



## **General Certificate of Education**

# **Critical Thinking 1771**

**CRIT1**

**Unit 1 Critical Thinking Foundation Unit**

# **Report on the Examination**

*2010 examination - January series*

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## **CRIT1**

### **Unit 1 AS Critical Thinking Foundation Unit**

#### **Chief Examiner's general comment on CRIT 1 and CRIT2**

Taking both AS Level papers into account there was a modest but measurable improvement over the June 2009 performance, although it has to be said that evidence of strong teaching, adequate preparation time, and coverage of the syllabus varied between centres. It is very clear that even for students with natural reasoning ability, good general knowledge and comprehension skills, all of which are necessary conditions for success, the best grades are accessible only if the syllabus has been thoroughly covered.

Although the knowledge content required for Critical Thinking is light in comparison with many other AS level subjects, the concepts are liable to be unfamiliar and many students are coming to them for the first time. There is also a certain amount of technical and quasi-technical terminology which needs to be learned. However, the skills the examiners are looking for concern the use and application of these concepts, not simply knowledge of them.

There is no doubt that Critical Thinking is a demanding subject, and needs to remain so if it is to stretch and stimulate students, and to earn the respect of the academic community and future employers. It is encouraging that the intended challenge in the two AS-Level units has clearly allowed able, confident and well-prepared candidates to demonstrate their excellence; and to do so in increased numbers and by higher margins

These general remarks are supported by thorough and detailed reports on the two component units, CRIT 1 and CRIT 2.

#### **CRIT 1**

##### **General Comment**

Although taking on a more specific topic than that of the previous paper, it was a topic that all candidates had experience of and were able to engage with, often putting forward their own experiences and judgements to good effect. It was pleasing to see that, while many candidates had strong views on the issue, they were not giving knee-jerk reactions, but providing sensible, intelligent, and balanced grounds for their opinions. Many candidates also appreciated the lighter tone and content of the topic, in particular to the question in Section B, and made good use of humour and irony in their responses. It was pleasing to see that candidates seemed to find the timing of the paper easier, and were able to provide substantial and very often lively and entertaining responses to the final question. It was also pleasing to see evidence of candidates being more selective with their responses, and not feeling the need to always fill up the space in the answer book, especially on the shorter questions – thus enabling them to manage their time more effectively.

Examiners were still met with the sad sight of clearly intelligent candidates scoring very poorly (high teens / low 20's, sometimes even lower) due to a lack of subject knowledge; their arguments at the end of the paper demonstrated that they could reason well, and sometimes were able to claw their mark back to something more respectable as a result. However very often clearly able candidate were restricted to low scores that did in no way reflect their ability.

On the positive side, candidates tended to understand better the nature of the questions being asked, knowing e.g. when to evaluate and when not; but there was still some time wasted and credit lost here (in particular on Q8(b) which was straight forward analysis – see below.) As previously mentioned, there was also more evidence that candidates were using the space needed rather than offered, which demonstrated greater understanding of the tasks, and also assuredness of their own thinking and reasoning skills.

There was however still a tendency, greater even perhaps than last summer, to fling in flaws. Candidates need to remember that these are tools, not merely labels; yes, (limited) credit will always be given on open evaluative questions to the introduction of a relevant flaw from the specification. But candidates should be warned against thinking that demonstrating awareness of the names of the flaws will be taken as signs of critical thinking; in fact an uncritical use of them / over-reliance on the terminology, at the expense of meaningful comment, will more likely be a sign of an absence of critical thinking. Allegations of ‘Straw man’ and ‘ad hominem’, in particular, were thrown around liberally; every time the word ‘you’ was being used, even if it clearly meant in the figurative sense of ‘one’ or ‘people’ (see Qns & ) was deemed ad hominem; and there was still the misconception in some centres that a straw man means attacking/ focusing on the weak part of someone’s argument. A straw man is an uncharitable move; there is nothing uncharitable about attacking the weak part of someone’s argument: it deserves to be attacked! You are perfectly entitled to attack the weak part of someone’s argument: to present it as the being the totality of their argument, or to reformulate their argument in such a way so that what was or is potentially a strong argument is made to appear weaker than it really is, is unfair.

Examiners had the feeling at times that candidates were so keen to see these flaws, that they adopted very imaginative readings of what was on the page; e.g. one candidate seeing Phil’s argument (in Document C, for question 5(c)) as a straw man as he ‘only attacks their apparent desire to avoid maths and subsequently fails to consider the other aspects of the opposing argument’. A discretionary mark for understanding of a straw man was all that was deserved on this occasion.

