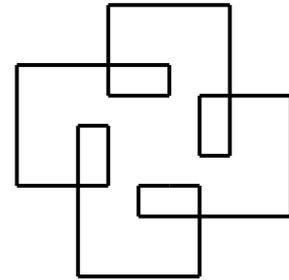
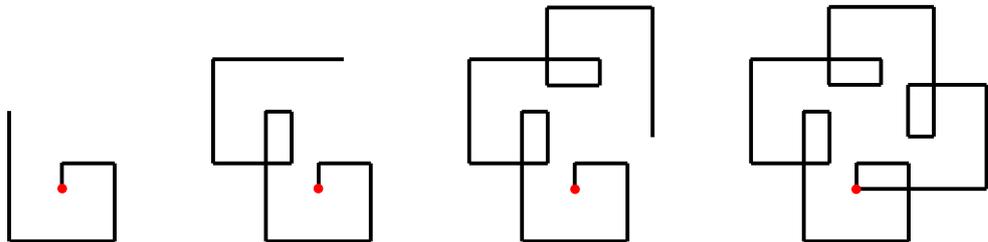
**intro**

In this investigation children work on a rectangular grid and by following simple sequences of commands, trace out spiral patterns of increasing complexity. The basic idea of the spiroilateral is attractively simple but the results can be surprising.

**first steps**

90° spirolaterals are the simplest since they involve only right-angle turns – and at this stage we'll stick to clockwise turns only. This is how the spiroilateral of order 5 works :

Starting at a point on the grid, go along 1cm and turn 90° clockwise, then go 2cm and turn 90° clockwise, then go 3cm, then 4cm and then 5cm, each time turning 90° clockwise. Here you might think you're going to travel 6cm along but – this is an order 5 spiroilateral and so at this point you begin the sequence again, travelling 1cm, 2cm, 3cm and so on, always remembering to turn 90° clockwise after each length, until . . .

**the investigation**

Once the children have understood how the thing works, you can get them to investigate spirolaterals of order 1, 2, 3, 4, 5, 6 and so on . . . obviously children will compare results etc but this is an activity which they should all do for themselves. Sadly, it's not as easy as it looks and some children will go wrong more readily than others . . .

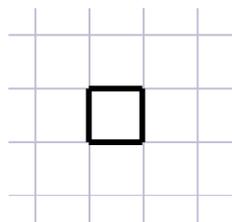
practical

1cm square grid paper and coloured pens, pencils or markers are all the children will need to carry out the investigation. Grid paper with bigger squares might be good for display purposes.

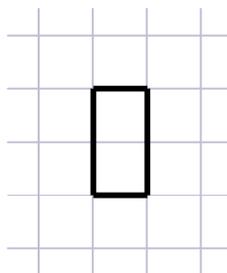
results

Results for spirolaterals up to order 7 are shown on the following pages. Ask the children to put into words what's different about the order 4 spiroilateral; can they find any others like this one?

