



News

One of the most famous mathematicians to come from America was Katherine Johnson, who died earlier this year, aged 101. One of the three main characters from the *Hidden Figures* film, she worked for NASA in the 1960s, as part of the team that helped get the Apollo astronauts to the moon and back. In her obituary in the Los Angeles Times¹, they said, "In 1961, Johnson did trajectory analysis for Alan Shepard's Freedom 7 Mission, the first to carry an American into space. The next year, she manually verified the calculations of a nascent NASA computer, an IBM 7090, which plotted John Glenn's orbits around the planet." "Our office computed all the trajectories," Johnson told the *Virginian-Pilot* newspaper in 2012. "You tell me when and where you want it to come down, and I will tell you where and when and how to launch it." Margot Lee Shetterly, who wrote the book *Hidden Figures*, on which the film is based, said, "She gave us a new way to look at black history, women's history and American history."

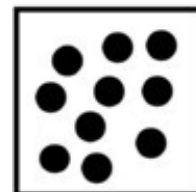
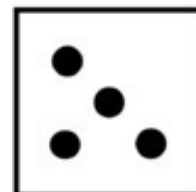


This week's newsletter has a bit of an American theme to it, and a joke about space. Let me know if you solve any of the puzzles.

1. <https://www.latimes.com/obituaries/story/2020-02-24/katherine-johnson-dead>
2. or 'subitizing' if you're American (or maybe if you're English and not great at spelling).
3. I got this from Chris Smith.

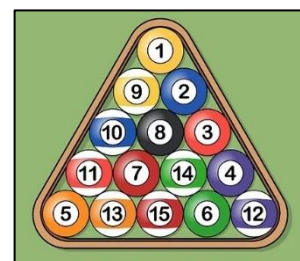
Maths Word

Boris Johnson has said that you are now allowed to meet up in groups of up to six people. Look at the two patterns of dots. How many dots are there in each one? Did you have to count them, or could you just tell how many dots were there by looking at them? You were probably able to tell that there were four dots in the first square just by looking at them, but you probably had to count the ten dots in the second square. This ability to count how many things there are just by looking at them is called **subitising**². Most people can subitise up to about five things, but if you see a group of six people, you'll probably need to count them, unless they are arranged in groups of a smaller number.



Puzzle

In the American game of 'eight-ball', there are 15 numbered balls (from 1 to 15). At the beginning of the game, these balls are arranged in a triangular pattern, as shown. The challenge is to arrange the numbers 1 to 15 in an upside-down triangle pattern such that each number is the result of subtracting the two numbers above it.³



Route 66

Route 66 was a famous road in the first half of the 20th century, that ran from Chicago to Los Angeles. Here is a puzzle based on this famous road.

A bus, in which you can carry as many people as you need to⁴, arrives in Chicago and prepares to travel along Route 66 to



Los Angeles. The bus is already carrying n passengers when it arrives in Chicago and, while it is there, 1 more person gets on the bus. It then begins its journey. In Springfield 2 people get off, in St Louis 4 people get on, in Joplin 8 people get off, in Oklahoma City 16 people get on. At this point, several of the passengers start to think that something strange is going on, so the driver has to explain to them that it's ok and that they're just in a maths puzzle. In Amarillo 32 people get off, and the pattern continues until they reach Los Angeles and a certain number of people get off the bus. The driver looks around at the remaining passengers, only to find that the bus is empty. How many passengers were already on the bus when it arrived in Chicago?

Joke⁵

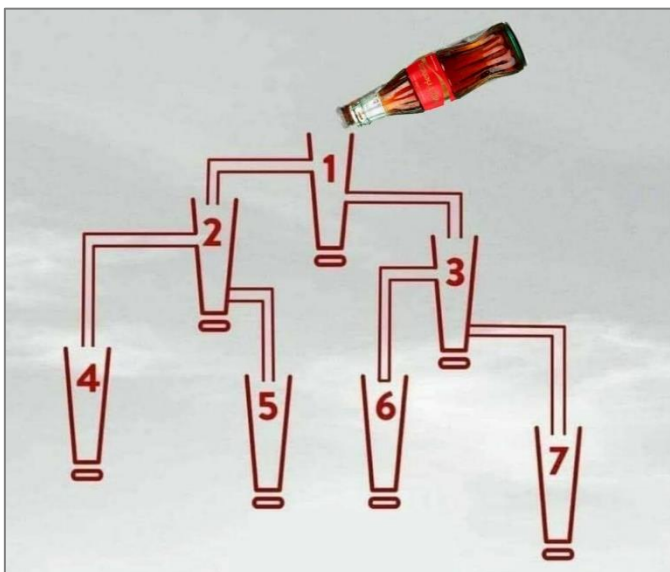
What did Mars tell Saturn?

Please give me
a ring anytime!



American Puzzle

In America, they drink a lot of coke. An American person pours some coke into this elaborate contraption of glass and tubes. Which glass is filled first?⁶



4. It's a magic bus (<https://www.youtube.com/watch?v=kemCgDfiBFM>)

5. I'm really struggling, after 66 newsletters, to find good maths jokes and memes! If you find any good ones, please send them to me!

6. It's also a magic Coke bottle. It contains an infinite amount of Coke.