

THINKING SKILLS

<p>Paper 9694/02 Critical Reasoning</p>

General Comments

The paper worked well and discriminated well across the ability range. Candidates responded well to the topics and were able to respond at their own level.

There is increasing evidence that Centres are becoming more familiar with the demands of this qualification and producing candidates who are able to answer the questions confidently, demonstrating strong critical thinking skills.

Question One

Candidates responded well to the scenario of a fall during a running race. Most were able to comment on the runners' ability to see, contradictions, possible biases and to come to a conclusion about what happened on the basis of the evidence. A pleasing proportion of the candidates were able to evaluate the credibility of the evidence provided with some sophistication and use this evaluation, along with a consideration of plausible courses of events, to come to a conclusion about what happened.

- (a) Almost all candidates were able to say that Daniele was in the best position to see what happened, as she was behind Britanni and Angelica.

A small minority of candidates misinterpreted the diagram and therefore thought that Emily was in the best position to see what had happened. A few candidates discounted Daniele because of the sweat in her eyes, even though this affected her ability to see not whether she was in a position to see.

It was quite common for candidates to write up to half a page of justification for this answer, although only two marks were available, and these were generally gained in the first sentence. Given that answers towards the end of the paper, with more marks attached, tend to be rushed, Centres would be well advised to encourage candidates to target their answers more precisely.

- (b) Most candidates were able to say that Britanni's evidence was unreliable because she would lie to protect herself, and she had given two contradictory accounts. The best answers suggested that Britanni had a vested interest to lie to avoid losing her medal and her place on the national squad, if she had pushed Angelica, commented on possible reasons for the contradiction and considered the plausibility of Britanni's claims.

Weaker answers tended to copy evidence, to mention key points but not evaluate them, and to speculate.

For example, weaker candidates tended to say, 'First she said she tripped because of a flash and a bang. Then she said she was tired.' Stronger candidates tended to say, 'Britanni gave two conflicting accounts of why she tripped – first she mentioned a flash and a bang, then said that she was tired. This makes her seem unreliable, as a common reason for this sort of contradiction is lying. As no one else was startled by a noise from the crowd, and as her story about tiredness is implausible because she managed to come second despite tripping, it seems likely that Britanni was not being truthful.'

A significant minority of candidates listed what every runner had said, possibly pointing out areas of corroboration, without evaluation.

- (c) Most candidates were able to come to a conclusion about whose evidence was more reliable and give some reference to the evidence to support it. The strongest answers considered that, although Daniele's evidence was not very useful in deciding whether Britanni had deliberately pushed Angelica, it was more reliable / more credible, because Daniele did not claim more than she could realistically have seen, whereas Cassandra made strong claims to have seen Britanni twisting her ankle which was unlikely given the people obstructing her vision and the likelihood that, on a hot day, she also had sweat in her eyes. These answers considered that, although both girls seemed to have some bias, Cassandra's bias was likely to be greater as she was in the same running club as Britanni, and, coming in third place, she had gained a medal and a place in the National Squad because of the incident. Daniele, on the other hand, coming last because of the fall, might have been annoyed and therefore had a reason to incriminate Britanni, but did not act on this.

Candidates who argued persuasively that Cassandra was more reliable with suitable evaluative reference to the evidence were able to access full marks.

Weaker candidates tended to copy out relevant parts of the evidence or to speculate rather than evaluate.

- (d) Most candidates were able to come to a suitable conclusion based on probability, and to support it with at least some reference to the evidence, although the very weakest answers were too definite, concluding that, 'Britanni definitely deliberately pushed Angelica.' The strongest answers were reasoned arguments based on evaluation of the credibility of the runners and the quality of their evidence, consideration of the plausibility of various possible courses of events and an overall view. The weakest seemed to think that being competitive was sufficient reason for cheating in an important race. Weaker candidates again tended to copy evidence rather than using it.

For example, a strong answer to this question might read:

There is evidence to suggest that Britanni did push Angelica on purpose: Britanni had a motive (to get onto the national squad). From the diagram we can tell that Britanni was just behind Angelica, and the other runners agree that there is unfriendly rivalry between the girls. In the heat of the moment it is plausible that Britanni might have been frustrated and thought that, in the crush of bodies, she could get away with pushing Angelica. However, the evidence does not conclusively prove that it was a deliberate act. The cameras show nothing useful, as they both failed to capture Britanni. Daniele's evidence only says that she 'expected' it was deliberate, but a 'sort of dive' could be an accident or a push. Britanni's excuse of being tired is plausible and is, on some level, corroborated by Cassandra. Overall, even though she had a motive, it is unlikely that Britanni would have cheated right by a camera with other runners who could have been witness.

