

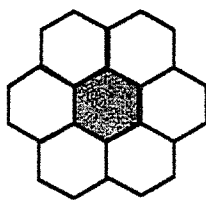
FLOWER BEDS

This problem gives you the chance to:

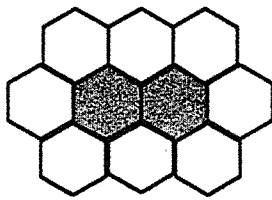
- recognize and continue a number pattern
- draw a graph of a sequence

In the diagram below the shaded hexagons are flower beds, and the white hexagons are white paving stones.

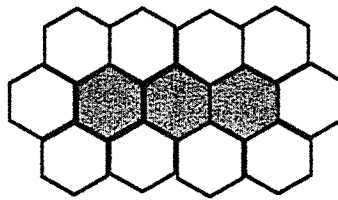
Marco figures out how many white paving stones are needed around different numbers of flower beds.



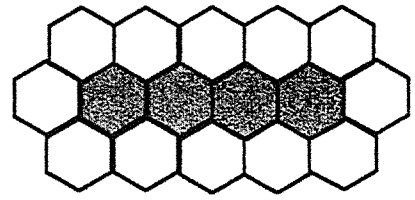
1 flower bed
6 white stones



2 flower beds
8 white stones



3 flower beds
10 white stones



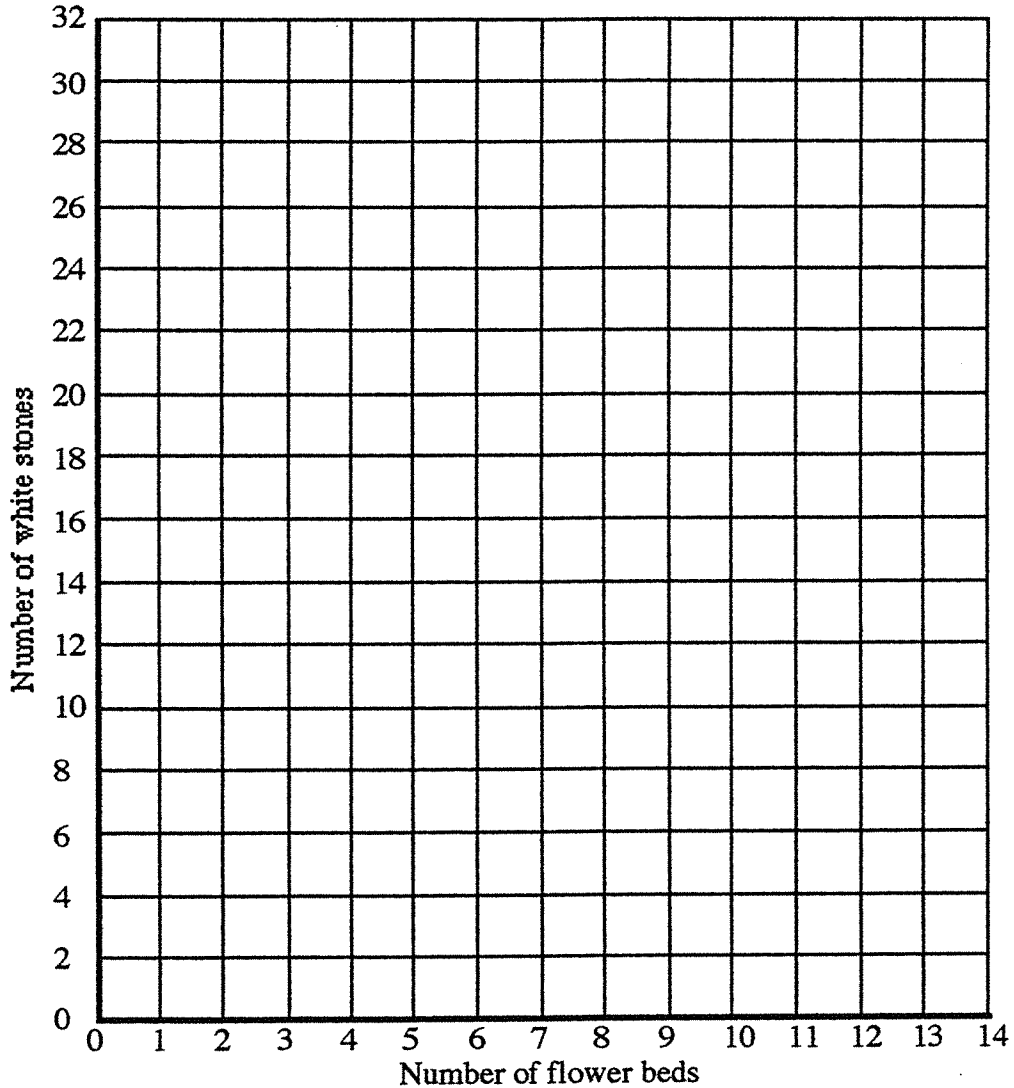
4 flower beds
12 white stones

1. Draw a diagram to show how many white stones are needed around 5 flower beds.

2. Fill in the empty boxes in Marco's table.

Number of flower beds	1	2	3	4	5	6
Number of white stones	6	8	10			

3. On the grid below, plot the results from the table in Question 2.



4. Marco says that 28 white stones are needed around 13 flower beds.

Without drawing the flower beds, explain how you know that Marco is not correct. How many white stones are needed around 13 flower beds?

[15]

SQUARE SPIRALS

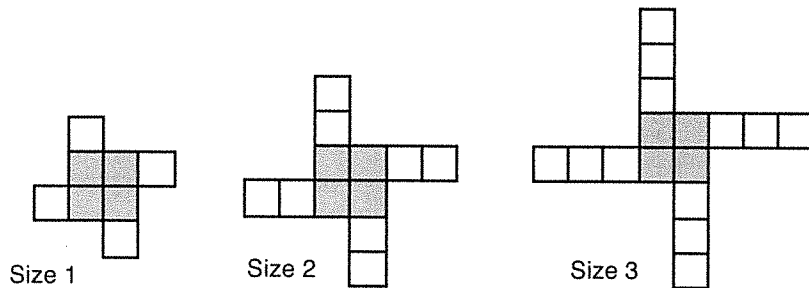
This problem gives you the chance to:

- Find number patterns
- Use number patterns to solve a problem

Maria designs logos. Here is her Square Spiral design.

The design is made with gray and white squares.

She makes this design in many different sizes.



1. Draw Size 4 next to Size 3.

How many gray and white squares are there in Size 4? _____

2. How many gray and white squares does Maria use to make Size 6?

Explain how you figured it out.

3. Write down a rule or formula for finding the **total** number of squares needed to make a Square Spiral when you know its Size number. Let T = total number of gray and white tiles, and S = Size number. Explain clearly.

4. Maria has 84 squares altogether.
What is the largest size spiral she can make? Show how you figured it out.

[10]