long. .... 1,6, math
8. If the whole is more than five hours long, then it is too long. premise
9. It is too long. .... 7,8,MP

b. *Background: In 1839, Lin Zexu, a high official of China, published an open letter to Queen Victoria of England calling for the cessation of the sales of opium in China by British merchants. (The letter went nowhere, China confiscated the opium stored by traders, and the British Empire responded by going to war with China in the name of defending the right to free trade—the disgrace known as the Opium War.)*

Put the reasoning in the following snippet into standard form:

We have heard that in your own country opium is prohibited with the utmost strictness and severity; this is a strong proof that you know full well how hurtful it is to mankind. Since then you do not permit it to in-

jure your own country, you ought not to have the injurious drug transferred to another country.

### Answer Key

The conclusion is *(you ought not to have the injurious drug transferred to another country)*. The explanation for that is *(you do not permit opium to injure your own country)*. Here is a reconstruction:

1. Opium is prohibited with the utmost strictness and severity in your country. .... premise
2. You prohibit opium with the utmost strictness and severity in your country only if you know how hurtful opium is to mankind. premise
3. You know how hurtful opium is to mankind. .... 1,2,MP
4. If opium is prohibited strictly and severely and you know how hurtful opium is, then you do not permit opium to injure your own country. .... premise
5. You do not permit opium to injure your own country. .... 3,4,MP
6. If you do not permit opium to injure your own country, then you ought not to permit it to injure another country. .... premise
7. You ought not to permit opium to injure another country. . 5,6, MP
8. If you ought not to permit opium to injure another country, then you ought not to have opium transferred to another country. premise
9. You ought not to have opium transferred to another country. . 7,8, MP

c. *The idea that prohibiting the sales of opium is a serious infringement of liberty was a respectable idea back then. The following are the thoughts of John Stuart Mill, one of the most important and respected British philosophers of the 19th century, writing in 1859.*

Put Mill's reasoning in standard form:

These interferences [like the prohibition of the sales of opium] are objectionable, not as infringements on the liberty of the producer or seller, but on that of the buyer. ... If poisons [like opium] were never bought or used for any purpose except the commission of murder, it would be right to prohibit their manufacture and sale. They may, however, be wanted not only for innocent but for useful purposes, and restrictions cannot be imposed in the one case without operating in the other. ...

[W]hen there is not a certainty, but only a danger of mischief, no one but the person himself can judge of the sufficiency of the motive which may prompt him to incur the risk: in this case, therefore, he ought, I conceive, to be only warned of the danger; not forcibly prevented from exposing himself to it.

### Answer Key

The conclusion is that prohibition of the sales of opium infringes on the liberty of the buyer.

1. If effects of opium are not certain and it is impossible to regulate only the bad cases, then only the person himself is allowed to judge whether or not to incur the risk of taking opium. .... premise
2. If only the person himself is allowed to judge whether or not to incur the risk of taking opium, then the prohibition of the sales of opium infringes on the liberty of the buyer. .... premise
3. Opium is used for evil, innocent, and useful purposes. .... premise
4. If opium is used for evil, innocent, and useful purposes, then effects of opium are uncertain. .... premise
5. The effects of opium are uncertain. .... 3,4,MP
6. It is impossible to regulate only the bad cases of opium use. premise
7. The effects of opium are uncertain and it is impossible to regulate only the bad cases of opium use. .... from 5,6
8. Only the person himself is allowed to judge whether or not to incur the risk of taking opium. .... 1,7,MP
9. The prohibition of sales of opium infringes on the liberty of the buyer. .... 2,6,MP