A weaker answer might read:

Examiner think that Britanni deliberately pushed Angelica because Britanni has a grudge against Angelica and wanted to win the race. Angelica was in a good position to beat Britanni, the only way to stop her winning was to push her. Britanni did not want Angelica getting in the national team so she had to come up with a way to stop her and benefit herself. Britanni flung herself forward so she would hit and injure Angelica so she could not finish the race and Britanni could win.

Question Two

Candidates responded well to the topic of banning smoking, and showed signs of having already thought about the issue in class time. The question discriminated well, although many candidates, especially weaker candidates, found the use of language and logic in this authentic passage more challenging than the passages written especially for the examination.

- (a) Most candidates were able to gain two marks, although weaker candidates wrote about half a page for a question which required two lines. It is not necessary for a candidate to paraphrase, summarise, add material or include their own thoughts. All that is required is a brief statement, in the author's own words, of the reasons why politicians cannot change people:

- 'People will stay at home and smoke instead.'
- 'When the weather is good, smokers will step outside to smoke.'

- (b) Assumption questions are generally difficult, partly because of the confusion between the everyday use of assumption to mean 'unfounded statement' and the technical critical thinking use of the term assumption to mean, 'missing reason,' or 'gap in the logic of the argument.'

In this session, most candidates managed to gain one mark for approximating to an idea which was necessary for the argument but unstated (i.e. not written down). The strongest candidates managed to articulate clearly an assumption such as, 'the side effects of prescription drugs are at least as bad for you as the side effects of smoking.'

A significant minority of candidates, as in every session, quoted part of the text rather than looking for an essential idea that was not written down. However, this minority was smaller than it has been in previous years.

- (c) This question was found challenging but discriminated well between those with strong thinking skills and those without. Many candidates were able to articulate vaguely that something was wrong with the passage or to provide a counter argument or disagreement, and a significant minority were able to use technical critical thinking language such as 'generalising from too small a sample / an unrepresentative sample' and to articulate clearly what was wrong with the reasoning.

The very strongest candidates were able to say that the New York Times did not mean that anyone who did not smoke is a good example just because they thought Mr Deng was a bad example for smoking publicly. Weaker candidates produced a counter argument suggesting that Hitler was not a good example, and the weakest ranted about Hitler.

In this question, as in **4(b)**, candidates need to evaluate the reasoning in terms of how well it works: for example whether there are flaws in the pattern of the reasoning, such as generalisation or slippery slope, or whether the reasons provide adequate support for the conclusion. Providing counter argument which would weaken the argument allows candidates to access some marks, but the best marks go to candidates who refer to flaws and weaknesses in the reasoning rather than arguing against the ideas in the passage. These ideas also need to be articulated in a suitably objective, thoughtful fashion: a strong candidate might say, 'The author's reason that the NYT did not print his letter is not strong enough to show that the NYT is no longer a serious newspaper, and it is unreasonable to generalise from one newspaper to being sceptical about everything you read in all newspapers.' The candidate who wrote, 'This author is a moron and should have his pen taken away,' appeared to have done some thinking, but not articulated their thoughts in a way that allowed them to access marks.

- (d) Most candidates were able to write an argument with reasons which gave support to a conclusion (which they had written down in their argument). Many candidates appeared to have practised writing arguments on this topic in School, or to have heard debate about it in the media. This meant that they had relevant general knowledge to draw on to support their arguments. Some candidates who had written otherwise clear and well structured reasoning failed to write the main conclusion down, which meant that they did not gain the mark that they would otherwise have been able to access.

Some candidates wrote arguments focused on whether smoking was a bad thing rather than on whether it should be banned in public. Weaker candidates tended to rant and express opinion rather than structuring an argument. Most candidates wrote more than was necessary to access full marks, probably because they knew something about the topic. To gain full marks a short, coherent argument is sufficient.

Question Three

This question was perhaps found most challenging by most candidates, although a significant minority of candidates who performed relatively weakly in **Questions 1, 2 and 4** were able to access fairly high marks in this question. The topic of animal imports was perhaps less familiar and less accessible to sixteen year olds than the other topics on the paper. In general, candidates did not read the words on the table very clearly, and very few candidates appreciated the difference between 'exotic animal,' and 'exotic pet.'

- (a) (i)** Only the most able candidates were able to say that ‘Most legally imported species have no risk to native species, humans, livestock or other animals’ could not be reliably concluded because of UNKNOWN risks. A substantial proportion of candidates simply read the numbers from the table in Box B and did some arithmetic.

