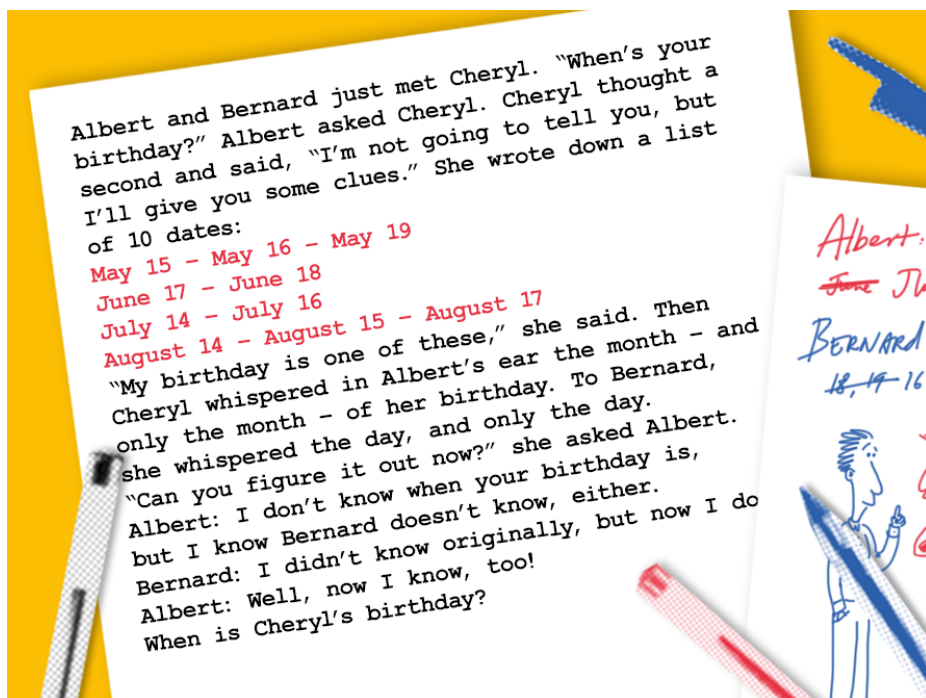


# Twitter bamboozled as logic puzzle goes viral

A question from a Singaporean maths test left thousands of people scratching their heads after it was spread by social media. What on Earth is the explanation for this improbable scenario?



This week the internet has three new celebrities. Their names are Albert, Bernard and Cheryl, they come from Singapore, and they have an infuriatingly cryptic way of communicating. Also, they do not exist.

The three companions are characters in a problem put to 14-year-old participants in a Singaporean maths challenge. In the puzzle (reproduced with slightly altered wording in the image above), Cheryl teasingly gives each of the boys separate pieces of information about her birthday, from which they somehow deduce the exact date. The task for examinees is to work out what both of Cheryl's admirers have been told.

It's not an obvious candidate for a viral sensation. Yet when somebody tweeted a photo of it, the riddle took the internet by storm. The hashtag #cherylsbirthday rocketed up the trending lists, leaving a sizeable chunk of Twitter scratching their heads in mystification. 'Sorry, what?' wrote

one stumped user. 'Cheryl's not getting a birthday, vague fool,' another quipped.

Can you do any better? Here are some hints:

1. Start with the numbers which only occur once. Could Bernard have been told one of those?
2. Rule out some of the months first, then use Albert's final statement to figure out the day.
3. You might find it useful to draw a table with days on one axis and months on the other, then eliminate the possible dates one by one.

The reason why people around the world find this problem so difficult is that it demands a particular type of reasoning unfamiliar to many: logical deduction. All of us use logic in our everyday lives, whether working out route plan, deciding whether to believe a politician or making predictions about a football match. And we learn about it in school as well, though only indirectly: much of maths is

founded on principles of logic.

Yet clear-cut examples like the type used in this problem are rare in everyday life. For that, we need a set of definite premises with a clear relationship to one another, which lead to a single conclusion. That's why examiners resort to convoluted scenarios involving oddly uncooperative characters like Cheryl.

## DEFYING LOGIC

Some have dismissed this puzzle as a ludicrously improbable situation with no bearing on reality. Anybody who behaved like Cheryl simply wouldn't get any presents at all, they say. Questions like this are just pointless riddles with no more meaning than sudoku.

This precise situation might be rather improbable, logic buffs admit; but that doesn't make it useless. Unless we understand how our beliefs are formed, we'll always be prone to fallacies and misconceptions. Logic and maths are indispensable tools for anybody who truly wants to understand the world around them.

## Q & A

**Q** This puzzle stinks of maths. I hate maths.

**A** A lot of people do, and that's understandable: maths can be incredibly frustrating. But finding the solution to a seemingly impossible problem can be hugely satisfying too — sometimes even beautiful. The great philosopher and mathematician Bertrand

Russell described it as 'sublimely pure, and capable of a stern perfection such as only the greatest art can show'.

**Q** Not convinced.

**A** No? In that case you'll have to settle for the fact that maths is enormously useful. Numeracy is one of the most sought-after qualities in young employees, and the more computers dominate our lives the more

crucial it becomes. Even people who pursue non-numerate vocations or study arts subjects at university often find themselves in need of maths skills. You've been warned.

## SOME PEOPLE SAY...

'Mathematics is the language of the universe.'

WHAT DO YOU THINK?

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### WORD WATCH

**Singapore** – This small country in East Asia has one of the most highly-rated education systems in the world, especially formidable when it comes to ‘problem-solving’.

**Deduction** – There are two types of reasoning: deductive and inductive. Inductive reasoning is drawing conclusions based on experience (‘the sun has always

risen in the east, so it will rise in the east tomorrow’). Deductive reasoning is taking a set of established facts and using them to discover new information: ‘kumquats are fruits, all fruits grow on trees, so kumquats grow on trees’.

**Premises** – Propositions or statements you accept before starting to solve problems. With correct premise or premises and sound

logic, the conclusion will be correct. But if the premises are false, even a logical argument can be wrong.

**Fallacies** – There are many categories of logical fallacy. One very common mistake is to assume that because a implies b, b must also imply a. For instance: all dogs have hair, this animal has hair, therefore this animal is a dog. In this case it’s clearly ridiculous, but often the fallacy is much harder to spot.

### YOU DECIDE

1. Are you more motivated by learning things which are useful, or things which are simply interesting?
2. ‘Modern life requires people to be as comfortable with numbers as they are with words.’ Do you agree?

### ACTIVITIES

1. Try to find the answer to the question in the infographic, either on your own or as a class. Then have a go at some of the other logic puzzles in the Become An Expert links.
2. Try to invent a logic puzzle of your own. It must have only one answer and require no extra information to solve.

 **BECOME AN EXPERT** Check our website for a selection of useful links to videos and further reading.



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