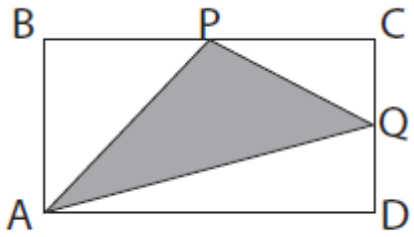
SASMO Sample Paper (S3)

1. In rectangle *ABCD* , *P* is the midpoint of side BC and *Q* is the midpoint of CD. The area of $\triangle APQ$ is what fractional part of the area of rectangle *ABCD?*
在長方形*ABCD*中，P是邊BC的中點，Q是CD的中點。問$\triangle APQ$的面積佔長方形*ABCD*的面積的幾分之幾？



2. Find the value of integral part of $\sqrt{1+3+5+...+45+47+49}$.
求$\sqrt{1+3+5+...+45+47+49}$的整數部分的值。

3. How many degrees are in the angle formed by the hands of a clock at 8:24?
在8:24時，求時針和分針的夾角。

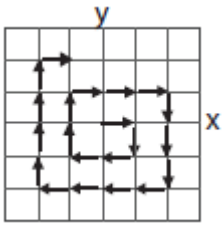
4. How many different triangles can be formed whose 3 vertices are chosen from the rectangular array of 8 points shown?
在以下八個點中，以其中三點作為三角形的三隻角，問可以形成多少個三角形？

5. Line segments form a path that starts at (0,0), is drawn to (1,0), and then to (1,2). Each new segment forms a right angle with the segment before it and is 1 unit longer than that segment. The path ends at (0,0). How many segments are in the shortest possible path?
(*Hint: Consider horizontal and vertical segments separately.)*
線段由(0,0)畫至(1,0)，再畫至(1,2)。每一條線段的長度都垂直之前每一條線段，而且比它長1單位。最後路線在(0,0)結束。問在最短的路線中，最少有多少條線段？
（提示：分開考慮水平線和垂直線）

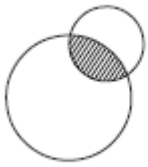
6. 561 is the product of 3 different prime numbers. How many factors of 561 are not prime?
561是3個不同質數的乘積。問561的因數中有多少個是非質數？

7. The first three terms in a sequence are: 1, 2, 3. Each term after that is the opposite of the sum of the three previous terms. For example, the 4^{th} term is -6 (the opposite of $1+2+3$),and the 5^{th} term is 1. What is the 99^{th} term?
在某數列中，首三項是1, 2, 3。然後接著每一項都是之前三項之和的相反數。例如，第四項是$-6(1+2+3$的相反數)，而第五項是6。問第99項是多少？

8. The picture shows a "spiral" that begins at the origin (0,0) and passes through every lattice point in the plane. Each small arrow is 1 unit in length. Following the "spiral", what is the length of the path from the origin to the point (5,3)?
下圖顯示了一個「螺線」，它在(0,0)開始，然後經過平面上每一交點。每一個小箭頭都長一單位。問由(0,0)開始至(5,3)，路徑長多少？



9. A circle with radius 5 cm intersects a circle with radius 3 cm as shown. The area of the shaded region is $\frac{7\pi}{2}$ square cm. Find the total combined area inside the circles, but outside the shaded region. Leave your answer in terms of π.
在下圖中，一個半徑5厘米的圓相交一個半徑3厘米的圓。陰影部分的面積是$\frac{7\pi}{2}$平方厘米。如果不包括陰影部分，兩圓共佔的面積是多少平方厘米？答案以π表示。



10. Starting with 1, Sara lists the counting numbers in order but omits all those that use the digit 9.
What is the 300^{th} number on her list?
由1開始，薩拉列出所有數位不包括9的數字，問第300個數字是多少？