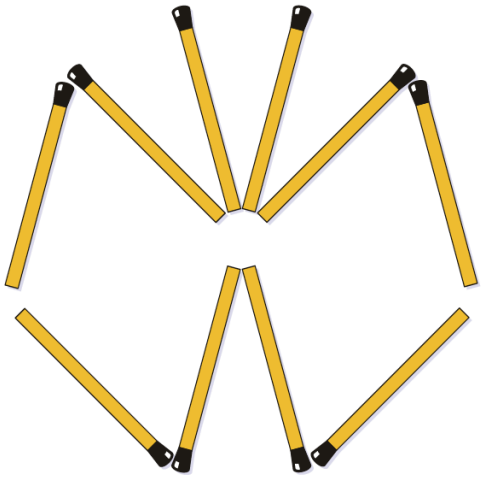
# Mathematics Challenge

**Issue 139**

Dear students and parents, welcome to the Dulwich Mathematics Challenge. Test your brainpower, whatever your mathematical ability. If you would like to contribute a puzzle please email me at chris.stanley@dulwich-beijing.cn



Move only three matches so that the bat will fly in another direction.

**Last week:**
1. **E**
2. **D**
3. **E**
4. **30°**
5. **45**
6. **E**



## Junior Mathematical Challenge

1. One million is approximately the number of

A grains of sand on a beach  B seconds in a day  C people in England and Wales
D grains of sugar in a cupful  E blades of grass on a football pitch

2. An ant is crawling in a straight line from one corner of a table to the opposite corner when he bumps into a one-centimetre cube of sugar. Instead of crawling round it, or eating his way through it, he climbs straight up and over it before continuing on his intended route. How much does the detour add to the expected length of the journey?

A 1cm  B 2cm  C 3cm  D 4cm  E 5cm

3. Our school dinners offer the same basic choice each day. Starters: soup or fruit juice; Main course: meat, fish, salad, chicken or curry; Afters: crumble, cake or sponge. I change my choice of course each day, trying each option in turn, going back to soup after fruit juice, to meat after curry and to crumble after sponge. Today, to celebrate the 2nd UK SMC, I shall sit down to soup, meat and crumble. How many school dinners will I have eaten before I next sit down to the same combination?

A 3  B 5  C 10  D 15  E 30

JMC 1989

## Junior Mathematical Olympiad

4. The area of a square is 0.25 $m^2$. What is the perimeter of the square in metres?

5. Each interior angle of a quadrilateral, apart from the smallest, is twice the next smaller one. What is the size of the smallest interior angle?

JMO 2013

## Intermediate Olympiad

6. A 5 × 5 square is made from 1 × 1 tiles, all with the same pattern, as shown. Any two adjacent tiles have the same colour along the shared edge. The perimeter of the 5 × 5 square consists of black and white segments of length 1. What is the smallest possible number of black segments on the perimeter of the 5 × 5 square?

A 4  B 5  C 6  D 7  E 8

Grey 2014