



There is no number which is **62** times the sum of its digits

### News

In recent weeks, seven temporary hospitals have been set up across England to care for people with Covid-19.

They have been called Nightingale hospitals, after the famous nurse Florence Nightingale, who helped to look after wounded soldiers during the Crimean War of the 1850s. May 12<sup>th</sup> this year marks the 200<sup>th</sup> anniversary of her



birth, so it seemed like a good time to remind you that as well as transforming the entire British healthcare system, she was also a very good mathematician. She loved statistics and understood their importance in bringing about social reform; so much so that in 1858 she became the first woman ever to be admitted to the Royal Statistical Society.<sup>1</sup> She realised though that data was only as persuasive as the graphs that illustrated them, so she became a pioneer in data visualisation, developing several different kinds of graphs to tell people all about the conditions she faced at the hospitals in which she worked. The most famous of her diagrams is called a rose diagram and is like a cross between a pie chart and a histogram. If you would like to know how Florence Nightingale might have tried to help tackle the Covid-19, have a look at the link below.<sup>2</sup> It's very interesting.

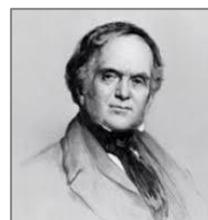
1. The Royal Statistical Society was founded in 1834.

2. <https://www.theguardian.com/society/2020/may/05/how-would-florence-nightingale-tackled-covid-19-200-year-anniversary>

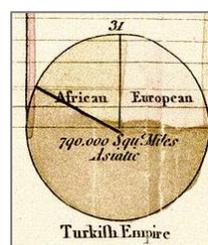
### William Playfair

William Playfair (1759-1823) was a Scottish engineer and political economist, who also acted as a secret agent

for Great Britain during its war with France. He is best known to mathematicians as being the inventor of both the bar chart and the



pie chart. As a secret agent, he reported on the French Revolution, and in 1793 he plotted to sabotage the French economy by making



counterfeit currency. The first pie chart was used to show the proportions of the Turkish Empire located in Asia, Europe and Africa before 1789.

### Lockdown

Since we're still in lockdown, here's a puzzle about a combination lock.



What's the 3-digit code?

6 8 2 one number is correct and in the correct position

6 4 5 one number is correct but in the wrong position

2 0 6 two numbers are correct but in the wrong positions

7 3 8 nothing is correct

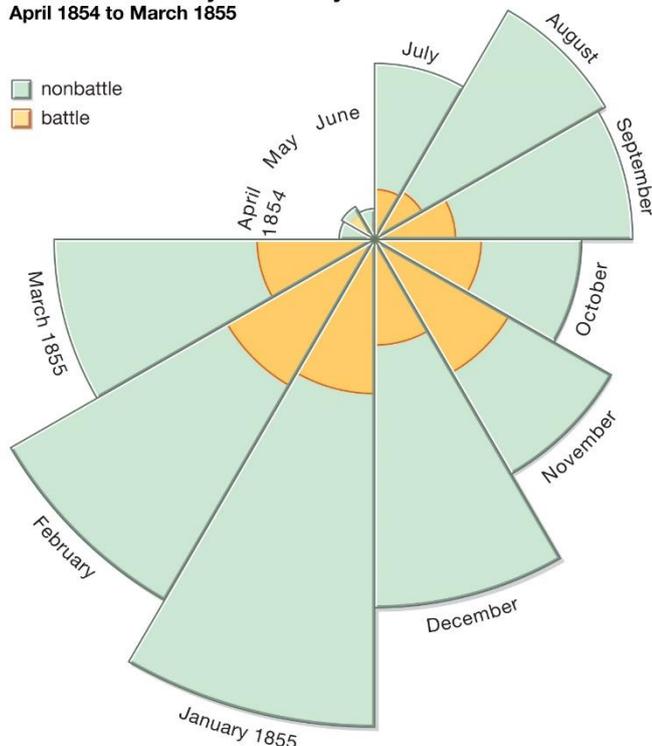
7 8 0 one number is correct but in the wrong position

## The Rose Diagram

In 1858, Florence Nightingale wrote her *Notes on Matters Affecting the Health, Efficiency and Hospital Administration of the British Army*. In it, she created a new kind of diagram called a **rose diagram** to show people how soldiers had died during the war. It's like a pie chart, cut into twelve equal angles, with each slice showing how many deaths per month were caused by battle-related injuries, and how many were caused by diseases. Unlike a regular pie chart though, the rose diagram is a **polar area diagram**, in which frequency is represented by area.<sup>3</sup> As you can see, battle-related deaths take up a very small portion of each slice.

These graphs convinced the government that there was a need to vastly improve the British healthcare system.

Causes of mortality in the army in the east  
April 1854 to March 1855



Based on Florence Nightingale's "Notes on Matters Affecting the Health, Efficiency and Hospital Administration of the British Army," 1858.

3. Like the histograms we learn about at school.

4. This isn't the book that Lucy is reading, but if you're looking for an interesting book about maths to read, you might like this one. I'm currently reading it. It's good.

## Joke

Never trust a person who  
has graph paper.  
They're always plotting  
something.

## How Many Pages?

Lucy is reading a book.

On Monday she reads  $\frac{2}{5}$  of the book.

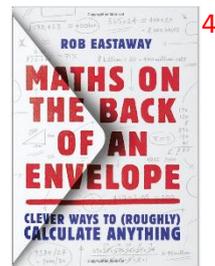
On Tuesday she reads  $\frac{1}{2}$   
of the remaining pages.

On Wednesday she reads  $\frac{5}{9}$   
of the remaining pages.

On Thursday she reads  
the rest of the book.

Lucy read 68 more pages on Tuesday  
than Wednesday.

How many pages are there in the book?



## Puzzle

Here's a puzzle from Chris Smith (@aap03102).



Fill in each of the eight small boxes in the figure above, from left to right, with consecutive integers so that the sum of the integers in the two central boxes is equal to the sum of three integers on the left as well as one-half of the sum of the three integers on the right.