# Changing places

Generalising from games and investigations

A square grid contains counters with the bottom left-hand square empty. The counter in the top right-hand square is red and the rest are blue. The aim is to slide the red counter from its starting position to the bottom left-hand corner (HOME) in the least number of moves. You may slide a counter into an empty square by moving it only up, down, left or right but not diagonally.
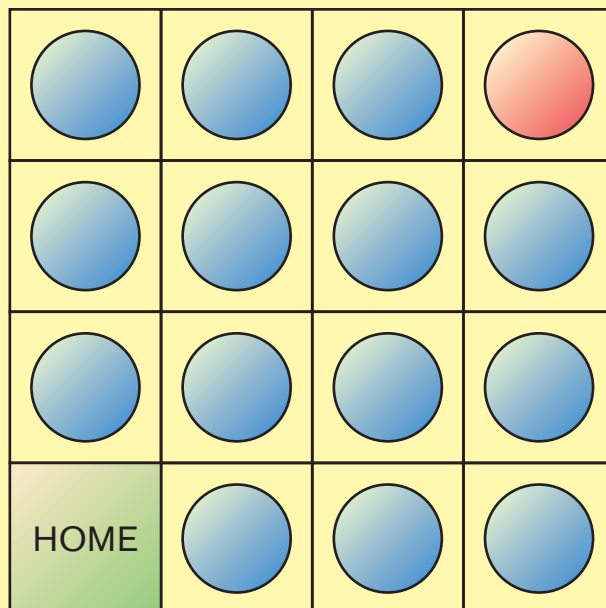
Explore a 4 by 4 array.
How many moves does it take to move the red counter to HOME?

Can you do it in fewer moves?
What is the least number of moves you can do it in?

Try a smaller array.
How many moves does it take to move the red counter to HOME?

Try a larger array.
What is the least number of moves you can do it in?

Have you a strategy for moving down each array?

On which move does the red counter make its first move?
On which moves does the red counter make its other moves?

Can you predict the least number of moves that the red counter makes on the way HOME?

Why is the least number of moves *always* odd?

Can you write a rule that describes what the least number of moves will be for any square array?

Can you explain why your rule works?

Changing places: blank 2 by 2 and 3 by 3 grids

Resource sheet

2 by 2 grid

HOME	

3 by 3 grid

HOME		

Changing places: blank 4 by 4 grid

Resource sheet

4 by 4 grid

HOME			

Changing places: blank 5 by 5 grid

Resource sheet

5 by 5 grid

HOME				

Changing places: blank 6 by 6 grid

Resource sheet

6 by 6 grid

HOME					