

Next door additions

Children add pairs of three-digit numbers and look for patterns in the digital roots of the answers.

Skills practised:

- Using written addition to add pairs of three-digit numbers

Conjecture: *There is a pattern in digital roots when you add pairs of three-digit numbers which have consecutive digits, and the digits in the second number are one more than each digit in the first number.*

What to do:

Children work individually or in pairs.

1. Use expanded or column addition to work out $123 + 234$.

$$\begin{array}{r} 100 \ 20 \ 3 \\ + \ 200 \ 30 \ 4 \\ \hline 300 \ 50 \ 7 \quad \underline{357} \end{array} \qquad \begin{array}{r} 1 \ 2 \ 3 \\ + \ 2 \ 3 \ 4 \\ \hline 3 \ 5 \ 7 \end{array}$$

2. Add the digits together from your answer 357: $3 + 5 + 7 = 15$. Then add the digits again so that you get a single-digit answer: $1 + 5 = 6$. This is called finding the digital root.
3. Now repeat with $234 + 345$ and then $345 + 456$ and so on. Can you see what is special about each pair of numbers?
4. What do you notice about the digital roots of the answers?

What happens if you try pairs of numbers like $987 + 876$ and $654 + 543$?

Aims:

- To make and test hypotheses

Minimum number of calculations expected

12

Next door additions

- Use expanded or column addition to work out $123 + 234$.
- Add the digits together from your answer. Then add the digits again so that you get a single-digit answer. This is called finding the digital root.
- Repeat with $234 + 345$ and then $345 + 456$ and so on. What is special about each pair of numbers?
- What do you notice about the digital roots of the answers?

What happens if you try pairs of numbers like $987 + 876$ and $654 + 543$?

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	$1+5=$			

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