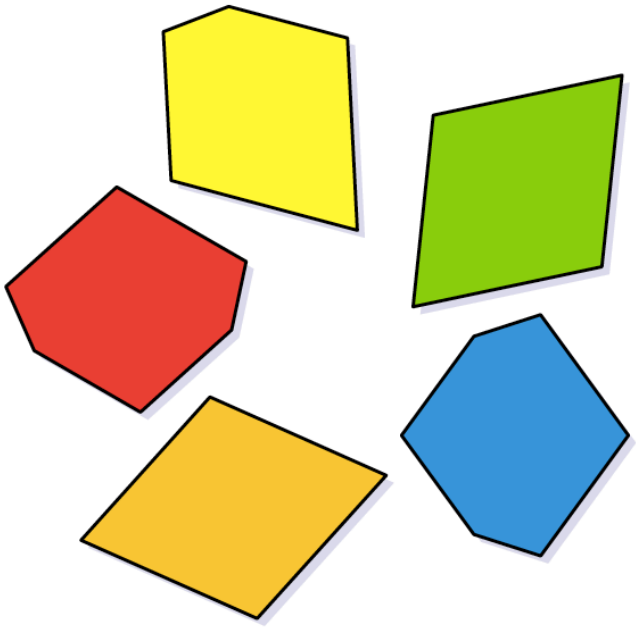
Mathematics Challenge

Issue 130

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



Arrange these five pieces so that to obtain a perfect five-point star. The pieces are allowed to be rotated but not turned over or overlapped.

Last week:
1. **D**
2. **B**
3. **D**
4. **10**
5. **1706**
6. **523**

Junior Mathematical Challenge

1. Quince, quonce and quance are three types of fruit. If seven quince weight the same as four quonce, and five quonce weigh the same as six quance, then the order of heaviness of the fruits (heaviest last) is

A quince, quonce, quance B quance, quince, quonce C quonce, quance, quince,
D quonce, quince, quance E quince, quance, quonce

2. A child's box of bricks contains cubes, cones and spheres. Two cones and a sphere on one side of a pair of scales will just balance a cube on the other side; and a sphere and a cube together will just balance three cones. How many spheres will balance a single cone?

A 1 B 2 C 3 D 4 E 5

3. How many pairs of numbers of the form x, 2x + 1 are there in which both numbers are prime numbers less than 100?
A 3 B 4 C 6 D 7 E more than 7

JMC 1988

Junior Mathematical Olympiad

4. Find all the values of m, n and p which satisfy the equation $p^n + 144 = m^2$ where m and n are positive integers and p is a prime number.

July 2014 Mentoring

5. A builder constructs a circular patio from 0.5m square paving stones. The radius of the patio is 3m. How many paving stones does the builder have to cut to shape to form the boundary of the patio?

June 2012 Mentoring

Intermediate Olympiad

6. Nine buns cost £11 + a pence and 13 buns cost £15 + b pence, where $0 < a < 100$ and $0 < b < 100$. What is the cost of a bun?

Maclaurin 2014