Key terminology seemed to be fairly well understood, but some candidates failed to understand ‘implied’ / ‘implicit’ which cost them marks as a consequence; a danger with terminology is the relying on it at the expense of meaningful comment – for example many weaker scripts were littered with answers along the lines of ‘His argument is flawed because he fails to give sufficient support for his conclusion.

His conclusion does not follow from the reasons. He needs to give greater evidence and make less unsupported claims. He is relying on assumptions and therefore he has not given a good argument’. All they have presented is the definition of a flawed argument, or set out what the conditions are for a good argument. There is no indication of how or why these apply to the particular case, and a candidate would be lucky to score anything for an answer like this.

There was also a tendency with some centres to see an assumption as (necessarily) a flaw in an argument. This is not the case. An argument is not flawed (simply) because it is ‘making lots of assumptions’. All arguments make assumptions, either explicit or implicit. The problem is if it is making *unwarranted* or, worse, patently false, assumptions. As a general rule, if a candidate identifies an implicit assumption, and this is obviously unwarranted, e.g. it conflicts with common sense or general knowledge, they will not need to go on to explain at length why the assumption is unwarranted. In open evaluation questions, such as question 3(b), since identifying implicit assumptions is such a difficult but important skill, candidates are awarded 2 marks instantly

merely for identifying and clearly articulately expressing, a pertinent implicit assumption. If they wish to go on to argue / explain why the assumption is unwarranted (for example where the assumption is debatable but not patently false / at odds with common sense), there will invariably (in an evaluative question) be extra credit for doing so. However, if the assumption is not entirely unreasonable yet nevertheless debatable, they need to do more than say 'This is just his opinion; he has no proof of this'. An assumption by definition lacks proof.

The degree of explanation / development, as with much of the evaluative aspects of the paper, requires a degree of judgement on the candidates' part; and recognising when they have said enough and conveyed their point, and having the confidence in their reasoning to stand by this and move on, is an important skill the subject, and thus its examination, expects. Many candidates were using appeals in a strange way: (e.g. of a piece of evidence, such as one of the films cited by the journalist to support her argument in Document C) 'this is a strong example as it appeals to popularity'; it is true that appeals *can* be relevant, and certainly true that they can be psychologically convincing – but the normal use is in a pejorative sense, and candidates need to be careful if they are using it in a way which goes against the normal use, clarifying their points accordingly.

Having said all this, examiners were never out to penalise candidates for such use; if it was clear what the point was that was being made, even if the terminology was a little awry, candidates still earned credit; where they lost marks, it was due to the meaning being too unclear to divine.

With Section B, the question being less open than last summer, candidates lines of arguments were more similar, and closer to issues in Sources as anticipated, but good use was made of personal experience/ anecdotal evidence (especially where the inherent limitations of this sort of evidence were made explicit). Some very enjoyable arguments were presented. It was unsurprising perhaps that many seemed to opt for what they no doubt saw as the safer option, i.e. disagreeing with the notion that maths deserves to be thought of as geeky, – often contrasting markedly with their lines of assessment in earlier Questions!

This was perhaps a shame, as the pre-determined position sometimes conflicted with the material they had at their disposal (candidates sometimes made very cogent points at moments in their response to questions in Section A that indicated sympathy with some of the 'anti-maths' sentiments presented by some of the participants in the source materials, that could have been developed into effective arguments in Section B; however when it came to Section B they automatically assumed it was unfair to deem maths 'geeky', but then struggle to provide an especially strong case!) Pleasingly, almost all candidates *were* producing arguments, a great improvement on last session; assured, developed lines of reasoning were presented, with sensible and effective inferences drawn that progressed their arguments in the appropriate directions; however there were problems in the lines of argument being (made) fully relevant (see comments below). Better use of (dealing with) counter arguments was also evident.

### **(More on Policy)**

For questions where candidates are asked to simply assess someone's response, it is recognised that, in this foundation unit, this is a very difficult thing to do; hence, if they are grappling towards a critical / rational response they deserve credit, even if the product remains a bit muddled / imprecise. However, there are questions (e.g. 3 (a) and 4(a)) where a specific Critical Thinking skill is sought (such as identifying a claim or a conclusion).

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Emily's conclusion, in Question 3.(a), for example, is not that it is cool not to like maths. There would be no dispute with the previous participant in the exchange, if that were the case. He has asserted that disliking maths is merely a blind prejudice; Emily's response is that 'It's cool not to like maths *for good reasons*'. This second part of her claim is vital, and here any imprecision cannot be allowed. (Note that where the question asks for an *implied* claim or conclusion, then greater leeway is given – see e.g. Question 8 (b) below)

## Question by Question

### Question 3(a)

candidates needed to get the full meaning of Emily's sentence, either by quoting it verbatim, or by a suitable paraphrase, e.g. 'That not liking maths is not just a blind prejudice but is well-founded'.

