



## UKMT Team Maths Challenge Round One Group competition

### Question 1

One class of 30 students averaged 52 on an exam. Another class of 25 students averaged 30 on the same test.

What was the average score of all 55 students?

### Question 2

A cylindrical can will just contain three tennis balls, stacked one above the other.

Find the ratio of the height of the can to the circumference of the can.

### Question 3

Mr Micklefield is a compulsive gardener. He has to plant his trees in rows, which form a perfect square. After forming a large square he finds that 46 trees are still unplanted. He then goes and buys 13 more trees and forms a new square, using all the unplanted trees, one row larger than the previous square.

How many trees has he planted?

### Question 4

Daily at noon, four mathematicians meet for lunch at the Prime Rock Cafe. Although each eats a differently priced snack, they share the bill equally.

Yesterday this resulted in one mathematician paying £1 less than the cost of her snack, another paying £3 more, another £4 less and the last mathematician paid £4. What was the actual price of each snack?

## Question 5

Jack said "I'm in the *prime* of my life, but I must admit that two years ago I was also having a prime year".

Tom said "I know that six years ago you were just an odd square".

We know that Jack can vote but is certainly not an Old Age Pensioner:  
how old is Jack?

## Question 6

Place the following numbers in the grid so that every row, column and diagonal adds to the same 'magic number'.

-4, -3, -2, -1, 0, 1, 2, 3, 4




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1 42

2  $3 : \pi$

3 900

4 £1, £5, £8, £2

5 31 years old

6 eg

-1	4	-3
-2	0	2
3	-4	1

The magic number is 0