# THIS YEAR'S PRIZE PROBLEM

If a number of copies of a shape can be fitted together to form a larger copy of the same shape, we call the shape a "replicating tile", or a "rep–tile" for short. The number of small tiles which are used to create the large copy is called the order of the rep–tile. For example, the following diagram shows a hexagon which is a rep–tile of order 4: that is, four copies can be combined to form a larger copy of the same hexagon.
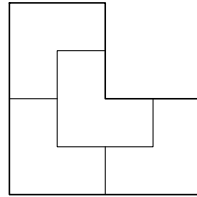


Incidentally, this diagram provides a solution to a well-known puzzle. Another example: the next two diagrams
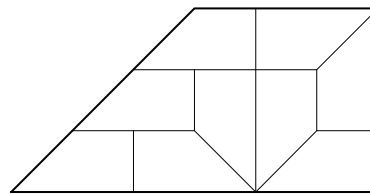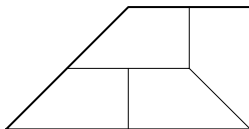


show a polygon for which either four or nine copies may be assembled into a larger similar shape. We shall say that this quadrilateral has order both 4 and 9, so that its minimum order is 4. (Or is it? – perhaps the shape also has order 3 or 2?)

What can you find out about rep–tiles? The best entry sent by a school student (other readers not eligible) and received by us no later than **30th September** will be awarded a book prize, donated courtesy of Penguin Books. Credit will be given for

- rep–tiles with a large minimum order;

- rep–tiles with a large number of sides;

- any other interesting questions you can ask and answer concerning rep–tiles.

Send your discoveries to us, and we will publish them for you.