# Up the Garden Path

You need: a copy of the map of the garden, square grid paper

1. Aisha keeps to the path between the flower beds when she walks through the garden on her way to school each day. She always takes one of the shortest routes.



a. Aisha finds just 2 shortest routes to the middle flower bed.
   Find the number of shortest routes to each of the garden intersections, including the exit. Some are already numbered above. Write all the numbers on your map.
b. Aisha notices a pattern for calculating the number of shortest routes.
   i. Explain how the pattern works.
   ii. Explain why the pattern works.

2. Aisha predicts that 4 rows of flower beds with 4 flower beds in each row will give enough different shortest routes for her to use one a day for 2 months. Is Aisha correct? Explain how you can tell.

1. Aisha's friend Jane has a flower garden with 28 different shortest routes to the exit from the entrance. Draw the arrangement of the flower beds in the garden.

2. Aisha designs a flower garden that allows her to choose a different shortest route from the entrance to the exit every day of the year (365 days). She has as few flower beds as possible. How many flower beds are in her design?

Making and using rules for number patterns