

# Expanded written method of column addition

## 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

## Lesson objectives

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

### 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

### Vocabulary

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

### Success criteria

Pupils can:

- write the calculation vertically
- add the ones, tens, hundreds
- combine the answers



**i** This lesson covers the expanded written method for addition. This is an important step in learning the formal written method of column addition as it develops children's understanding of the method, for example, 241

$$\begin{array}{r} + 157 \\ 8 \\ 90 \\ 300 \\ \hline 398 \end{array}$$

**i** 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".



↓ Ask about the value of each digit.



↓ Write the HTO above the numbers.

## 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)

- Say: **There are mental methods for adding and there are written methods for adding. Today we are going to start learning a written method. Written methods are useful when we need to add large numbers together.**
- Write: 241 on the board.
- Ask: **What is the place value of this number?**
- Establish that as it is a three-digit number, then the digits are worth hundreds, tens, ones.
- Display: Slide 1.
- Say: **Look at this calculation and estimate the answer with your partner.** Show the calculation for approximately 10 seconds.
- Share children's ideas and discuss what makes a sensible estimate.
- Ask: **Why do we need to be able to estimate an answer?** Discuss children's suggestions.
- Say: **For this method of addition, we use the place value of the digits. We write the numbers out with hundreds under hundreds, tens under tens and ones under ones.**
- Display: Slide 2. Show the calculation on the slide. Say: **To make adding these two numbers easier, we add ones to ones, tens to tens and hundreds to hundreds.** Point to the relevant digits as you speak.
- Say: **We start by adding the ones.**
- Ask: **What is the ones calculation?** Establish that it is  $1 + 7$ . Write 8 in the first line of the answer box.
- Ask: **What is the tens calculation?** Establish that it is  $40 + 50$ . Say: **It is not 4 add 5, as the digits are the tens digits.** Write 90 in the second line of the answer box. Encourage the use of known addition facts to work out the answer.
- Ask: **What is the hundreds calculation?** Establish that it is  $200 + 100$ . Ask: **Why isn't it 1 add 2?**

↓ Add two two-digit numbers.



- Say: **Now we have added the ones, tens and hundreds separately, we need to put them back together.**
- Model how to add them up mentally, for example, 300 add 90 is 390 and then add on 8, so the answer is 398.
- Write 398 in the answer box.
- Display: Slide 3.
- Show the calculation and ask children to estimate the answer. Ask some children for their estimates.
- Say: **Write this calculation on your whiteboard and try adding it up using this method.**
- Go through the calculation as a class. Focus on any steps the class found tricky. Ensure children record 12 correctly in the answer. Say: **As the ones add up to twelve, the ten must be written in the tens column.**
- Display: Slide 4.
- Show the calculation and ask children to estimate the answer.
- Say: **Write this calculation on your whiteboard and try adding it up using this method.**
- Go through the calculation as a class. Focus on any steps the class found tricky. Ensure children record 120 correctly in the answer. Say: **As the tens add up to one hundred and twenty, the hundred must be written in the hundreds column.**
- Display: Slide 5.
- Repeat with this calculation if appropriate.

## Individualised Learning

Refer to Activity 1 from the Learning activities on page 276.

**Pupil Book 3B** – Page 28: Expanded addition  
**Progress Guide 3** – Support, Year 3, Unit 7, Week 1, Lesson 1:  
 Adding 1s and 10s

## Plenary



- Write  $369 + 258$  on the board. Say: **I am going to work this out using the method we have learned today.**
- Work out the calculation, talking through each step. Make a deliberate mistake. Choose a mistake that picks up on an error that you have noticed children making through the lesson.
- Ask: **What will you say to me so I do not make that mistake again?**
- Share children's explanations. Establish which explanations ensure you understand the mistake.
- Say: **Remind me why being able to estimate your answer first is useful.** Discuss as a class.

## Overcoming Barriers

- Children will find this method challenging if they do not have a very 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.