INVESTIGATION

Consecutive numbers

5 6 7

8 9 10

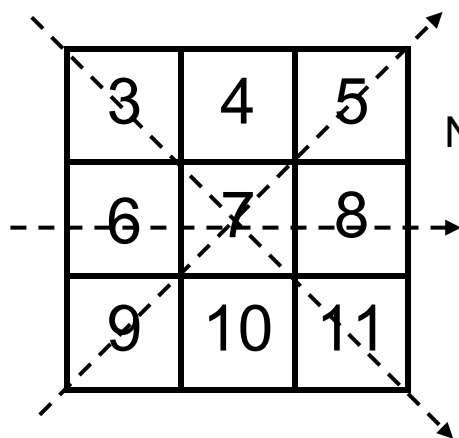11 12 13

MathSphere

Consecutive numbers Investigation

Starter

Choose any nine consecutive numbers.

Put them in a 3 x 3 square.

Here is an example:

Now add the diagonals and the middle line.

What do you notice?

6 + 7 + 8 =

3 + 7 + 11 =

9 + 7 + 5 =

Does this work for other 3 x 3 squares with consecutive numbers in?

What other patterns can you find in this square? What about the middle line adding downwards?

Investigate!!

Some Ideas

Work in a methodical way, recording your results carefully as you go.

Think about how to set out your results clearly.

Try to find as many rules and patterns as you can.

What would happen if you added each row of numbers?
Look at the differences.

What would happen if you added each column of numbers?
Look at the differences.

What would happen if you used a set of numbers going up in twos eg 2, 4, 6, 8, 10, etc

What would happen if you chose 16 consecutive numbers in a 4 x 4 square?

Can you make a prediction for other sized squares?
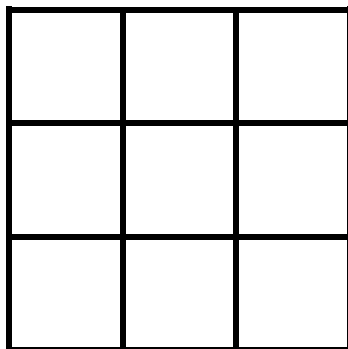
Answer Guide

This is really a mini version of investigating a 100 number square, but many children will feel more confident when faced with a less daunting starting point.

A whole class introduction could concentrate on what consecutive numbers are, how the square is set out and the initial addition of rows and diagonals. The language used to describe parts of the square could also be reinforced - diagonal, row and column.

There are plenty of opportunities to explore this idea, beginning with other sets of numbers, then perhaps moving to numbers in a multiplication table - 2, 4, 6 etc or 3, 6, 9 and seeing if the same patterns emerge.

They may well try random numbers where a pattern does not emerge - this could help them see why a pattern does occur with consecutive numbers.

Some children may notice that the middle number is always four more than the first number and four less than the end number

By adding rows or columns different answers are found, but the important thing is to look at the differences to see the pattern.

Encourage children to ask "What would happen if" questions and try to explain why the diagonals come to the same answer.

Similar questions can be asked on a larger square, 4 x 4 or 5 x 5.