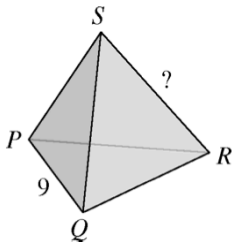
1.

Each of the four vertices and six edges of a tetrahedron is marked with one of the ten numbers 1, 2, 3, 4, 5, 6, 7, 8, 9 and 11 (number 10 is omitted). Each number is used exactly once. For any two vertices of the tetrahedron, the sum of the two numbers at these vertices is equal to the number on the edge connecting these two vertices. The edge PQ is marked with the number 9. Which number is used to mark edge RS?

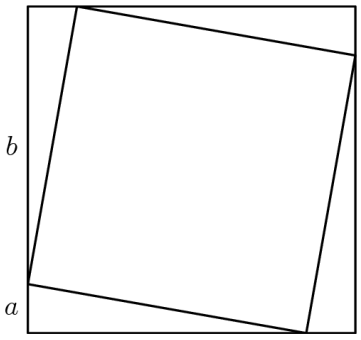


2.

Ria bakes six raspberry pies one after the other, numbering them 1 to 6 in order, with the first being number 1. Whilst she is doing this, her children sometimes run into the kitchen and eat the hottest pie. Which of the following could not be the order in which the pies are eaten?

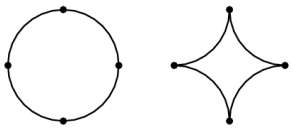
3.

A square with area 4 is inscribed in a square with area 5, with one vertex of the smaller square on each side of the larger square. A vertex of the smaller square divides a side of the larger square into two segments, one of length a, and the other of length b. What is the value of ab ?



4.

A circle of radius 2 is cut into four congruent arcs. The four arcs are joined to form the star figure shown. What is the ratio of the area of the star figure to the area of the original circle?



5.

The product of two positive numbers is 9. The reciprocal of one of these numbers is 4 times the reciprocal of the other number. What is the sum of the two numbers?

6.

Three unit squares and two line segments connecting two pairs of vertices are shown. What is the area of $\triangle ABC$?