The vast majority of candidates surprised Examiners by suggesting that ‘28% of species have a known risk, therefore we cannot conclude that most do not have a risk’. Variants of this included, ‘all the categories (e.g. fish, birds etc.) have risk so we cannot conclude this claim.’ These candidates appeared to be confused about the meaning of ‘most’ and to have not carefully read the information in the chart.

- (ii)** Most candidates were able to say that this could not be concluded because there was evidence in Box B only about bird with unspecified risks, and in Box C when it mentioned bird flu there were no figures which would generate a precisely calculated risk.

Weaker candidates said that the claim could not be concluded because there was actually a 5% risk, or agreed that there was a 0.05% risk.

- (b)** The most common response to this question was simple fear: the more people there are the more people could get sick so the more Americans are vulnerable to a serious sickness outbreak. Better candidates suggested that the size of the population was irrelevant, what we actually needed to know was the population density. Strong candidates referred to the evidence in Box C and suggested that 3 deaths from a disease in a population of 3 million over a number of years indicated that Americans did not seem very vulnerable to a serious sickness outbreak. A handful of the most perceptive candidates produced a more sophisticated evaluation.

- (c)** The vast majority of candidates made some reference to the evidence and were able to say broadly that Boxes A, B and C gave support to the claim that, ‘The USA should ban the import of exotic pets’ whereas Box D countered it. Strong answers evaluated the evidence in each box, considering that, for example, although Box B gave figures for known risks, it also showed that most imported animals were safe, so it gave only limited support to the claim that the USA should ban the import of exotic pets. The strongest answers also tended to put the information from the boxes together and to consider the difference between imported animals, pets and body parts from animals.

Question Four

Candidates generally responded well to the topic and felt confident formulating answers. As ever, the open ended nature of the question allowed candidates to perform at their own level.

- (a)** There was considerable variation in performance in this question and this would seem to be an area where Centres can easily affect marks by working with the mark scheme and teaching candidates to quote and label reasons, intermediate conclusions and main conclusion.

The weakest answers gave some gist and often displayed lack of understanding of the meaning of the passage. This was not generally an issue relating to those speaking English as a second or third language, but was common to candidates from all countries and appeared to be a lack of understanding of logical connections between parts of an argument rather than a lack of understanding of the words.

At the other extreme, there were some highly effective analyses of the structure of the reasoning which accurately identified reasons, key reasons, intermediate conclusions and the main conclusion.

- (b)** Performance in this question part has improved compared with previous sessions. More candidates evaluated the reasoning using technical vocabulary such as, ‘contradiction,’ ‘generalisation,’ ‘support’. Some candidates produced competent evaluations of the reasoning. Most candidates were able to identify an assumption, although a significant minority quoted parts of the text and called them assumptions.

Most commonly, candidates produced various qualities of counter argument and disagreement. Better candidates provided counter argument at points that would significantly weaken the argument, whereas weaker candidates simply disagreed.

A very strong answer might have included:

‘Just because dogs *can* transmit diseases to people does not mean that they actually *do* give us diseases very often, so this does not support the intermediate conclusion that dogs have a negative effect on human health. It only shows that they might have a negative effect.’

A reasonable answer might have included:

‘Good pet owners get their dogs vaccinated and rabies is not very common in pet dogs, so dogs do not transmit diseases to people all that much.’

A weak answer might have included:

‘Not all dogs have rabies.’

- (c)** Most candidates had some ideas. The best candidates wrote a short argument with one or two reasons which strongly support a conclusion (which they had written down). Candidates often had relevant ideas, which they expressed at length, but failed to write their conclusion down, thus failing to access all possible marks.

Some candidates continued in the same vein as in **4(b)**, disagreeing with the passage. These candidates were unable to access marks. A further argument should bring in new ideas which would support or challenge the given conclusion.

THINKING SKILLS

Paper 9694/04
Applied Reasoning

General comments

There were more responses of a very high standard in each of the questions this session than in previous sessions. More than 4/5 of candidates performed better on the Critical Thinking skills questions than the Problem-solving. Compared to previous exam sessions, many more candidates began with **Question 3**, or were willing to pass over parts of **Question 1** and **2** if they were taking too long.

Comments on specific questions

Question 1

More than a third of candidates were not awarded any marks on this question – the majority of these clearly decided not to attempt the question, and to concentrate on **Question 3** (and **Question 2** to a lesser extent).

