



Trick product – all the ones

Spotting the Pattern

Calculate the following sums. Using a non calculator method will help you spot reasons and justifications for the pattern.

- 1) $11 \times 11 =$ _____
- 2) $111 \times 111 =$ _____
- 3) $1,111 \times 1,111 =$ _____
- 4) $11,111 \times 11,111 =$ _____

Can you continue the pattern?

Examining the pattern

- 1) Can you explain what is happening with the first and last digit of each answer and why?

- 2) Can you explain a generalised rule?

Powers of 10

1) Express 11×11 as a product of two numbers as powers of 10

a. $11 = 10^{\square} + 10^{\square}$

b. $(10^{\square} + 10^{\square})(10^{\square} + 10^{\square}) = \underline{\hspace{10cm}}$

2) Extend the method to 111×111

3) 1111×1111

4) You can work out what numbers you will get by using an addition square. Fill in the following square and use it to justify your pattern.

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

5) Can you explain why this table shows that $1,111,111,111^2$ breaks the pattern?