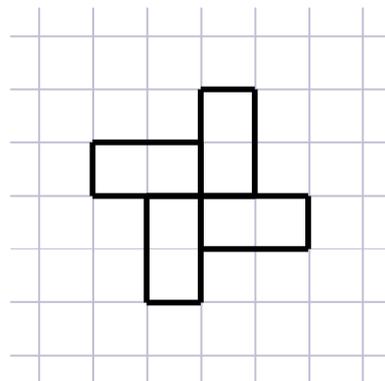
spirolaterals



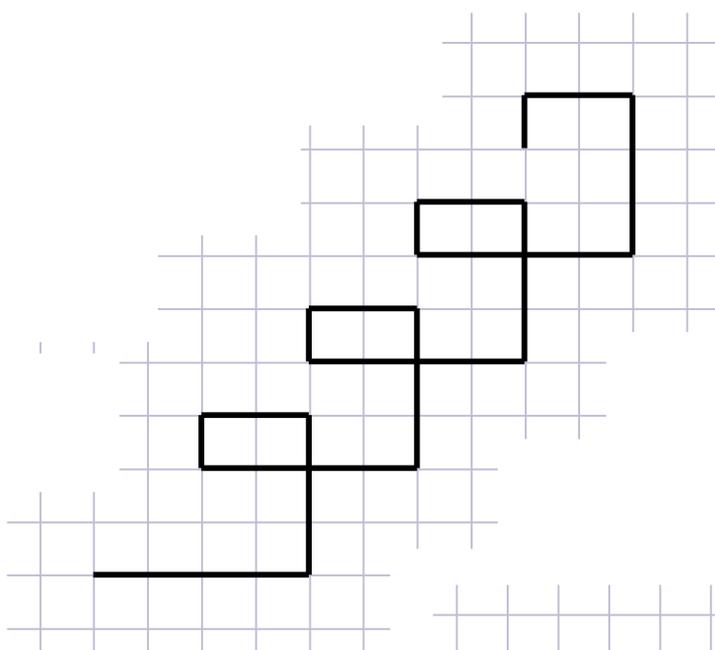
order 1



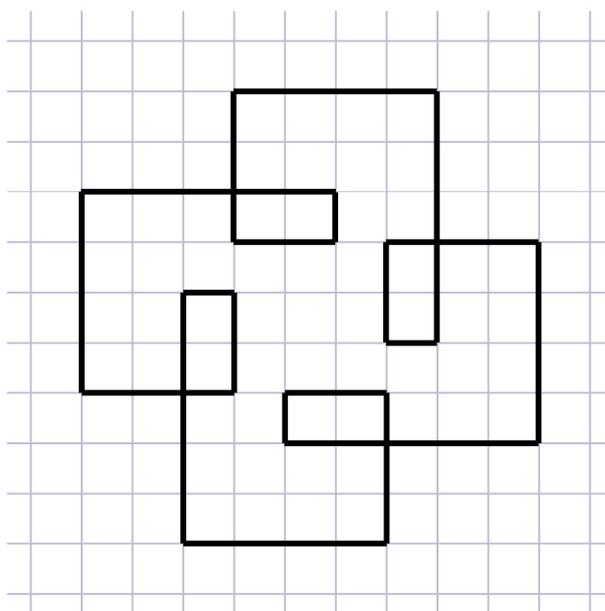
order 2



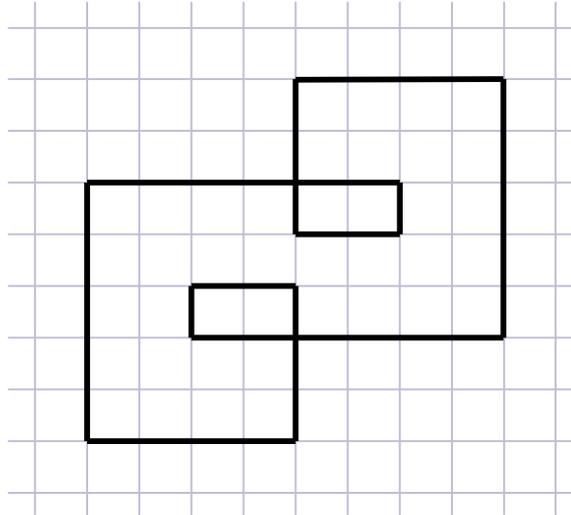
order 3



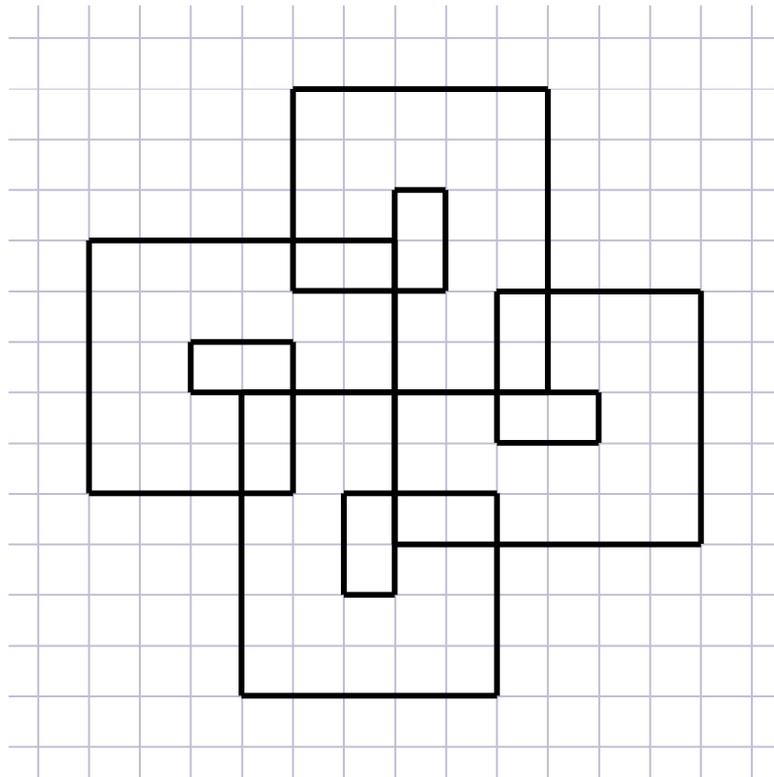
order 4



order 5



order 6



order 7