- (a) This question did not require any working for full marks. Roughly 50% of candidates were awarded 2 or 3 marks.
- (b) About 1/3 of candidates completed this question satisfactorily. Clearly the second part of the question was dependent on the first part in terms of working.
- (c) There were many more reputable responses to this question than to equivalent questions in previous exam sessions. Over a third of those who attempted **Question 1** were awarded 4 or 5 marks on **part (c)**. A complete answer to the question required a demonstration of the maximality of the candidate's answer – this was mostly done by considering the next integer solution up, and arguing that it would not allow for the requisite facilities within the allotted space. A small number of candidates reached answers algebraically, appreciating that 1.26 km² of land was needed for each extra km² of residential space.

Question 2

There were fewer impressive answers to this question than to equivalent questions from previous sessions. Less than a quarter of the candidates managed to achieve more than half marks on **Question 2**. This appeared to be partly due to the change in direction required by **part (d)**.

- (a) This question was intended to be a fairly simple data extraction question, but it proved to be harder than expected.

A significant minority of candidates appeared to struggle with the information presented in the second table (showing the rates that apply when sending mail from one province to another), and listed all the journeys which would cost less than 81 cents.
- (b) This question was answered well by most candidates.
- (c) This question tested candidates' ability to organise the information they were given, as well as their ability to precisely appreciate what the question was asking. About 1/3 of candidates managed to attain 2 or 3 marks.

The most common error was to calculate the difference between sending all the mail from Sorrel and all the mail from Chervil.

- (d) In order to be awarded marks, candidates needed to demonstrate that all the charges could be achieved with the reduced set of stamps that they were proposing.

A small number of candidates appreciated that $5+16 = 21$ and $40+5 = 45$, allowing the results of these sums to be omitted.

Question 3

A number of Centres appeared to have encouraged their candidates to attempt **Question 3** first, and this led to a higher standard of response overall. Most candidates appeared to be engaged in the issues that were raised by the documents, but new to the proposals described in Documents 1 and 2. Any such heartfelt energy in these cases can be a hindrance (if it obscures the candidate's view of the assumptions they are making), but can be channelled into creative and persuasive further arguments in **Question 3(c)**.

- (a) Most candidates managed to achieve at least two marks on this question.

It was felt that overall candidates performed better on this question than in previous exam sessions. In particular there were far fewer candidates who merely summarised each paragraph or gave a précis of the stimulus material.

Some candidates were distracted by the introductory paragraph, and many lost marks by picking their conclusion indiscriminately from the last paragraph (or quoting the entire paragraph).

Candidates did not need to use the terms "intermediate conclusion" or "counter-argument" in order to be awarded three or four marks, but they did need to include the appropriate pieces of the argument precisely in their analysis.

- (b) Very few candidates scored over half marks on this question. Aside from the genuine difficulty of finding and expressing evaluative points, the substantial responses which failed to acquire marks most often consisted of (a) insufficiently explained strengths or (b) detailed rhetorical evaluation (often offering neat literary analysis of the stimulus source, commenting on diction, syntax, style etc.).

In order for a positive evaluative point to be credited, the candidate must explain why the reasoning in question is particularly strong. An example of this that occurred occasionally focused on the financial argument posed by Richard Damiens – when accompanied by a comment such as, "this reasoning is strong since the difference between the costs (of poaching and farming tigers) appears insuperably large – and the attraction of an easy profit for poachers will remain extremely strong".

Some candidates offer detailed rhetorical analysis (with respect to the types of language that the author is using) and their efforts are infrequently rewarded, since they must relate their comments to the strengths/weaknesses of the reasoning. If such comments are linked to the inappropriateness of the appeals that the author is making, or to the over-generalisation that a big rhetorical statement might include, then these will be credited. If candidates simply detail the author's use of persuasive language or over-use of rhetorical questions (or use of statistics) then they will not be credited.

- (c) This question attracted the normal range of answers. The sustained critical attitude that is required for the achievement of top band marks was rare, but the majority of candidates managed to assemble an organised, reasoned argument for or against the conclusion. Given that the most clearly argued piece was against the conclusion, it was perhaps slightly easier to offer a critical attitude in taking a stance for it (since this required an immediate need to explicitly dismiss the reasoning of Document 1, and add to the reasoning offered in the other documents).

A misconception that lay behind some of the weaker answers was that the intention was to replace wild tigers with farmed tigers. Although there was a place for these comments alongside the argument, they were often mixed up with the reasoning of Documents 1 and 2. There was also some confusion over the similarities and differences between co-existence and farming.

Most candidates managed to refer to a variety of sources (there was no need to refer to them all); the most common “type” of answer involved the selection of favourable reasoning from the articles, supported and united by the candidate’s rhetoric. Even if done clearly and carefully, this approach was unable to far transcend the middle band of the mark scheme.