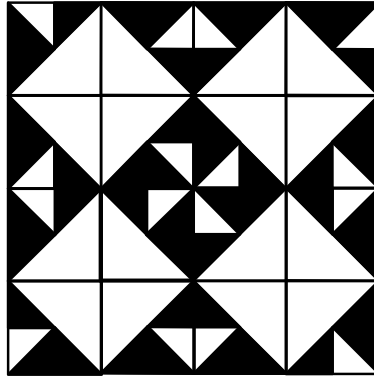
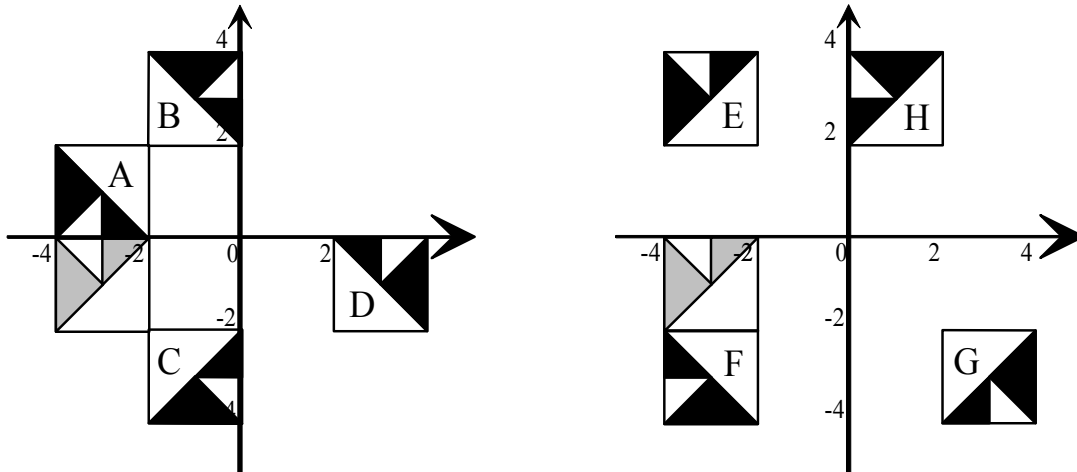


Patterns and Transformations

This pattern has been made out of the same basic design, copied 16 times, and rotated, reflected and translated in various ways.

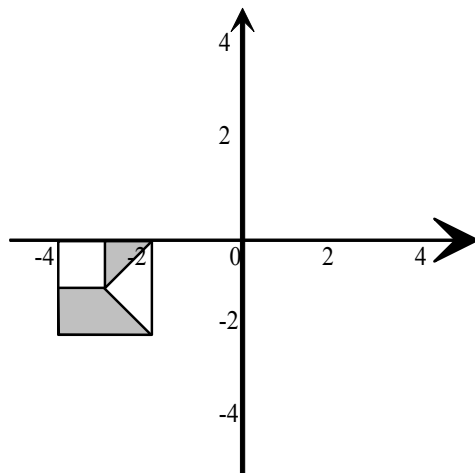


1) Here are some of the individual squares from the pattern above, shown on coordinate axes. Write down what transformation would be necessary to move the starting square (shaded in grey) onto each of the squares labelled A to H.



2) Copy the diagram below, and then start to create a pattern by drawing onto your diagram the image of the shape shown after each of the following transformations:

- Rotation 90° clockwise around the point $(0, -2)$
- Reflection in the line $x = -2$
- Reflection in the line $y = -x$
- Translation $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$
- Translation $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$
- Rotation 180° about $(-1, -1)$



Now finish the pattern off.

3) Make up a pattern of your own on coordinate axes, and write down some of the transformations you have used to create it.