### Question 3(b)

This was a nice open question with an indefinite range of approaches that candidates could take. Some candidates presented a series of counter-assertions – she claims / assumes 'X' but 'X' is not true, or 'not necessarily true' with no more development or explanation. Virtually everything *may* not be true; the trick is to argue / explain why the claim is less likely / unlikely to be true. Recognising that the claims were not factual / certain could merit a mark but no more; this does little to weaken her argument, which is not supposed to be factual but about the value of maths / why we ought to value it.

There was a tendency to waffle, with candidates either talking about how one or other of the participants in the exchange had provided a 'good well structured argument with reasons and a conclusion' or given a 'weak argument with insufficient reasons for their conclusion' (in some cases the participant's argument had managed to do both of these at the same time!). Comments such as this, or: 'this is merely her value-judgement and has not provided sufficient evidence to support her claim however the claim is factual in kind' earned candidates no credit. Credit was given, however, for basic analysis including e.g. straightforward explanation of which claims were supporting or targeting which others; yet some kind of evaluative response was required to take their answers up to full marks.

Candidates could achieve this if their analysis exposed pertinent assumptions implicit in the reasoning. The simplest method was to successfully challenge the truth or relevance of any of the principal assertions, but good use was made of necessary and sufficient conditions, as well as exposing potential vagueness or obscurity.

Allegations of emotive or leading language were sometimes thrown at one or the other participant's reasoning, but unless they were able to explain how or why the use of language was unfairly leading, such approaches tended not to be too profitable. As with any of the 'tools' for assessment, the skill is in their use, and some candidates made strong and convincing cases that the arguments relied unfairly on rhetoric. For example: '*In Claire's response she has used emotive language in trying to persuade Emily that maths is more imaginative. By using 'weird mystical' she invokes images that sound more powerful to make it more inviting – which may lead the reader to an irrational response based on emotive language*'.

As often, the allegation of ‘insufficient evidence’ was uncritically bandied about: one candidate complaining that ‘She states that ‘numbers don’t really exist’, she is incorrect as there is no evidence to support this’(!) Despite all this, candidates generally scored reasonably well on this question, usually obtaining 2-4 marks of the 4 marks available, with a range of original, quite often unexpected, but nevertheless effective lines of assessment.

#### **Question 4**

This proved to be a good question for weaker candidates to score well on. Many candidates failed to get the mark for part (a) through not giving an answer in the form of a (hypothetical) claim, or through wandering off into unnecessary assessment without giving the answer. Almost all candidates (including those who missed out on (a)) scored reasonably well on parts (b) and (c); however, for part (c) the allegation of a straw man needed justification; they needed to explain why the weaker version of Rav’s claim was also the version less likely to be the one he had intended. A significant no of candidates did this very well, citing Rav’s reference to teachers as showing that he was clearly aware that they were taught it in schools, or simply pointing out that this is such obvious common knowledge that he must have been aware of it. There was a tendency (as with question 5 – see below) to fling in flaws. Some good answers achieved full marks by just focusing on the straw man, and in just 2 or 3 sentences, e.g. *‘Amy’s interpretation is unfair as she completely misunderstands the phrase. Rav will probably be very aware that maths is a compulsory subject. Amy assumes he does not know this, making a straw man of his argument, as it is based on an incorrect assumption about what he meant, and makes his argument look worse and hers better.’*

This was a question where extended waffle proved costly. For example, some candidates argued that on the one hand it was fair because Rav’s comment was ambiguous; but on the other hand it was unfair because it was clear which meaning Rav intended. 5(a)(i). There was a tendency not to see this as a straightforward analysis question and to veer off into quite pointless (in terms of the question) extensive evaluation and assessment. Most candidates who answered the question obtained one or both of the marks, with examiners employing a fairly generous policy for expression / articulation as is the norm when the question asks for an ‘implied’ claim (see also Question 8(a) below).

#### **Question 5(a)(i)**

A great many candidates spotted the rather obvious slippery slope here; and many more expressed the answer just as well (if not better) by using necessary and sufficient conditions. A very good case was also made of his limiting the options (either you do maths and can think clearly, or you do not and cannot).

