Stage 3 ★
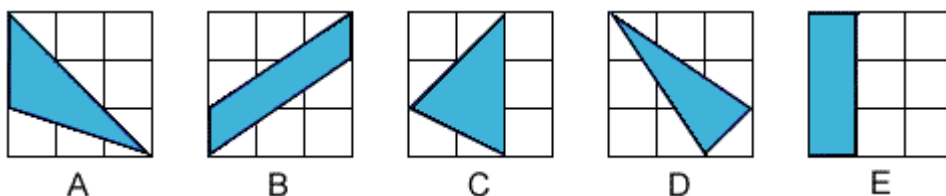**Mixed Selection 1**
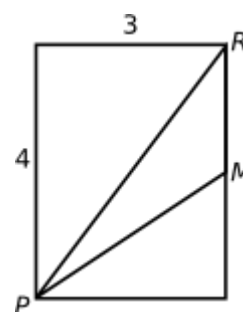
   1. **3x3 areas**
   Which of the following shaded regions has an area different from the other shaded regions?

   2. **Mid-point area**
   M is the midpoint of the side of the rectangle.

   What is the area (in square units) of the triangle PMR?


   3. **Rectangle cutting**
   Tom and Jerry started with identical rectangular sheets of paper. Each of them cut his sheet in half. Tom obtained two rectangles, each with a perimeter of $40\,\text{cm}$ while Jerry obtained two rectangles, each with a perimeter of $50\,\text{cm}$.

   What was the perimeter of Tom's original sheet of paper?

   4. **Hexa-split**
   The three regular hexagons are all the same size. X, Y and Z denote the values of the shaded areas in the hexagons as shown.

   Which of these areas are equal to each other?
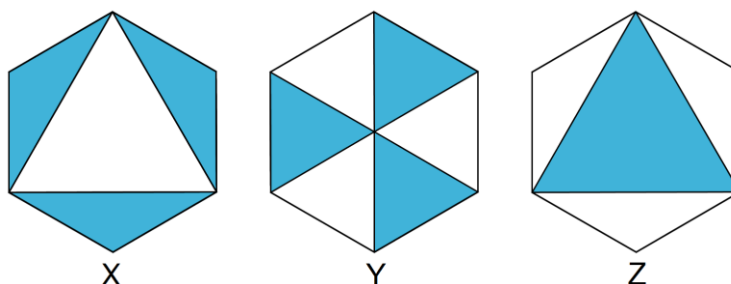
These problems are adapted from UKMT Mathematical Challenge problems (ukmt.org.uk)