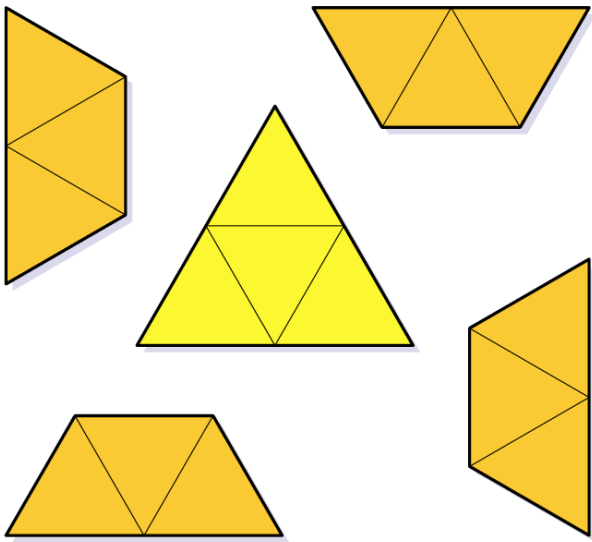




# Mathematics Challenge

## Issue 125

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](mailto:chris.stanley@dulwich-beijing.cn)



Arrange these five pieces so that to obtain a plain equilateral triangle. Pieces can be rotated but not overlapped.

Last week:	
1.	E
2.	D
3.	C
4.	121
5.	31
6.	E

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Richard Candy

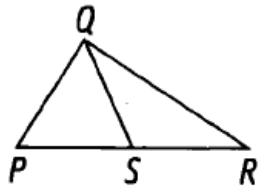
## Junior Mathematical Challenge

1. In the diagram the lengths SP, SQ and SR are equal and the angle SRQ is  $x^\circ$ . What is the size PQR?

- A 90                      B  $2x$                       C  $3x$                       D  $180 - x$                       E  $180 - 2x$

2. If the following values are written in order of size, which will be in the middle?

- A  $1/3$                       B  $3/10$                       C 31%                      D 0.03                      E 0.303



3. Baby's nearly one year old now. We've worked out how to weigh her but nurse and I still have trouble measuring her height. She just will not stand up straight against our measuring chart. In fact she can't stand up at all yet! So we measure her upside down. Last year nurse held Baby's feet, keeping them level with the 140cm mark, while I read off the mark level with the top of Baby's head: 97cm. This year it was my turn to hold the feet. Being taller than nurse, I held them against the 150cm mark, while the nurse crawled on the floor to read the mark level with the top of Baby's head: 84cm. How many centimetres has Baby grown in her first year?

- A 13                      B 237                      C 53                      D 23                      E 66

JMC 1989

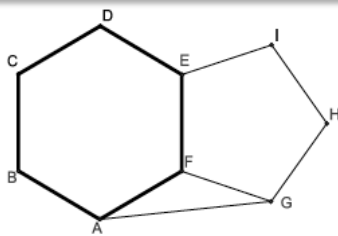
## Junior Mathematical Olympiad

4. The number  $a = 1111 \dots 111$  consists of 2013 digits, all 1s. What is the remainder when  $a$  is divided by 37?

January 2013 Mentoring

5. In the figure ABCDEF is a regular hexagon, EFGHI is a regular pentagon so triangle AFG is isosceles. Calculate angle GAF.

February 2013 Mentoring



## Intermediate Olympiad

6. The numbers  $a$ ,  $b$  and  $c$  satisfy the equations  $a + b + c = 500$  and  $3a + 2b + c = 1000$ . What is  $3a + 4b + 5c$ ?

- A 2000                      B 1900                      C 1700                      D 1600                      E 1500

Grey 2014