

# KS1 Problem

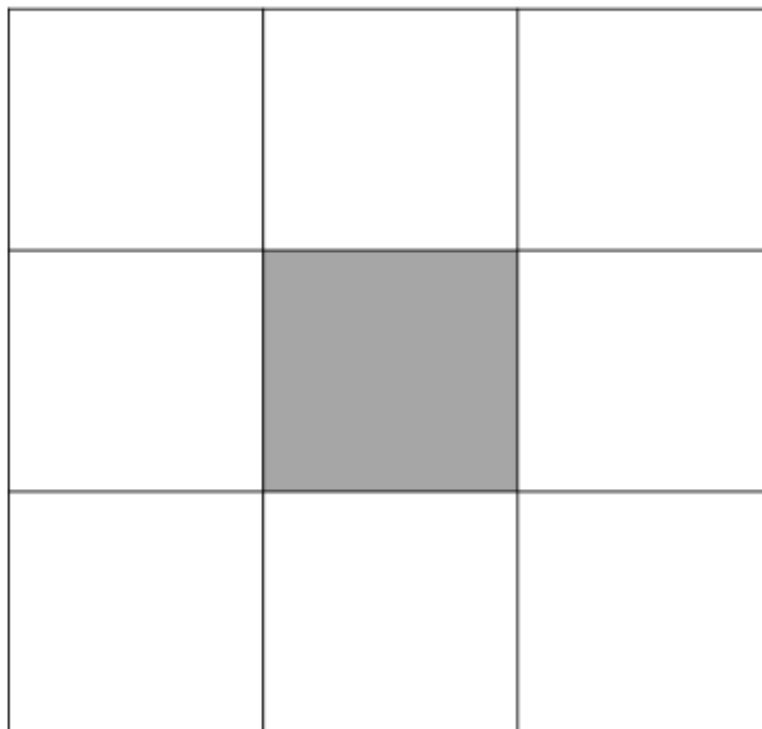
## Six in a Line

You need:

- 20 small items (counters, jelly beans, Smarties etc.)
- a 3 x 3 grid on paper

The aim of the challenge is to put all of the 20 items on to the grid so that there is a total of 6 in each line (vertical and horizontal). Leave the centre square empty. All other squares must be occupied.

See how many different ways you can do it.



### Challenge

- Can you make each line have a total of 7 items? How many different ways can you find?
- What about a total of 8 items? Does it have the same number of ways to solve it?

### Simple Version

Use a 2 x 2 grid and 8 counters.

- How many different ways can you have a line total of 4?

# KS1 Problem

## Support for Parents and Carers

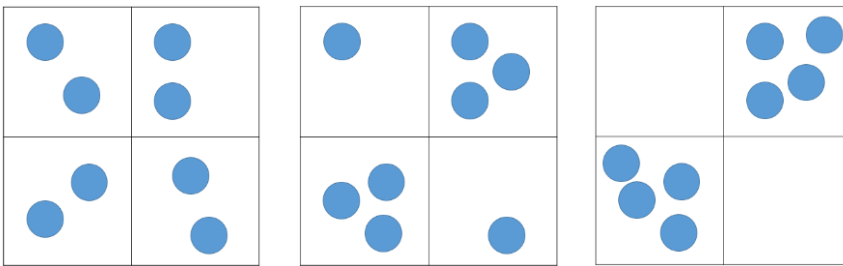
This problem is helping children to recognise that certain numbers need to go in particular spaces on the grid for the given totals. Each total is being made from three 'parts' being added together (the three amounts in each line). A small total such as 6 needs the greatest 'part' in the middle space so that it is only included in that one horizontal **or** vertical line. The corner spaces are used in two lines – one horizontal **and** one vertical.

Each following possibility is created by moving as few counters between the spaces as possible from the previous solution, then checking the totals for each line. It is also important that children record their solutions so that they can check whether they have repeated any possibilities.

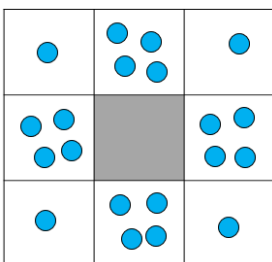
## Solution

### Simple Version

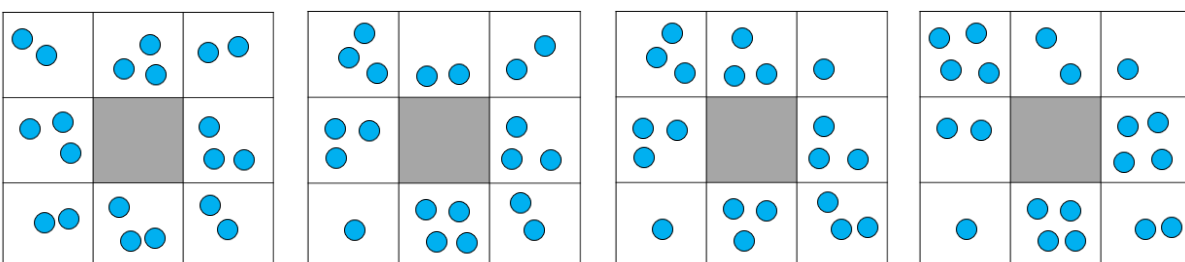
There are three possible solutions.



There is only one possible solution for a line total of 6.



There are four possible solutions for a line total of 7.



# KS1 Problem

There are nine possible solutions for a line total of 8.

