

What an odd thing!

Children create a triangle of odd numbers and identify the patterns when rows are summed or their end numbers are averaged.

Skills practised:

- Adding several two-digit numbers
- Halving numbers with 2 or 3 digits
- Recognising square and cube numbers

Conjecture: We can use a triangle of odd numbers to create squares and cubes.

What to do:

Children work individually or in pairs.

1. Lay out odd numbers in a triangle like this:

```
      1
     3  5
    7  9 11
   13 15 17 19 and so on.
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2. Continue until you have at least 8 rows.
3. Add the numbers along each row in the triangle. Write this number in blue.
4. Add the beginning and end number of each row and divide by 2. Write this number in red.
5. Look at the blue numbers for each row. Can you recognise and name these numbers?
6. Look at the red numbers for each row. Can you recognise and name these numbers?

Discuss what you notice.

7. Try adding two more rows to your triangle.
8. Is the pattern sustained?

CHALLENGE: Can you find any other patterns in the triangle of odd numbers?

Try looking at the triangle inside the large one (i.e. remove the outer diagonals, 1, 3, 7, 13, etc. and 1, 5, 11, 19, etc.) Add the rows. You will have to play about a bit with square numbers to spot the pattern.

Aims:

- To recognise number properties
- To explore patterns in a triangle of odd numbers

Minimum number of calculations expected

12 - 20

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7. Try adding two more rows to your triangle.
8. Is the pattern sustained?

	1		1	
	3	5		8
	7	9	11	27 9
	13	15	17	19
	21	23...		

$18 \div 2 = 9$

Challenge

Can you find any other patterns in the triangle of odd numbers? Try looking at the triangle inside the large one (i.e. remove the outer diagonals, 1, 3, 7, 13, etc. and 1, 5, 11, 19, etc.) Add the rows. You will have to play about a bit with square numbers to spot the pattern.