Answers to Exercises 1

Indicate the premises and conclusions of the following arguments. Which of these arguments do you suppose involve deductively valid reasoning? Why?

1   *Whoever works hard at logic does well. Accordingly, if Russell works hard at logic, he does well.*

    Premiss: Whoever works hard at logic does well.
    Conclusion: If Russell works hard at logic, he does well.

A valid inference move (marked by 'accordingly'): the premiss says that anyone, if he or she works hard at logic, will do well. And if this is true of everyone it must be true of Russell in particular.

2   *Most politicians are corrupt. After all, most ordinary people are corrupt—and politicians are ordinary people.*

    Premisses: (1) Most ordinary people are corrupt. (2) Politicians are ordinary people. [Or equally, we could take it that there is a single premiss, 'Most ordinary people are corrupt *and* politicians are ordinary people'—it doesn't matter which.]
    Conclusion: Most politicians are corrupt.

'After all' signals that what comes next are the reasons for the initial statement. The inference move is invalid. It is logically possible that *most* ordinary people are corrupt, but all the politicians are among the exceptions!

3   *It will snow tonight. For the snow clouds show up clearly on the weather satellite, heading this way.*

    Premiss: The snow clouds show up clearly on the weather satellite, heading this way.
    Conclusion: It will snow tonight.

The inference is not deductively valid. The weather satellite results may give us excellent *inductive* reasons for predicting snow tonight: but what is happening to the weather now doesn't *absolutely guarantee* snow (it is coherently conceivable that the snow will pass us by!).

4   *Anyone who is well prepared for the exam, even if she doesn't get an A grade, will at least get a B grade. Jane is well prepared, so she will get at least a B grade.*

    Premisses: (1) Anyone who is well prepared for the exam, even if she doesn't get an A grade, will at least get a B grade. (2) Jane is well prepared for the exam.
    Conclusion: She [Jane] will get at least a B grade.

We've added 'for the exam' to the second premiss, as surely intended. It is crucial if the argument is to work: to be well prepared for e.g. a hard night's clubbing won't guarantee a B grade! The resulting inference move is valid.

5   *John is taller than Mary; and Jane is shorter than Mary. So John is taller than Jane.*

    Premisses: (1) John is taller than Mary. (2) Jane is shorter than Mary. [Or as in exercise #2, a single premiss with an 'and' in the middle.]
    Conclusion: John is taller than Jane

Another valid move. A point worth noting, though, is that this little argument (unlike the other examples of deductivly cogent arguments we've met so far) doesn't depend for its validity on the distribution of—so to speak—very general logical words like 'all' or 'most'

or 'some' or 'or'; rather, it is valid in virtue of the meanings of 'taller' and 'shorter'.

6   *At eleven, Fred is always either in the library or in the coffee bar. And assuming he's in the coffee bar, he's drinking an expresso. Fred was not in the library when I looked at eleven. So he was drinking an expresso then.*

The conclusion, in a stand-alone form, is

Fred was drinking an expresso at eleven.

The natural way of reading the second premiss is as a generalization. That makes the three premisses

(1) At eleven, Fred is always either in the library or in the coffee bar.
(2) Whenever Fred is in the coffee bar, he's drinking an expresso.
(3) Fred was not in the library [when I looked] at eleven.

And the inference is valid. Fred was not in the library at eleven. But he was then either in the library or the coffee bar (by premiss 1). So he was in the coffee bar. Etc.

7   *The Democrats will win the election. For the polls put them 20 points ahead, and no party has ever overturned even a lead of 10 points with only a week to go to polling day.*

Again the conclusion is stated first, and 'for' marks the premisses on which the conclusion is based. Not a deductive valid inference—though a reasonable induction.

8   *Jekyll isn't the same person as Hyde. The reason is that no murders are sane—but Jekyll is a murderer, and Hyde is certainly sane.*

Valid inference to the conclusion that Jekyll isn't the same person as Hyde. Given no murderers are sane, and Jekyll is a murderer, it follows that Jekyll is not sane. And if Jekyll is not sane and Hyde is, then they have different properties, so cannot be one and the same person.

9   *No experienced person is incompetent. Jenkins is always blundering. No competent person is always blundering. Therefore Jenkins is inexperienced.*

Valid inference to the conclusion that Jenkins is inexperienced. Here's one way to see it: Suppose Jenkins *is* experienced. Then (by the first premiss) he must be competent; and so (by the third premiss) he isn't always blundering—which contradicts the second premiss. So the supposition he is experienced isn't consistent with the other premisses. So it must be false, given those premisses.

10   *Many politicians take bribes. Most politicians have extra-marital affairs. So many people who take bribes have extra-marital affairs.*

Invalid inference to the conclusion marked by 'so'. Suppose there are 1000 politicians, and 400 of them take bribes (and no one else does). And suppose the other 600 of them have extra-marital affairs (and no one else does). Then that's a world where the premisses are true, but *no-one* who takes bribes has extra-marital affairs!

11   *(Lewis Carroll) Babies cannot manage crocodiles. Because babies are illogical. But illogical persons are despised. And nobody is despised who can manage a crocodile.*

Premisses: (1) Babies are illogical. (2) Illogical persons are despised. (3) Nobody is despised who can manage a crocodile.
Conclusion: Babies cannot manage crocodiles.
Valid inference! The first two premisses imply babies are despised. So, by the third premiss, they can't be crocodile managers!

12 *(Lewis Carroll again) No interesting poems are unpopular among people of real taste. No modern poetry is free from affectation. All your poems are on the subject of soap bubbles. No affected poetry is popular among people of real taste. Only a modern poem would be on the subject of soap bubbles. Therefore all your poems are uninteresting.*

Consider this reasoning, set out a bit more formally than we've done so far:

(1)	No interesting poems are unpopular among people of real taste.	Premiss
(2)	No modern poetry is free from affectation.	Premiss
(3)	All your poems are on the subject of soap bubbles.	Premiss
(4)	No affected poetry is popular among people of real taste.	Premiss
(5)	Only a modern poem would be on the subject of soap bubbles.	Premiss
(6)	All your poems are modern poems.	From 3 and 5
(7)	All your poems are affected.	From 2 and 6
(8)	None of your poems are popular among people of real taste.	From 7 and 4
(9)	All interesting poems are popular among people of real taste.	From 1
(10)	All your poems are uninteresting.	From 8 and 9

Does this establish that the desired conclusion does indeed follow from the premisses? Lewis Carroll seems to have supposed so. But actually, the step from (1) to (9) can be challenged—does not being unpopular imply being popular? Can't something be neither popular nor unpopular, because everyone is indifferent to it??

13 *'If we found by chance a watch or other piece of intricate mechanism we should infer that it had been made by someone. But all around us we do find intricate pieces of natural mechanism, and the processes of the universe are seen to move together in complex relations; we should therefore infer that these too have a maker.'*

An 'Argument from Design': whole books have been written on this sort of argument for the existence of God! It is certainly not deductively valid—but is it a plausible inference to the best explanation of the order we find in the world??

14 See e.g. Peter Smith and O. R. Jones, *The Philosophy of Mind*, Chapter 3 on this argument for the distinction between mind and body often attributed to Descartes.