#### **Question 5(a)(ii)**

The trick here for getting 3 marks was the explanation. It is not enough to say by way of explanation that ‘he does not give any evidence’; this is lazy, and misses the point that he is exaggerating the consequences of his largely reasonable assumptions. However, recognising that there is a clear case of exaggeration of consequences, and identifying where this exaggeration arises, was enough to support the case of a slippery slope, and three marks would be awarded for such a response.

On the other hand, simply saying ‘He claims that ‘maths sharpens up your mind, makes you think and reason better’ but he gives no evidence to support this’ is insufficient for a mark. The problem is not so much in this assumption, which is reasonable, but in the move he makes *from* this assumption, to the claim that if you avoid maths you will therefore be ‘incapable of forming a logical argument or thinking clearly about anything’.

### **Question 5(b)**

Some candidates thought that Emily’s response was good because it had managed to get him ‘angry’. Quite why this was a good thing, or how they knew this, was something of a mystery.

Another point: you do not *have* to give an argument – ‘she gives no conclusion’ or ‘no support’ etc is a feeble criticism. Sometimes in a debate it is enough to provide a piece of further evidence or ask for a position to be clarified or just say where you stand. It was nice to see some candidates pointing out that although it wasn’t an argument it was a good rejoinder; other candidates argued well that although there was something extremely / slippery / flawed about Phil’s argument, it did make a reasonable assertion or two about the value of maths that Emily in her ‘witty’ rejoinder failed to deal with.

### **Questions 6 and 7**

Candidates faltered on these questions due to complete misreadings of the document (e.g. the author is arguing that maths is not really geeky but it’s the media that makes it seem that way); seeing as this was sometimes evident in apparently bright and articulate candidates, there was a worry about their comprehension / reading skills; candidates are advised to perhaps spend more time thinking and reading and less time scrawling stuff down.

### **Question 7(b)**

provided an opportunity for weaker candidates to gain marks, with 1–2 simple marks obtained for effectively paraphrasing/ explaining why the examples were indeed examples of non-geeky mathematicians and therefore good ones. All candidates who had followed the gist of the argument in the relevant paragraphs, even if they were unclear about the author’s overall position or some of the other parts of the documents, managed to score quite effectively on this question; and many candidates were quick to point out the limited number of cited in support of her general conclusion. This question was mostly well answered.

### **Question 8(a)**

The main problem here was candidates not understanding what is meant by ‘implied’, and quoting directly a part of the argument, often the 1<sup>st</sup> sentence. Candidates who understood what the question was asking nearly always obtained the mark here, since a more generous marking policy is applied when asking for an implied conclusion than when identifying a conclusion contained on the page. Any reasonable attempt to convey the meaning sought on the mark scheme was credited.

### **Question 8(b)**

Here there was a tendency to either evaluate unnecessarily, or just loosely paraphrase the argument with no sense of rigorous argument analysis in evidence. Marks were given for suitable paraphrasing that showed understanding of how the argument / support was supposed to work; any premise clearly identified earned a mark; and candidates were awarded two marks for each clear articulation of a major assumption (see mark scheme)



**Question 8(c)**

Candidates tended not to score very highly on this question. While it is understood that candidates are having to function quickly in the examination conditions, it is not enough to see some reasoning that is based around an either-or and then assume it must be a false dichotomy. Work needed to be done here to justify the case that the 'either-or' split was an unnaturally artificial or limiting one. Some did this well, but the majority did not; either because they didn't attempt to, just declared it a false dichotomy and be done with it; or they said that 'there are many other' (in one case an 'infinite') 'number of reasons' without saying what or why; or they attempted to but came up with a further reason that was almost identical in meaning to / clearly contained within her split (e.g. 'they may feel that it is the only subject that they don't dislike' seems rather similar to their choosing to study it 'because they like it'; or 'because the school forces them to' is really contained within the second part of her split – 'because they have to etc'); besides, if this is the case, it is certainly not going to undermine the support for her conclusion: that changing its portrayal will make no difference.)

Of course candidates are pressed for time, and esp towards end of section A may be jumping to answers / conclusions, but they must remember it is a critical thinking exam; and the specification is designed to make students more critical in their thinking; to see an argument which uses a split and assume it must be a false dichotomy is *uncritical*. (Indeed there are plenty of perfectly reasonable arguments that employ an either-or base). It could also be due to lack of teaching time some centres adopt – if you have little time, only able to introduce what each flaw is and learn to spot it, not time to practice using it critically.

