Missing numbers

National Curriculum attainment targets

- Add and subtract numbers using concrete objects, pictorial representations, and mentally, including a two-digit number and tens
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

Lesson objective

- Find missing numbers when multiples of ten are added to or subtracted from two-digit numbers

Previous related lessons

Unit 1, Week 2, Lessons 1 & 3; Unit 2, Week 1, Lessons 2–4; Unit 2, Week 2, Lessons 3 & 4

Prerequisites for learning

Pupils need to:

- recall addition and subtraction facts to 20 with confidence
- identify the tens and ones digits in a two-digit number
- be confident in their use of Base 10 material and a 1–100 number square
- recognise multiples of ten
- add and subtract multiples of ten and two-digit numbers

Vocabulary

ones (units), tens, addition, add, plus, more, subtract(ion), minus, take away, leaves, how many (are left)?, make, total, equals, multiple

Future related lesson

Unit 7, Week 1, Lesson 4

Success criteria

Pupils can:

- recognise that the ones digit in a number does not change when a multiple of ten is added or subtracted
- move down a column on a 1–100 number square to add multiples of ten and move up a column to subtract multiples of ten
- identify missing numbers in a calculation other than the answer

Getting Started

- Choose an activity from Number – Addition and subtraction.
- Choose a game or activity from *Fluency in Number Facts: Y1/Y2* – Addition and subtraction.

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'.

Collins Connect
Year 2, Unit 7, Week 1

Teach

Resources

Resource 4: 1–100 number square (per child)

- Ask: **What are multiples of ten? What is a quick way to spot a multiple of ten?**
- Write 37 + 20 = on the board and ask: **How would you work out the answer to this question?** Discuss the different methods suggested, using the Busy Ant tools to demonstrate, where appropriate. Write the answer (57) on the board.
- Now write 63 – 40 = on the board and ask: **How would you work out the answer to this question?** As before, discuss methods and write the answer (23) on the board.
- Say: **We usually work out answers to number sentences and write the answer after an equals symbol, as we have just done. Today we're going to work out missing numbers from different parts of number sentences.**
- Write 24 + ☐☐ = 54 on the board and say: **24 add something equals 54.**
- Ask: **How might we be able to work out the missing number?** Work through children's best suggestions using the most appropriate tools, such as the Base 10 tool or the Number square tool. Establish that subtraction can be used to find a missing number in an addition calculation.
- Ensure that the following strategies are discussed: counting on in tens from 24 to 54, counting back in tens from 54 to 24 (to find the difference), taking 24 away from 54 (by counting back ten, ten and then four). Confirm that 30 is the missing number and write it on the board.
- Now write ☐☐ + 50 = 68 on the board and say: **Something add 50 equals 68.**
- Ask: **How would you work out the missing number?** Again, work through children's best suggestions using the most appropriate tools. Establish that the missing number is 18.

- Write □□ = 20 + 46 on the board and say: **Something equals 20 plus 46.**
- Ask: **What do you notice about this number sentence compared to the other ones we've talked about in this lesson?** Establish that it means the same as 20 + 46 = □□ and 46 + 20 = □□. It doesn't matter that the answer appears to the left of the equals symbol and the question to the right.
- Ask: **How would you work out the missing number?** Again, work through children's best suggestions. Write the missing number on the board.
- Write 75 – □□ = 45 on the board and say: **75 subtract something equals 45.**
- Ask: **How might we be able to work out the missing number?** Work through children's best suggestions using the most appropriate tools. Establish that when the number being subtracted is missing, we either take away the answer from the first number or count on from the smaller number to the larger number to find the missing number. Write the missing number on the board.
- Write □□ – 30 = 27 on the board and say: **Something take away 30 equals 27.**
- Ask: **How would you work out the missing number?** Again, work through children's best suggestions. Establish that when the first number in a subtraction calculation is missing, addition can be used to find a missing number. Write the missing number on the board.

Individualised Learning

Refer to Activity 2 from the Learning activities on page 294.

Activity Book 2B: – Page 28: Mystery numbers
Resources: Base 10 material (per child) (optional); Resource 4: 1–100 number square (per child)

Progress Guide 2: – Extension, Year 2, Unit 7, Week 1, Lesson 3: Missing numbers

Plenary

Resources

0–9 number cards (one card per child)

- Give each child a number card from 0 to 9.
- Write an addition or subtraction number sentence on the board (a two-digit number add or subtract a multiple of ten) with either the answer or one of the two numbers in the question missing, e.g. 46 + □□ = 76.
- Challenge children to work out the answer and hold up their card if they think their number is one of the two missing digits.
- Repeat for other questions with the missing number, multiple of ten and answer in different locations, for example: 10 + □□ = 62, □□ + 27 = 47, □□ + 50 = 78, □□ = 70 + 23, □□ = 14 + 40, □□ – 20 = 51, 86 – □□ = 16, □□ = 95 – 70.

If preferred, the Number Cards tool could be used here by choosing 'Type of numbers: custom' in Set up.

Homework Guide 2
Year 2, Unit 7, Week 1, Lesson 3: Number detective

Overcoming Barriers

- Children can be confused by the need to use the inverse operation to work out the answer to a missing number calculation. Ensure they understand the meaning of the calculation. Saying the calculation to themselves (using the vocabulary described in this lesson) can help children understand the calculation. Using a 1–100 number square can then help them work out the answer.
- Children may also find calculations where the answer is to the left of the equals sign difficult. Ensure they understand the meaning of the equals sign (is the same as). Statements such as 4 + 5 = 3 + 6 can help reinforce this concept.