Formal written method of column addition (2)

National curriculum attainment targets

- Add numbers with up to three digits, using the formal written method of columnar addition
- Estimate the answer to a calculation and use inverse operations to check answers

Lesson objectives

- Add three-digit numbers using the formal written method of column addition
- Estimate the answer to a calculation

Previous related lessons

None

Prerequisites for learning

Pupils need to:

- understand the place value of three-digit numbers
- recall and use addition facts to 20 fluently, and derive and use related facts up to 100
- use the formal written method of column addition and carry ones

Vocabulary

place value, hundreds, tens, ones (units), estimate, carry

Future related lessons

Unit 9, Week 2, Lesson 2; Unit 11, Week 1, Lesson 1; Unit 11, Week 1, Lesson 2

Success criteria

Pupils can:

- write the calculation vertically
- add the ones
- carry ten when needed
- add the tens
- carry hundreds when needed
- add the hundreds

Getting Started

- Choose an activity from Number – Addition and subtraction.
- Choose an activity from *Fluency in Number Facts: Y3/Y4* – Addition and subtraction.

Teach

Resources

mini whiteboard, pen and eraser (per child)

- Display: Slide 1.
- Say: **In your head, what is your estimate for the answer to this question?** Ask some children to share their estimates.
- Say: **Work out this question using the formal column method.**
- Work through the calculation as a class, if appropriate.
- Display: Slide 2.
- Say: **In this calculation, it is the tens column that we need to carry.**
- Ask: **What is the answer I write in the ones column?** Write 7 in the answer box.
- Say: **Next we add the tens.**
- Ask: **What is the tens calculation?** Insist that children say 70 add 60 and not 7 add 6. Encourage the use of known addition facts to work out the answer.
- Say: **As 70 plus 60 is 130, I cannot write that in the tens column.** Write 130 on the board.
- Ask: **How many hundreds in 130?** (1) Say: **So I carry that one hundred to the hundreds column. I am going to put it below the answer line, ready to add in with the hundreds.**
- Cross out the 1 from the 130 you wrote on the board. Point and say: **So now I have 30 or 3 tens left. I can put the 30 in the tens column.** Write 3 in the answer box.
- Say: **Next we add the hundreds.**
- Ask: **What is the hundreds calculation?** Insist that children say 300 add 400 and not 3 add 4. Encourage the use of known addition facts to work out the answer.

The word "ones" has been used throughout this lesson when referring to the least significant digit. However, children also need to be familiar with the word "units".

$$
\begin{array}{r}
436 \\
+ \ 248 \\
\hline
684 \\
\small 1
\end{array}
$$

- Say: **We need to remember to add on the hundred we carry so the answer is 800.** Write 8 in the answer box.

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- Display: Slide 3.
- Say: **Estimate the answer to this calculation.**

↓ Work out a calculation that requires no carrying, for example, 254 + 335.

- Say: **Work out this calculation. Use the formal method for addition. Remember, you will need to carry the tens to the hundreds column.**
- Work through the calculation as a class and focus on any aspects children find challenging.
- Display: Slide 4.

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- Say: **Estimate the answer and then work it out.**

↑ Work out a calculation that requires the ones and the tens column to be carried, for example, 468 + 367.

- Work through the calculation as a class, focusing on any aspects children find challenging.

Individualised Learning

Refer to Activity 3 from the Learning activities on page 277.

Pupil Book 3B – Page 30: Column addition (2)

Progress Guide 3 – Extension, Year 3, Unit 7, Week 1, Lesson 3: Addition puzzle

Plenary

- Display the instructions that you wrote as a class in Unit 7, Week 1, Lesson 2. Read them together.
- Ask: **Do we need to add anything to these instructions after today's lesson?** Share children's suggestions and update the instructions to allow for carrying tens.
- Say: **This formal method for addition is a written method. That means we need to write it down, not work it all out mentally. We use this method when the numbers are too large to be added mentally.**
- Say: **I am going to say a calculation. If you think it is a calculation we can do mentally, make an M shape with your fingers, if you think we need to use the written method make a W with your fingers.**
- Say various calculations for the class to respond to, for example, 432 + 50, 432 + 163, 58 + 31.
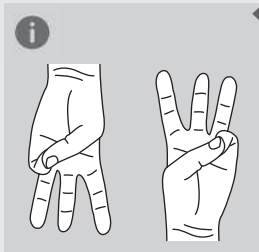
Overcoming Barriers

- Children will find this method challenging if they do not have a secure understanding of the place value of three-digit numbers and instant recall of the addition number facts to 20. Continue to focus on mental methods to develop this understanding or continue to use the expanded method.