



News

Hello and welcome to the first maths newsletter for this academic year. If you are new to Camp Hill, then you are extra welcome, although you are still welcome even if you're not new.¹ If you are happy to pick up a newsletter that says "I love maths" on it, then you have passed the first test. Well done. There is nothing to be worried about. This is Camp Hill. So have you ever wondered why, if you're talking about something like apples, we say "two apples" and "one apple", but we say "no apples", as if two is plural and one is singular, but zero becomes plural again for some reason... or how even though there are an infinite amount of numbers between 1 and 2, if you start 1 metre away from your desk and walk until you are 2 metres away from your desk, you will have passed through an infinite amount of distances from your desk in a finite amount of time? If you have wondered about these things, or if you haven't but you find this sort of thing interesting, then the make sure you always get the maths newsletter. We write them every few weeks, depending on how much is going on at any particular time. There are also lots of copies of old newsletters in the corridor outside the maths office.

I  maths



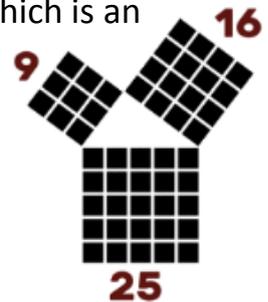
1. This situation factorises like this:

welcome to the maths newsletter + welcome to Camp Hill = welcome(maths newsletter + Camp Hill).

2. Here's a clue: This is a well-known puzzle. It's not really very mathematical, but there is a nice logic to it, and logic is definitely a branch of mathematics.

Maths Word

A **theorem** is a mathematical idea that has been proved to be true. In science, you believe something to be true if, when you carry out experiments, the idea seems to work. Maths is totally different. In maths, we only believe something to be true if it has been proved logically. A famous example of a mathematical theorem is **Pythagoras' Theorem**, which is an idea from the branch of maths called geometry. The word **theory** is only ever used in maths to describe a whole area of maths, such as number theory, graph theory or game theory.



Logic Puzzle

Here is a puzzle for you to think about.

There is a lightbulb inside a closet. The door is closed, and you cannot see if the light is on or off through the door. However, you know the light is now off. Outside of the closet, there are three light switches. One of the switches controls the lightbulb in the closet. You can flip the switches however you want, but once you open the door, you can no longer touch the switches.



How do you figure out without a doubt which switch controls the light?

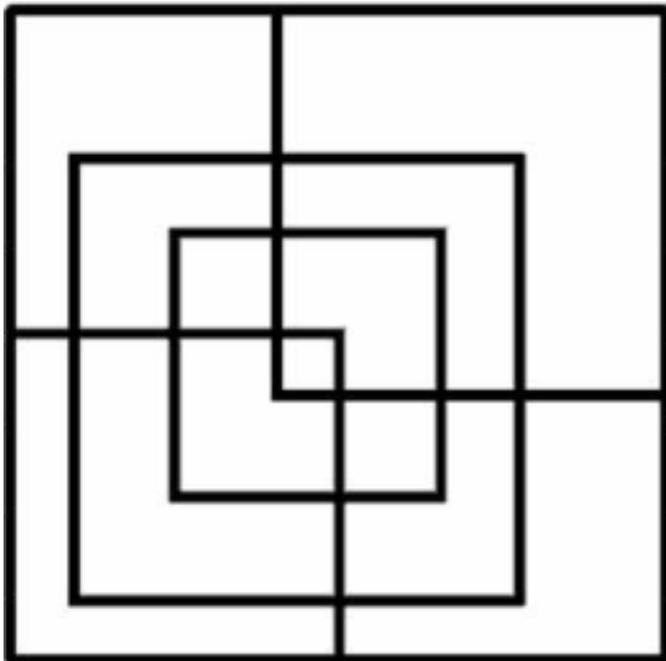
If you work it out, tell your maths teacher and they may give you a house point².

Code Breaking

It's getting close to that time of year again where we start pretending to be code breakers, working at Bletchley Park during World War II. For the past few years now, we have entered Southampton University's annual Cipher Challenge, and we're getting better at it! Last year our team, which consisted mainly of Eleanor Barrell and Emma Hillier (both now in year 12), came fifth nationally, scoring full marks right up until the very last code, which unfortunately was quite difficult and took a day or two to solve. You can register to take part in this on the University of Southampton's website from Friday 21st September. It's a good competition for anybody who likes both maths and computer programming. Please let the maths department know if you decide to sign up.

Another Puzzle

How many squares are there in the following diagram? If you think you know the answer, take it to Dr Taylor, who will give you a house point if you are correct.



3. It's really only suitable for year 11 and sixth form.

4. If you are reading this newsletter, and you're in years 7 or 8, then you should definitely be going to this club!

Birmingham Lecture

The annual public lecture by the London Mathematical Society takes place at the University of Birmingham on Wednesday 19th September. Please let the maths department know if you would like to go to this.³

Maths Puzzle



Each day for a week, a tennis player is to receive a number of tennis rackets as a gift. She knows that she'll get a different number of rackets on each of the seven days and is told exactly how many she'll receive in total. Using only this information, she deduces that on at least one day she'll be presented with at least ten rackets. What is the minimum total number of rackets she could receive for her to know this?

Maths Puzzle Club

Any keen mathematicians in years 7 or 8 are welcome to attend Maths Puzzle Club, which takes place every Thursday lunchtime at 1 o'clock in room 26.⁴ We enter lots of competitions at Camp Hill, and we win quite a lot of them. If you would like to be in one of our maths teams in the future, then you definitely need to be going to this club!

Joke

I've created a Facebook group for compulsive mathematicians. Feel free to add yourself to it as many times as you like.