Another problem many candidates saw with this argument was that it was just her opinion / contained very little evidence. This is not a very useful line of assessment. For one thing, the author admits that it is 'The way I see it'; secondly, this is a hypothetical argument about what *would* happen if... The author is trying to imagine what would be the case *if* the media presented maths in a different light. While candidates are not expected to be thinking about things like suppositional reasoning or hypothetical reasoning patterns at this stage, they need to be aware that it is OK for people to merely *think* about things, explore implications, and make theories/ provide arguments based purely on their thinking.

**Question 9**

This was a difficult question, partly because the author's original reasoning is not altogether clear and appears flawed and / or self-contradictory. As a result, candidates were awarded marks for unravelling/ clarifying what the reasoning was *intended* to be doing, even if they gave little or nothing by way of assessment. Some candidates got in a muddle about what the comparison was trying to show; this is to some extent understandable as there is a case that the author's own thinking is slightly muddled here! In cases like this, candidates need to feel brave enough to say that they think there is something unclear about the argument / reasoning. A number of candidates did just this, and the stronger responses pointed to the inconsistency with other parts of her argument. This was really a question which allowed the strongest candidates to shine – with some rare, yet excellent, answers to (b) especially that highlighted the contradictions / confusions in the reasoning.

Candidates who commented that the support was effective by explaining how the support was supposed to be working (effectively paraphrasing the argument), but who saw the reasoning as otherwise unproblematic were awarded up to a maximum of three marks as a general rule.

## Question 10

Unlike the previous paper and specimen papers, the question on this occasion did not explicitly require candidates to specify criteria for their decision; it was felt that this was not necessary, with the particular question they had been asked, and with the definition of 'geeky' provided. Some candidates, clearly practiced on the available materials, felt the need to get this in, and this was nearly always a useful addition to their argumentation, bolstering their reasoning. However, it was not essential, and candidates should be aware of the need to check what is required in the task-direction bullet points, as there may be minor variations from paper to paper depending on the type of question and topic being discussed.

On the whole, candidates wrote well, and it was pleasing to see a much higher number of candidates producing genuine arguments, with the result that the majority of candidates scoring well and perhaps better than last summer. Arguments tended to be a little briefer, but more carefully composed, which was a good thing.

There was a danger to rely on anecdotal evidence a little too much in Section B ('I know lots of people who like maths and they are not geeks'), but as long as this was suitably qualified, e.g. with 'Obviously this is just my experience, but...') the evidence usually worked well enough.

The main problem lay in candidates failing to fully address the question. Candidates must be reminded that they need to think carefully about exactly what the question is asking, and to ensure that their answer, and their supporting argument, do directly address it. It was common for candidates to argue, along lines raised in Document A, for example, that since a negative view of maths is costing us money, or since maths is useful for the economy, and having a negative view of maths is stopping people studying it, then maths shouldn't be thought of as geeky. The problem here is that the question was about whether or not maths *deserves* to be thought of as geeky; this is not quite the same as, or is more specific than, asking whether or not it is a good idea to call it geeky. (Having said that, some candidates did persevere and make it relevant, e.g. by arguing that something that is so useful for us does not deserve to be disrespected and therefore does not deserve such a clearly disrespectful image.)

As per previous reports, to get full marks for stating the conclusion part, it needs to be a clearly expressed conclusion that is not only consistent with the reasoning but that 'follows smoothly from the reasoning' (see mark scheme) – i.e. with few or no significant 'jumps', and with overall good grounds provided for the stance taken. Marks for this and for the reasoning are clearly linked: it would not be possible to get 4 out of 4 for the conclusion and a low score for the reasoning.

The mark for quality of reasoning was decided as follows:

- If a candidate was clearly presenting an argument (and not e.g. a rant or series of incoherent assertions, or merely juxtaposed views, and did not contradict themselves) then they were immediately placed in the middle band.
- If the argument was present but it tended to struggle, perhaps drift into assertions too often or become too reliant on rhetoric, or the reasons lose relevance or impact at times, then it would be placed towards the lower end of the band.
- Arguments in the top band were characterised by a consistently logical approach and / or reasons of real quality and impact and / or impressive range of argumentation; counter arguments were appropriately dealt with, and a modified conclusion, if necessary, adopted.

- Candidates that failed to present a recognisable argument but that identified some relevant points or made some interesting assertions were in the bottom band.

### **Regarding the use of documents**

Even if no reference was made to the documents, candidates inevitably dealt with issues raised at least implicitly – therefore virtually every response earned a minimum 1 for this; many referenced well to the documents but used them a bit uncritically, e.g. using the ‘evidence’ of the film characters in Document C of maths not necessarily being cool / socially unaccepted without pointing out / at least recognising that these were merely films, and were perhaps selective etc.

### **Mark Ranges and Award of Grades**

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.