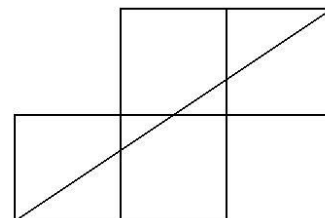## Stage 4 ★
Mixed Selection 1

1. **Tetromino diagonal**
   Four unit squares are placed edge to edge as shown. What is the length of the diagonal line drawn?

2. **Out of the window**
   I have four rectangular pieces of thin hardboard whose dimensions (in cm) are 55 x 85, 65 x 75, 65 x 85, 90 x 105.

   Without bending the hardboard, how many of these can I get through an open rectangular window measuring 60 cm x 80 cm?

3. **Folding in half**
   The shorter sides of a right-angled isosceles triangle are each 10cm long. The triangle is folded in half along its line of symmetry to form a smaller triangle. How much longer is the perimeter of the larger triangle than that of the smaller?

4. **Right-angled possibilities**
   If two of the sides of a right-angled triangle are 5cm and 6cm long, how many possibilities are there for the length of the third side?

5. **Rectangle Rearrangement**
   A 3×8 rectangle is cut into two pieces along the dotted line shown. The two pieces are then rearranged to form a right-angled triangle. What is the perimeter of the triangle formed?
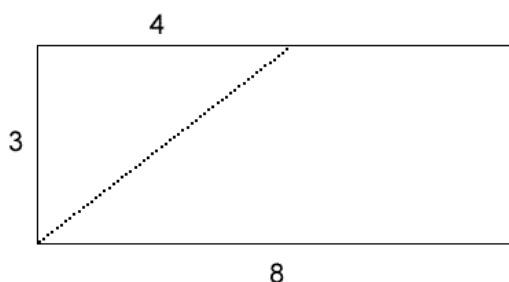
These problems are adapted from UKMT Mathematical Challenge problems (ukmt.org.uk).