



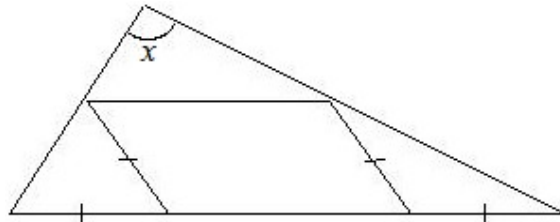
Angles, Polygons and Geometrical Proof

Stage 3 ★★★ Mixed Selection 1

1. Parallelogram in the middle

The diagram, which is not drawn accurately, shows a parallelogram inside a triangle. The marked lengths are equal.

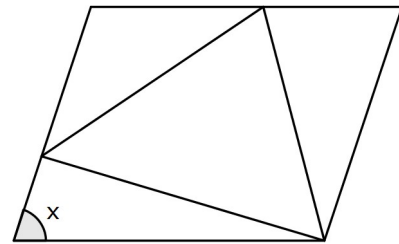
What is the value of x ?



2. Equal lengths

The diagram shows an equilateral triangle inside a rhombus. The sides of the rhombus are equal in length to the sides of the triangle.

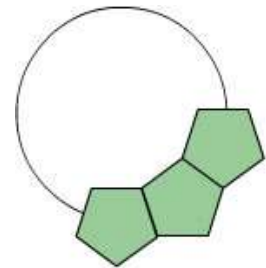
What is the value of x ?



3. Pentagon ring

Equal regular pentagons are placed together to form a ring as shown in the diagram which shows the first three pentagons.

How many more pentagons are needed to complete the ring?



These problems are adapted from UKMT Mathematical Challenge problems (ukmt.org.uk)