Progression through key ideas

Understand and use similarity and congruence

Students will already be familiar with similarity through their work on proportional reasoning. Here the focus shifts to properties that may not have been explicitly addressed before, particularly the preservation of angle size when shapes are enlarged.

When exploring congruence, students should be aware of not only what is changing but also what is staying the same, and investigate changes possible which maintain congruence. Exploring similarity and congruence with a range of polygons and triangles should help students refine their understanding of these concepts and avoid confusion between them.

In addition, exploring rotational symmetry offers students a further set of geometrical properties with which to describe and classify shapes.

Key ideas

- Recognise that similar shapes have sides in proportion to each other but angle sizes are preserved*
- Recognise that for congruent shapes both side lengths and angle sizes are preserved
- Understand and use the criteria by which triangles are congruent
- Recognise rotational symmetry in shape

Understand and use Pythagoras' theorem

The relationship described by Pythagoras' theorem offers a context for students to reason deductively and use known facts to generate other mathematical truths. There are many ways to prove Pythagoras' theorem; sharing more than one approach helps students to appreciate the richness of mathematics and provides a context to consider mathematical elegance. Offering students a diagram and asking them to identify known lengths and areas, can develop students' awareness of the relationship.

Method 1 and *Method 2* outlined below provide students with the opportunity to consider the structure behind Pythagoras' theorem.

Method 1