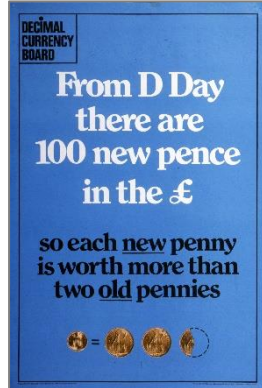




A 7-dimensional hepteract has **84** 5-dimensional penteract faces

### News

This year marks the 50<sup>th</sup> anniversary of decimalisation in the UK. This was when, on 15<sup>th</sup> February 1971, we got rid of the old system of money that was quite complicated and replaced it with the simple system we have now. A lot of people at the time, though, really didn't like the idea of changing the system of money that they were familiar with, even though the new system was going to be easier. We're going to have a look at this in more detail shortly. Meanwhile, here's a puzzle...



### The Diophantus Puzzle

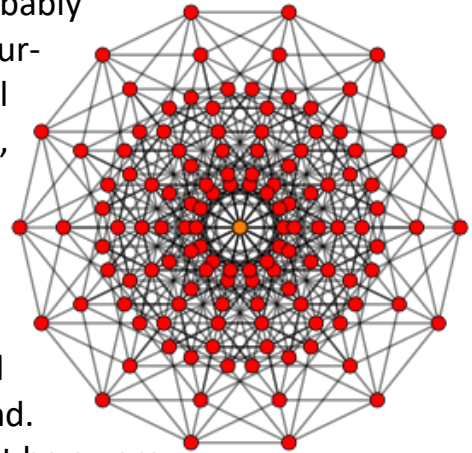
Diophantus was a famous mathematician who lived around 1800 years ago. We only know how old he was when he died from this puzzle: "God gave him his boyhood one-sixth of his life, One twelfth more as youth while whiskers grew rife; And then yet one-seventh ere marriage begun; In five years there came a bouncing new son. Alas, the dear child of master and sage after attaining half the measure of his father's life chill fate took him. After consoling his fate by the science of numbers for four years, he ended his life." How old was Diophantus when he died?<sup>1</sup>



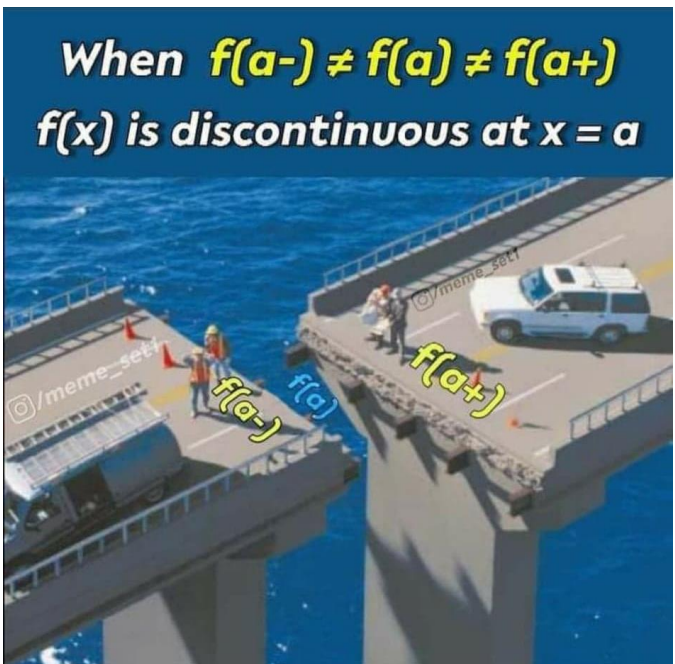
1. This is a very famous puzzle.
2. You may need to look some of these words up in order to really understand what it all means!

### Maths Word

A **hepteract** is a 7-dimensional hypercube. You are probably aware of four-dimensional hypercubes, because we talk about them in class, and you have all seen Flatland. You may not be aware, though, that mathematicians don't see any reason to stop at four dimensions. They just carry on. A hepteract has 128 vertices, 448 edges, 672 square faces, 560 cubic cells, 280 tesseract 4-faces, 84 penteract 5-faces, and 14 hexeract 6-faces!<sup>2</sup>



### Maths Meme



1. This is a very famous puzzle.
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## 50 Years Since Decimalisation in the UK

If, for some reason<sup>3</sup>, the government announced that it was fed up with the current system of money that we are used to using, and that we were going to return to the system that was used before **15<sup>th</sup> February 1971**, this is what you would need to learn.

First of all, there would no longer be 100 pennies in a pound; there would be **240 pence** in a pound. 12 pennies would be called a **shilling**, and **20 shillings** would make a pound. In fact, the system of money that you would be using would be called '**pounds, shillings and pence**'.

Each penny (because a penny could buy quite a lot<sup>4</sup>) could then be split up into 4 **farthings**, or 2 **half-pennies** (pronounced 'ape-knees'<sup>6</sup>). Often the word '**bit**' would be added to the word, so you would talk of an 'ape-knee-bit', meaning a half-penny coin. A shilling was also called a '**bob**', so you might hear someone say that something cost 'two bob' or 'three bob' etc. The word 'bob' was never used in the plural though, no matter how many shillings were involved. The symbol for 'pence' was '**d**'<sup>7</sup>, so if something cost 3 pence, you would write 3d.

Two shillings were called a **florin** (this coin was used as a new 10p coin until relatively recently – also the shilling coin was used as a new 5p coin). One shilling was written **1/-**, because you would write the number of shillings, then a slash, then the number of pence, so if something cost 2 shillings and 6 pence (6 pence, by the way, was called a **tanner**), you would write 2/6 and you would say '**two and six**'. This is what they used to call '**half a crown**'<sup>8</sup>. A whole **crown** was therefore 5 shillings. There was also an interesting twelve-sided three pence coin, or '**thrupny bit**', as you would call it – possibly the most interesting looking British coin, but these had all disappeared by the mid-1970s, as they were not used in the new decimal system. As well as this, a **guinea** was 1 pound and 1 shilling – in other words 21 shillings. I have no idea why.<sup>9</sup>

Would you like to go back to this system? Don't forget that this was all used long before the invention of calculators!

3. I don't know what that reason might be... something to do with Brexit or something, maybe...

4. When I was growing up, most old people used to enjoy telling stories about how much they used to be able to buy for a penny and still have enough change out of it to feed their whole family for a week.<sup>5</sup>

5. This is an exaggeration, but not a huge one. Ask any other teacher who is over 40 years old about this.

6. Yes, exactly like the knee of an ape, or indeed any other large non-human primate.

7. Obviously.

8. 'Half a crown' is what rich people in, say, Dickens novels used to give to young street urchins if they did them a favour – like, say, if you went and bought a goose for Ebenezer Scrooge (in his post-ghost-period).

9. If you want to read more about decimalisation, start by having a look at this article from The Guardian:

<https://www.theguardian.com/money/2021/feb/15/d-day-uk-marks-50-years-since-decimalisation>

