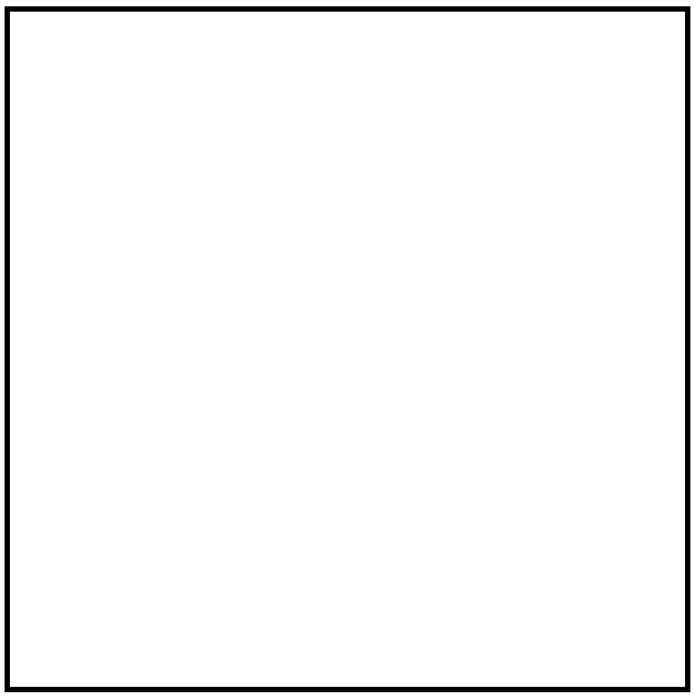
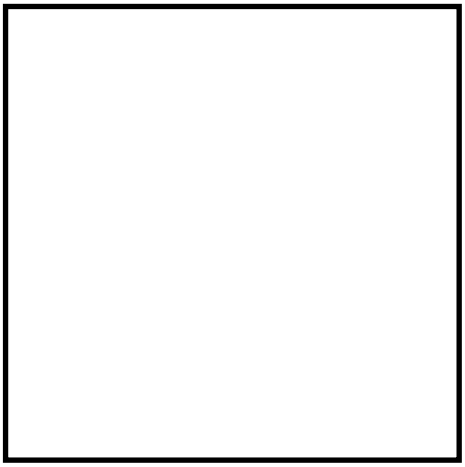
KS2 Problem

Two Squares

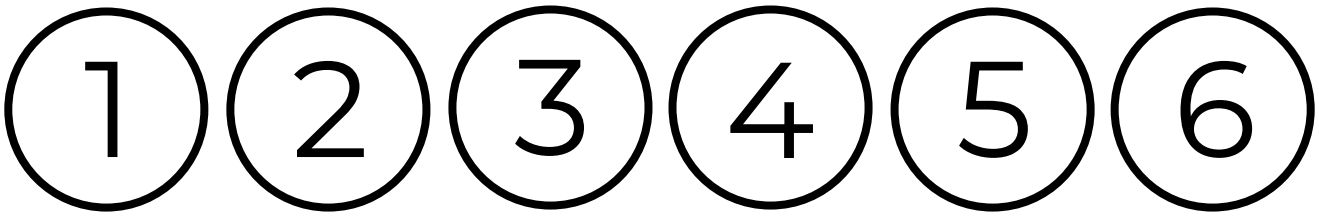
Using all of the digits 1, 2, 3, 4, 5 and 6 only once, place them in one square or the other so that the total in the large square is double the total in the small square.

How many different solutions can you find?





You can cut out the numbers below or write your own on pieces of paper.



Challenge

What if the number 7 was also included and the total in the large square had to be three times greater than the total in the smaller square?

Can you make up some of your own puzzles like this?

Lancashire Mathematics Team (2020)

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Information for Parents/Carers

Encourage your child to use what we call a trial and improvement method to solve this problem. That means that if their first guess at the numbers isn't correct, they don't remove them all, they think about what needs to be changed and how rather than starting from scratch each time. For example, if they have 4, 5 and 6 in the larger square and 1, 2 and 3 in the smaller square, the totals are 15 and 6. Is 15 twice as much as 6? Do they need to make the total in the larger square more or less? How could they do this? They might then adapt it to have 6, a 5 and a 3 in the larger square. When your child has solved the problem, ask them how they did it.

Make sure your child uses all of the numbers once to solve the problem.

Solution

To solve this puzzle, all of the digits must be used. This means that the totals of the two squares together must be the same as the total of all of the numbers from 1 to 6.

The total of the digits, and therefore the two squares, is 1 + 2 + 3 + 4 + 5 + 6 = 21

We know that the large square is double the total of the small square, so it is worth the same as two small squares. This means there are three parts altogether: two parts of 21 in the large square and one part of 21 in the small square. So to find the totals we need to divide 21 into three equal parts.

The total of the big square is 14. The total of the small square is 7.

Once this has been worked out, we need to see how we can make these numbers.

There are four possible solutions:

Small square	Large square
1 + 6	2 + 3 + 4 + 5
2 + 5	1 + 3 + 4 + 6
3 + 4	1 + 2 + 5 + 6
1 + 2 + 4	3 + 5 + 6

There are four possible solutions for the challenge:

Small square	Large square
1 + 6	2 + 3 + 4 + 5 + 7
2 + 5	1 + 3 + 4 + 6 + 7
3 + 4	1 + 2 + 5 + 6 + 7
1 + 2 + 4	3 + 5 + 6 + 7