



**United Kingdom
Mathematics Trust**

Mentoring Scheme

Supported by **Ox**FORD
ASSET MANAGEMENT

Pythagoras

Sample questions

These questions are taken from the first sheet and give a good indication of the level of difficulty and prerequisite knowledge required at the start of the programme.

1. A polygon of 100 sides has all possible diagonals drawn from a chosen vertex to the others.

How many triangles are formed? What is the sum of the interior angles of the 100 sided polygon?

[You should assume that all the interior angles are less than 180° . This is called a *convex* polygon.]

2. To make 'short' pastry one uses flour to fat (butter, margarine, etc.) in the ratio 2 : 1. To make 'flaky' pastry requires a ratio of 4 : 3.

I have 3 kg of flour and 2 kg of fat and wish to use all the ingredients making some of each type of pastry. How much flaky pastry do I make?

3. The exterior angles of a triangle are in the ratio 4 : 5 : 6. What is the least interior angle?

[The exterior angle of a polygon is the angle between one side and its neighbour extended.]