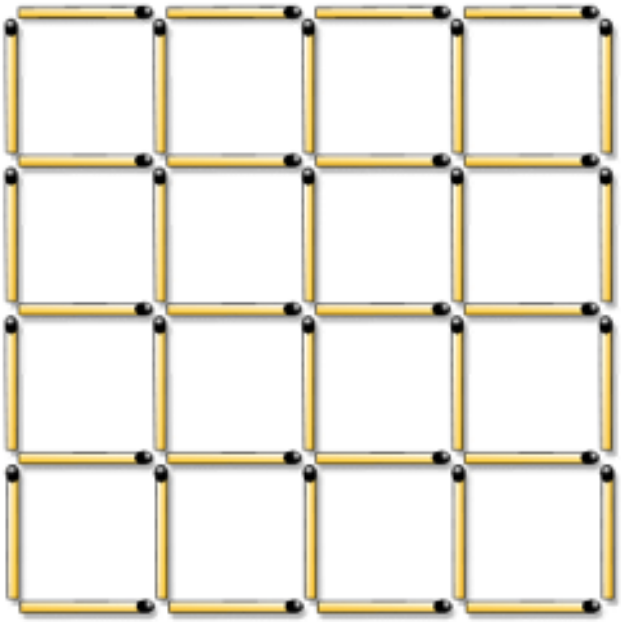
Mathematics Challenge

Issue 119

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



Remove 9 matchsticks so that no square of any size remains.

Last week:
1. **A**
2. **B**
3. **C**
4. **114**
5. **220**
6. **1, 2, 3**

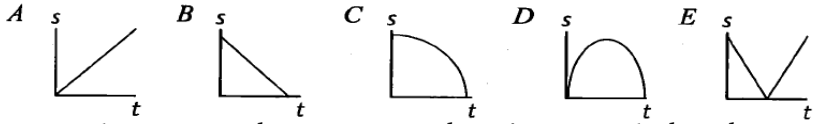
Junior Mathematical Challenge

1. The missing numbers in this calculation add up to

$$\begin{array}{r} \square\,7\,2 \\ -\,3\,\square\,8 \\ \hline 4\,7\,\square \end{array}$$

A 7 B 11 C 13 D 15 E 21

2. I throw a ball vertically up in the air. Which of these graphs might reasonably show the ball's speed (s) against the time (t) since leaving my hand?



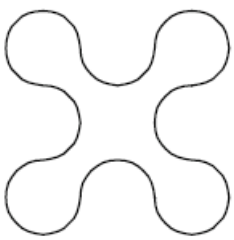
3. In a school photo the 630 pupils are arranged in rows. Each row contains three fewer pupils than the row in front of it. What number of rows is not possible?

A 3 B 4 C 5 D 6 E 7

JMC 1993

Junior Mathematical Olympiad

4. The perimeter of the shape shown on the right is made from 20 quarter-circles, each with radius 2cm. What is the area of the shape?



5. Tamsin has a selection of cubical boxes whose internal dimensions are whole numbers of centimetres, that is, 1cm × 1cm × 1cm, 2cm × 2cm × 2cm, and so on. What are the dimensions of the smallest of these boxes in which Tamsin could fit ten rectangular blocks each measuring 3cm × 2cm × 1cm without the blocks extending outside the box?

JMO 2008

Intermediate Olympiad

6. On Monday in the village of Newton, the postman delivered either one, two, three or four letters to each house. The number of houses receiving four letters was seven times the number receiving one letter, and the number receiving two letters was five times the number receiving one letter. What was the mean number of letters that each house received?

Hamilton 2014