



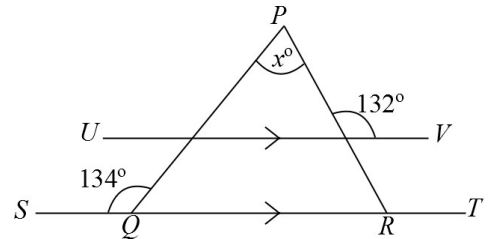
# Angles, Polygons and Geometrical Proof

## Stage 3 ★ Mixed Selection 3

### 1. Parallel base

In the diagram  $ST$  is parallel to  $UV$ .

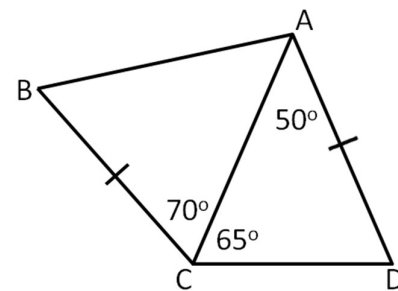
What is the value of  $x$ ?



### 2. Other side

The diagram shows a quadrilateral  $ABCD$ , in which  $AD = BC$ ,  $\angle CAD = 50^\circ$ ,  $\angle ACD = 65^\circ$  and  $\angle ACB = 70^\circ$ .

What is the size of  $\angle ABC$ ?



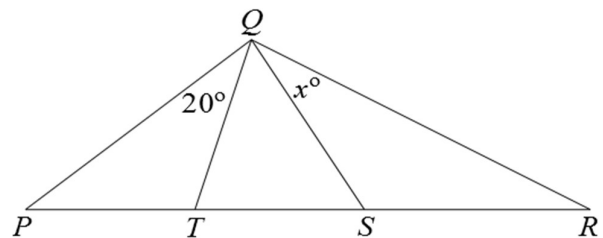
### 3. Half past two

What is the angle between the two hands of a clock at 2:30?

### 4. Tent poles

In the diagram,  $PT = QT = TS$ ,  $QS = SR$ ,  $\angle PQT = 20^\circ$ .

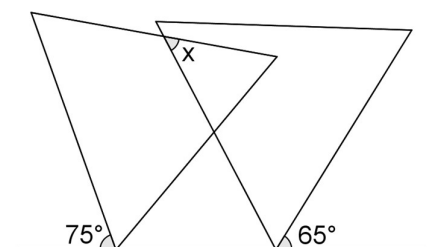
What is the value of  $x$ ?



### 5. Angle of overlap

The diagram shows two equilateral triangles.

What is the value of  $x$ ?



*These problems are adapted from UKMT Mathematical Challenge problems ([ukmt.org.uk](http://ukmt.org.uk))*