NUMBER AND PLACE VALUE

Objectives

- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- Count, read and write numbers to 100 in numerals
- Given a number, identify one more and one less

Before they tackle this problem, ensure children have...

- Mastered counting to 100, forwards and backwards, from any given number
- Mastered counting, reading and writing numbers to 100 in numerals
- Mastered an understanding of one more and one less
- Investigated and used a hundred square, discussing patterns

Please note this activity can be adapted to be used with part of 100 square - e.g. numbers to 50, if place value is being taught in different stages.

SETTING THE SCENE

We have been asked to help write a program to move a robot on the 100 square. Our robot only understands numbers and arrows. We will tell the robot where to start and how to move.

How could we get the robot to move to a bigger number? What about a smaller number?

EXPLORE

Show children the top 3 rows of a 100 square and explain the codes we are going to use. E.g:

3 → would be start at 3 and move 1 to the right 4 ← start at 4 and move 1 to the left

5 ⇉ would be start at 5 then move 3 to the right 7 ⇇ would be start at 7, move 2 to the left.

Give children a selection of numbers followed by arrows and ask them to say which number the robot will land on, keeping the numbers within the range you are currently focusing on.

When we are using → what are we telling the Robot to do? What about ←?

Are children confident seeing and explaining the links with one more, and one less?

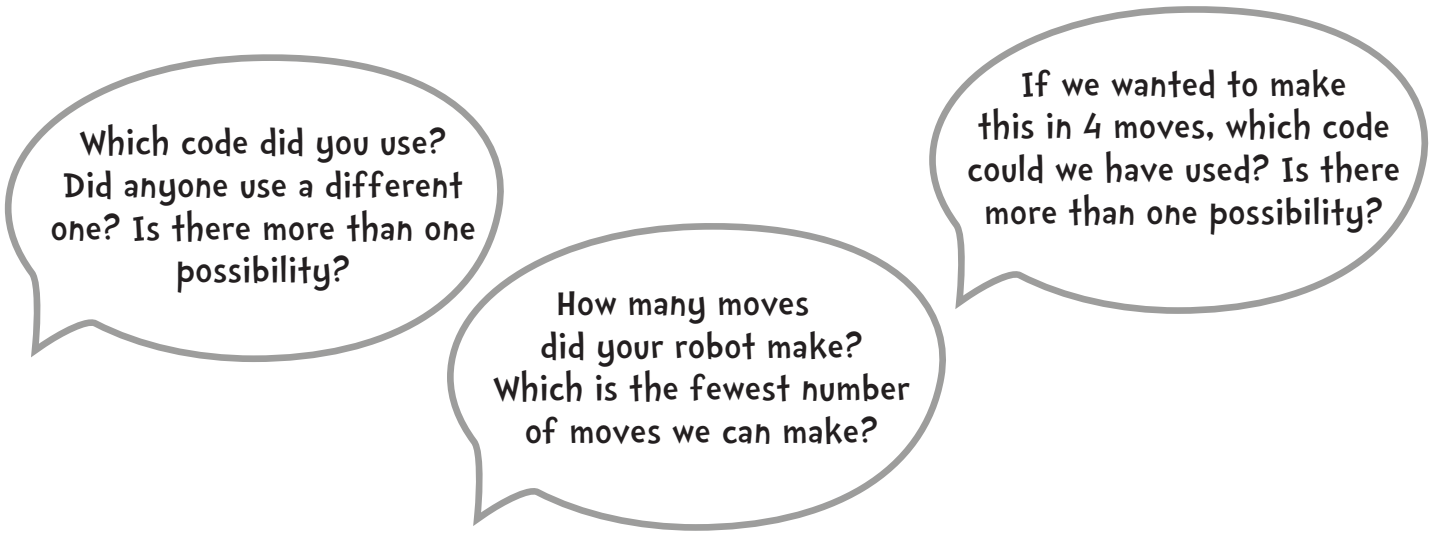
Are the children confident moving to the next line or the previous line when counting on and back across tens boundaries?

Which way would we move if the code was 4 ↓? Look at 100 square again. What happens to the number when we move down? Try moving down with a few different start numbers. What about if the arrow is ↑? Try moving up from various numbers. Extend to codes such as 5 ↓↓ and 43 ↑↑↑ and give the children some examples to work out.

TAKING IT FURTHER

Consider what would happen to the number if we put 6 ↘. We would move down one and right one. Discuss which number we would land on. Try it on the hundred square and see if you can work out a rule for that arrow. Ask the children to test it on 3 other numbers and see if we find the same pattern.

Increase the complexity of the codes and ask the children to find the number the robot will land on. E.g:
19 ←← ↑ ↘. There could be a selection of these for children to solve and record in their books. Next, give the children a problem e.g. You are on 24 and you want to land on 6. Write the codes to take you there.



Apply through further problems, limiting the moves or challenging children to generate different codes to get the robot to the same point.

OUTCOME

Children will look at patterns on a 100 square and should notice which digit changes as you move up and down, right and left. They will apply one more, one less to the ones digit. They should realise that although the tens digit also goes up and down by one, each digit is really ten more or less. They may go further and realise that the diagonal arrows mean add one then add 10, or add 11, for example.