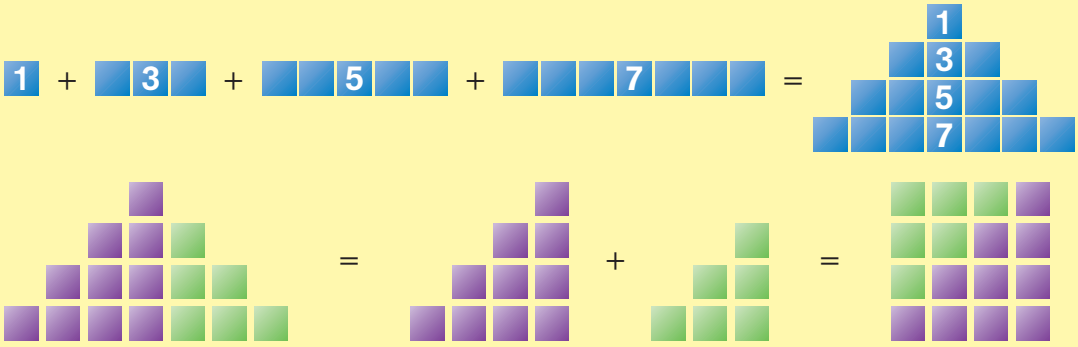
More sequences and series

Generalising and creating formulae



Square numbers can be represented as the sum of consecutive odd numbers.

	Sequence	Square numbers
S_1	1	1
S_2	1 + 3	4
S_3	1 + 3 + 5	9
S_{25}	1 + 3 + ⋯ +?	?
S_{64}	1 + 3 + ⋯ +?	?
S_{95}	?	?

Have you a method for filling in the missing numbers quickly?

What is the sum of 1 + 3 + ⋯ + 149 + 151 + 153?
Which square number has this value?

What is the value of 51 + 53 + 55 + ⋯ + 149 + 151 + 153?
Which square numbers could help you find this value?

You could now explore square numbers as the sum of two consecutive triangle numbers.

More sequences and series: grid

Resource sheet