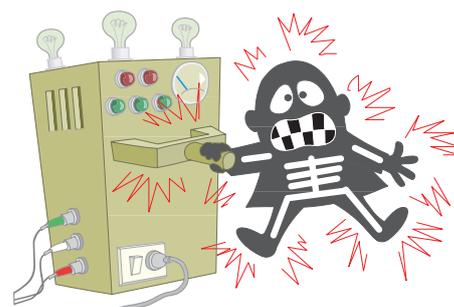


# Dr Shock



## Learning objectives

- **Using and applying:** Choose and use appropriate calculation strategies
- **Calculating:** Calculate mentally with integers and decimals:  $U.t \pm U.t$

## Problem-solving strategy

Logical reasoning

## Setting the scene

This is a whole-class activity involving mental calculation with decimals. Explain that Dr Shock has a number problem based on a Carroll diagram; when the children solve the problems Dr Shock has a shocking surprise!

For the first problem, ask the children to look for any patterns to help find the missing total in the bottom right-hand corner of the grid. As the children progress through the activity, the number of blank squares with missing numbers increases, and the pattern changes. Children can click on the question mark beside the grid for a reminder of the original pattern.

## Solving the problem

There will be a dictated path to follow but essentially the children should start by looking for two parts of a number sentence in order to fill in the missing pieces. As long as they understand that the ends of the rows or columns are essentially the solutions and that the green squares are the two parts of the sentence, they should be able to solve the problem by working round the square and filling in the blanks. It's much like a crossword - once you solve the obvious problems the answers to the others reveal themselves.

## Key questions

**Enquiring:** How will you find the missing numbers? How will you organise your thinking?

**Reasoning:** Which missing numbers should you find first?

**Communicating:** How were you able to find the total for the yellow square? How can you prove that your answers are correct? Can you prove that somebody has an incorrect answer?

## Differentiation

**Less confident:** Support children by writing out each part of the problem as a sentence. This will emphasise the mathematics behind each question and will give step-by-step guidance on how to approach the activity.

**More confident:** Ask the children to design their own  $3 \times 3$  Carroll diagrams for a friend to complete. They should fill in the squares on one graph as an example, and give their partner another that is only partially filled in. Ask them what strategies they could use if information, such as a number within the four green squares, was missing. (Could addition sentences be inverted to subtraction sentences to find the smaller number?)

## Follow up

Ask the children to complete the follow-up activity on page 15. Challenge them to find as many correct answers as possible for grids 3 and 4.

## Problems bank

Page 35

Press the clue button for a reminder of the original pattern.

Fill in the missing numbers on the grid.