

A Math Problem From Singapore Goes Viral: When Is Cheryl's Birthday?

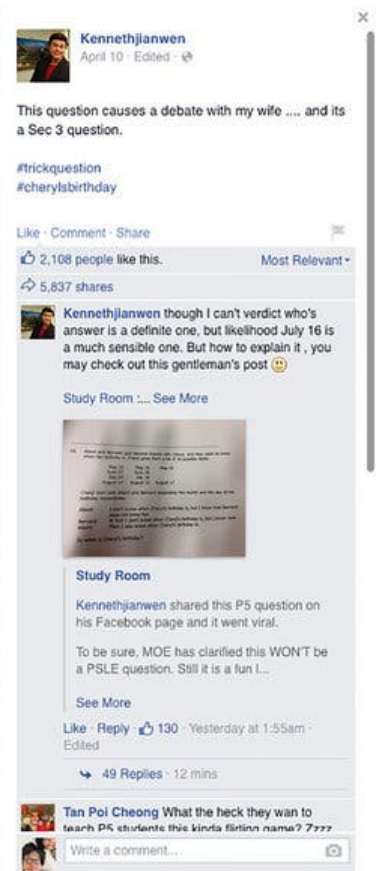
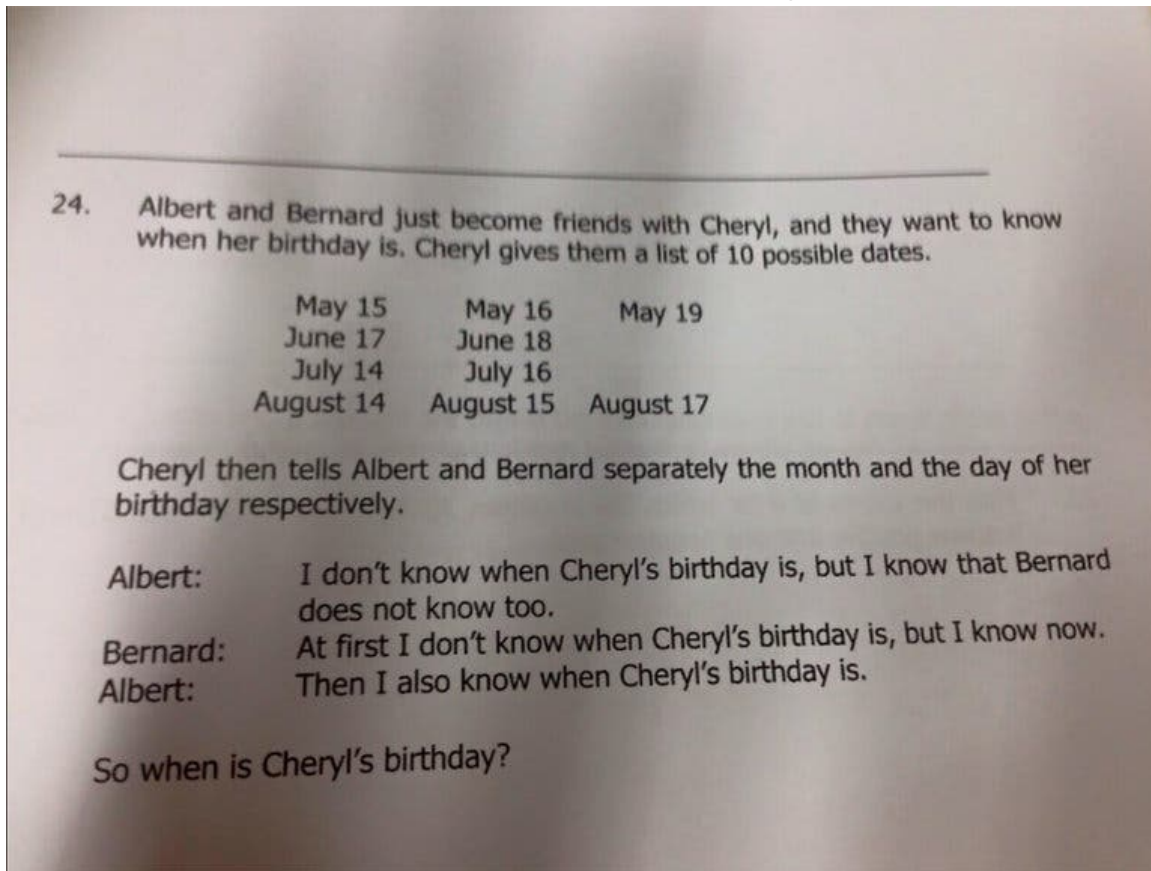
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A couple of months ago, it was a color-changing dress that blew out the neural circuits of the Internet. Though it may not have quite the mass appeal, this week it is a math problem that is making bushels of brains hurt.

It started with a posting on Facebook, by Kenneth Kong, a television host in Singapore.

Image



From there, people around the world have been trying to figure out Cheryl's birthday, or at least wondering why she couldn't just save everyone a lot of trouble and be more direct with Albert and Bernard.

The wording of the problem is terrible, so here is a clearer version, which makes some of the assumptions more obvious but which does not change any of the underlying logic of the problem:

Albert and Bernard just met Cheryl. “When’s your birthday?” Albert asked Cheryl.

Cheryl thought a second and said, “I’m not going to tell you, but I’ll give you some clues.” She wrote down a list of 10 dates:

May 15, May 16, May 19

June 17, June 18

July 14, July 16

August 14, August 15, August 17

“My birthday is one of these,” she said.

Then Cheryl whispered in Albert’s ear the month — and only the month — of her birthday. To Bernard, she whispered the day, and only the day.

“Can you figure it out now?” she asked Albert.

Albert: I don’t know when your birthday is, but I know Bernard doesn’t know, either.

Bernard: I didn’t know originally, but now I do.

Albert: Well, now I know, too!

When is Cheryl’s birthday?

Originally, Mr. Kong said this was a problem inflicted on fifth-graders, leading to hand-wringing that Singapore children were way better at math than everyone else in the world and worries that Singapore children were being mentally abused with convoluted logic at a young age.

It turned out the problem actually came from a math olympiad test for math-savvy high school-age students.

How would you fare in a room full of adolescent math competitors in Singapore?

(Once you think you have figured it out — or if you don’t know where to start — here is the answer and an explanation.)