Formal written method of column addition (1)

National curriculum attainment targets

- Add numbers with up to three digits, using the formal written methods 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
- understand the expanded written method of column addition

Vocabulary

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

Future related lessons

Unit 7, Week 1, Lesson 3; 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 and carry ten when needed
- add the tens
- 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.

Collins Connect
Year 3, Unit 7, Week 1

Teach

Resources

mini whiteboard, pen and eraser (per child), Base 10 (per class) (optional)

The layout for the formal written method of column addition used in this lesson will continue to be used in future lessons. If this does not fit with your Calculation Policy then adapt lessons accordingly.

- Display: Slide 1.
- Say: **We are going to continue to learn a method for adding numbers that are too large to add mentally. The expanded method will help us understand the formal method.**
- Say: **First let's estimate the answer to the calculation with your partners.** After about 20 seconds, ask for some estimates.
- Say: **In both calculations, we start with the ones**.
- Ask: **What is the ones calculation?** Ask a child to write the answer on both versions.
- Ask: **What is the tens calculation?** Insist that children say 70 add 20 and not 7 add 2. Encourage the use of known addition facts to work out the answer.
- Model where to put the answer in both versions. Say: **We write 9 straight into the answer box. As the 9 is in the tens column, it means 90.**
- Ask: **What is the hundreds calculation?** Insist that children say 300 add 400.
- Model where to put the answers in both versions. **As the 7 is in the hundreds column it means 700.**
- Add up the hundreds, tens and ones on the expanded version. Say: **We have the same answer in both calculations.**
- Say: **Discuss the two methods and what you like about them.** Share children's ideas and reasons.
- Display: Slide 2.
- Say: **Estimate the answer to this calculation.**
- Say: **Work out this calculation. Use the formal method for addition.**

375	375
+ 423	+ 423
8	798
90	
700	
798	

Children continue with the expanded method.

Model the carrying using Base 10.

- Display: Slide 3.
- Say: **In this calculation, the ones add up to 14.** Write 14 on the expanded version.
- Ask: **What are the ones in 14?** (4) **So I can write 4 in the ones column on the formal version.**
- Ask: **How many tens in 14?** (1) Say: **The 10 must go in the tens column; I cannot write it in the answer line as I know there are more tens to add. I carry the 10 from the ones column to the tens column but I write it under the answer box.** Write 1 under the answer line.
- Say: **When we add up the tens column, we will add it on.**
- Add the tens digits and say: **20 add 50 is 70, and then I add on the 10 we carried over; that makes 80.** Write 8 in the tens column.
- Continue modelling the calculation. Fill in the expanded version if it is appropriate for your class.

428	428
+ 356	+ 356
14	784
70	1
700	
784	

- Display: Slide 4.
- Say: **Estimate the answer and then work it out. Remember to carry the ones into the tens column.**
- Work through the calculation as a class, focusing on any aspects children find challenging.

Individualised Learning

Refer to Activity 2 from the Learning activities on page 276.

Pupil Book 3B – Page 29: Column addition (1)
Progress Guide 3 – Extension, Year 3, Unit 7, Week 1, Lesson 2: Addition instructions

Plenary

Resources

mini whiteboard, pen and eraser (per child)

- Say: **We are going to write some instructions to help us with this method for addition.** If any children have worked on Extension: Addition instructions, ask them to have their instructions ready to share.
- Ask: **What do you think the first instruction should be?**
- Work together as a class and compile a set of instructions.
- Write a calculation on the board for the class and ask them to copy it onto their whiteboards.
- Say: **I will read out the instructions. Follow the instructions to work out the calculation.**
- As the instructions are carried out, ask the class if they think they work or whether they need to be adapted.
- Say: **We can use these instructions every time we learn about the formal column method.**

Homework Guide 3
Year 3, Unit 7, Week 1, Lesson 2: Practising the column method for addition

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.