



General Certificate of Education  
Advanced Subsidiary Examination  
January 2010

## **Critical Thinking**

**CRIT1**

**Unit 1 Critical Thinking Foundation Unit**

## **Source Material**

This source material is to be read in conjunction with the questions in unit CRIT1.

**There are no sources printed on this page**

## Document A

# Can't-do attitude to maths 'has cost economy £9bn'

Nicola Woolcock

- (1) A "lost generation" of mathematicians has cost the economy £9 billion, according to a report by the Reform think-tank.
- (2) The decline in standards threatens the future of the economy, say the authors, and is having a devastating impact on the City, with some firms recruiting most of their maths graduates from overseas.
- (3) A culture shift is needed so that people no longer boast about their lack of maths skills but are instead embarrassed, the authors say.
- (4) "The UK remains one of the few advanced nations where it is socially acceptable, fashionable even, to profess an inability to cope with maths," they add. "Society needs to build on its new interest in maths-based puzzles such as Su Doku to expel the myths about maths and change the image of the subject from geek to chic."

Source: adapted from: *The Times*, 3 June 2008

## COMMENT:

**"It is deemed uncool within the social context of USA middle and high schools to do mathematics for fun; doing so can lead to social ostracism\*. Consequently, gifted girls, even more so than boys, usually camouflage their mathematical talent to fit in well with their peers."**

(Janet Mertz, a University of Wisconsin-Madison professor, newsmeat.com / Reuters; 9th October 2008)

\* Ostracism – Exclusion / Isolation

## Collins English Dictionary Definition

**Geek** (*gi:k*)  
*n* Slang

**A boring and unattractive social misfit**  
 > **Geeky** (*adj*)

Turn over ►

**Document B**

*(From an internet discussion board)*

I'm starting Year 9. Can't believe I've got three more years of maths hell to go. Someone please tell me it's not true!!!

Amy

What i'd give to stop doing maths, what's the point of it anyway, its not like im actually going to need any of it, i mean when do you ever have to solve a quadratic equation in life???

Jason

Well it depends what you do. If you are going to be an engineer or something then of course you're going to need maths.

Phil

People should stop being so prejudiced against maths. Maths is cool.

Rav

Maths is for geeks.

Amy

See what I mean! That is just the kind of prejudiced attitude I'm talking about. That's the kind of attitude that puts people off doing maths and just perpetuates the negative stereotypes.

Rav

See what I mean!

Amy

LOL\*

Jason

Maths is for everyone, Amy. That's what's so great about it. It goes beyond culture or race or nationality. It's a universal language.

Phil

But it's all about abstract things. It doesn't say anything about real life or people. It's not like you could have a conversation in maths.

Emily

Good point Emily.

Amy

\* LOL – Laugh Out Loud

What I want to know is why people associate being good at maths with being geeky.

Rav

There's no logical reason for it, Rav. It's just people's prejudices. It's cool not to like maths, and that's just the way it is.

Phil

It's cool not to like maths for good reasons. Maths has no heart or soul; it's just formulas and logic and equations. There's no feeling in it. It only uses the logical part of the mind. People are not logical. It's cold and clinical and machine-like. It's the language of robots, not humans.

Emily

Not true. Maths is imaginative. After all, numbers don't really exist. You can't touch the number four. It's like a concept, an idea. Numbers are weird mystical things. You need to have imagination to be good at it.

Claire

I think more people would like maths if they gave it a chance. Also maybe if teachers taught it better. They need to make it more real life so people can see its benefits.

Rav

What do you mean, *'if they gave it a chance'*?

Ever heard of something called the National Curriculum, Rav? It's not like we have a choice about whether or not to study it. That's the whole problem. It would be fine if only people who wanted to study it did.

Amy

But Rav, the beauty of maths is that it's not real life. Real life is messy. Maths is about beauty and perfection. It's more like music, or Art. And anyway, Rav, people who need everything to be 'real life' are the people who lack imagination!

Claire

Sure, go ahead and avoid maths. And then don't complain when you find – as a result – you are incapable of forming a logical argument or thinking clearly about anything. Maths sharpens up your mind, makes you think and reason better.

Phil

I assume you've been skipping your maths classes, Phil!

Emily

LOL.

Jason

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**DOCUMENT C****Comment**

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# The root of maths' square image

**According to recent research, the media is to blame for a 'geeky' image of maths that is putting people off. I don't buy it, says Linda Nordling**

(1) The “geeky” image of maths is to blame for a lack of interest in studying the subject, according to recent research. The survey by UK researchers found that students think of mathematicians as old, white, middle-class men who lack social skills and have no life.

(2) The media is to blame for perpetuating this negative stereotype, the study says. Guess what – I don't buy it.

(3) Before I became a journalist, I studied mathematics. I don't know why others choose to do it. Presumably they, like me, liked it and were good at it at school. But my choice was also born out of a wish to emulate some of the fictional mathematicians I'd seen on the silver screen. Mathematicians that dressed sharply, looked cool and always knew best.

(4) One of my early role models was chaos mathematician Alan Malcolm, played by Jeff Goldblum in the *Jurassic Park* franchise. My decision to study maths in the late 1990s was based, probably more than I care to admit, on the hope that one day I would meet – or become – someone like Malcolm, someone with a deeper understanding of nature's mysteries.

(5) Then there was *Good Will Hunting*, with Matt Damon, the “sexiest man alive” according to *People* magazine. In the 1997 movie, Damon plays the university janitor-cum-mathematical genius, who outshines the professor of maths and then walks away with the girl.

(6) Cinemas are currently showing *21*, a slick casino romp in which a group of highly numerate college students learn to cheat at blackjack. The students (including a stunning Kate Bosworth, a smattering of ethnic minorities and Jim Sturgess, a leading man who looks like Alex Turner from the Arctic Monkeys) head to Las Vegas at weekends, where they enter a glamorous world of hot tailoring, lapdancing clubs and Prada shoes.

(7) As these examples show, maths in film is not all about inch-thick glasses and obsessive compulsion. I'm not saying it's all slick and sexy. Extreme numeracy is just as often linked with mental illness (*Pi*, *Rain Man*, *A Beautiful Mind*). But the idea that there are no flattering portrayals of mathematicians in mainstream media is just plain wrong.

(8) Moreover, I wonder whether any attempt to make maths more popular by changing its portrayal in the media would really attract more students to the subject. The way I see it, there are two reasons why people study mathematics: either they like it for what it is (intellectually challenging, highly structured), or they need it (to make money, or pass a science degree, or please their parents); the number of people that genuinely like the subject could perhaps be increased by better maths teaching in schools. Meanwhile, the second group (who study maths because they need it) is unlikely to be bothered whether there is a mathematician on *EastEnders* or not.

(9) I went to college wanting to be a mathematician; I'm now a journalist. There are many reasons for this, but one is that at university, although the maths was lovely, the Kate Bosworths in the class were few and far between, and the staffroom was filled by "old, white, middle-class men". If there were glamorous, adventure-packed lives being had, they hid them pretty successfully.

(10) This, I think, answers the question of why the "positive" portrayals listed above have not managed to uproot the negative stereotype of the mathematician. Not all films about archaeology are action-packed riots, but when asked to imagine an archaeologist, many of us will struggle to block out Indiana Jones wielding a big whip. So why is the image of the old, white, socially-awkward mathematician so difficult to get rid of?

(11) Could it be because it is to some extent true?

Source: adapted from LINDA NORDLING, *The Guardian*, 23 May 2008

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