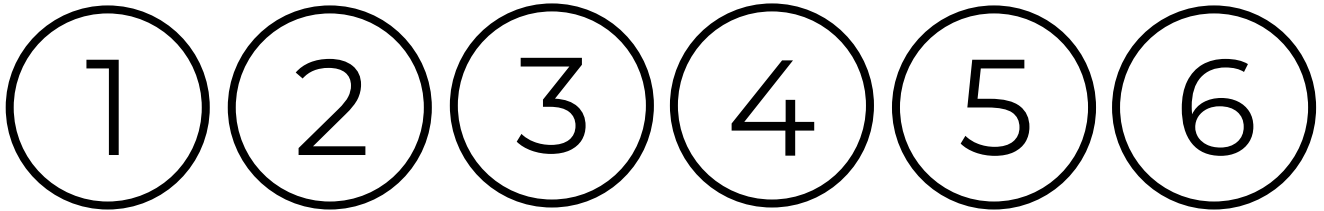
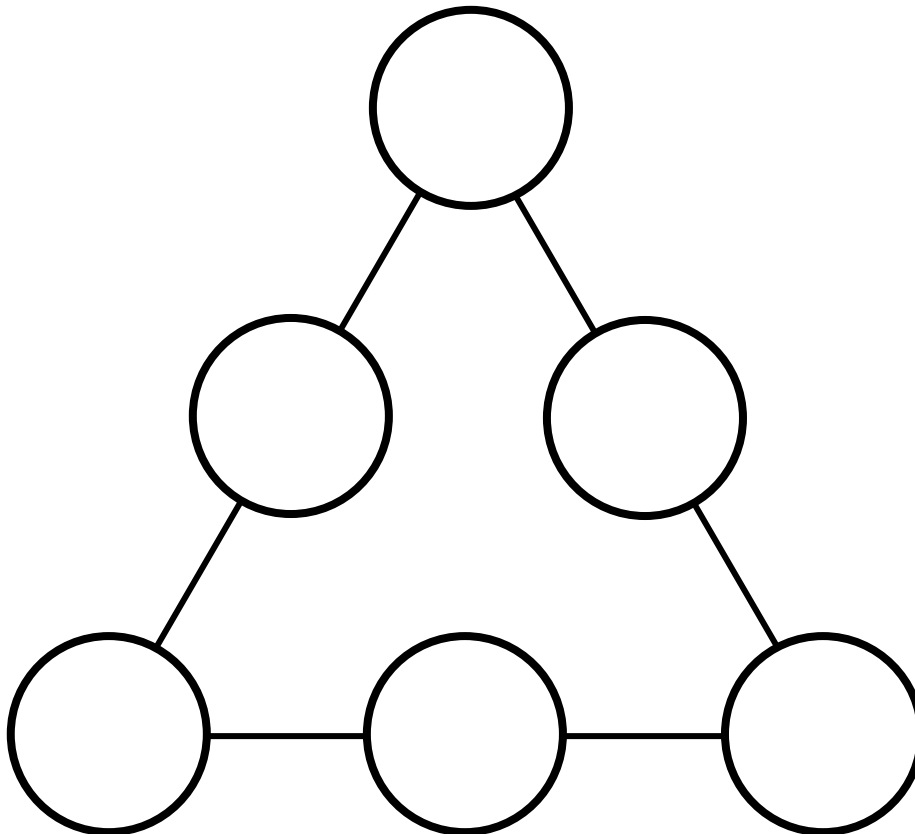


Magic Triangle

Cut out the following numbers or write them on pieces of paper.



Place each of the numbers 1, 2, 3, 4, 5 and 6 into the circles on this triangle so that the numbers on each side of the triangle add up to 9. If you don't have a printer, you could draw this diagram yourself.



Challenge 1

Now make the numbers on each side of the triangle add up to 10.

Challenge 2

What other numbers can you make each side of the triangle add up to? Each side has to be the same total.

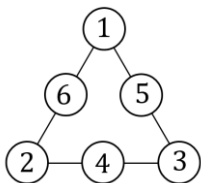
KS2 Problem

Support for Parents and 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 a 6, a 3 and a 2 on one of the sides in the triangle, it adds up to 11. Which number or numbers could they change to reduce it to 9? They might then adapt it to a 4, a 3 and a 2. When your child has solved the problem, ask them how they did it.

Solution

To make each side of the triangle add up to 9.

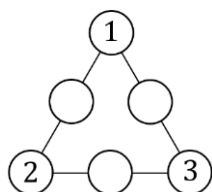


This could be done by trying out different options, but there is a quicker way to identify the numbers on the vertices, or corners, of the triangle.

Add up the numbers, i.e. $1 + 2 + 3 + 4 + 5 + 6 = 21$

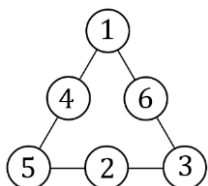
Add up each side of the triangle, i.e. $9 + 9 + 9 = 27$

The sides of the triangle add up to more than the numbers because some of the numbers in the triangle are counted twice because they appear in two sides, i.e.



Notice that these numbers add up to 6, the difference between the total of the numbers (21) and the total of the sides (27).

To make each side of the triangle add up to 10.



The difference between the total of the numbers (21) and the total of the sides (30) is 9. We need to make the numbers that are counted twice add up to 9, i.e. $1 + 3 + 5 = 9$

It is also possible to make each side of the triangle add up to 11 and 12.