Here are some challenges/ maths investigations that you can answer alongside your Fluency 15. You can choose to complete them whenever you wish just remember to jot down your answers and working out into your work book/ on paper!

Number Detective

Age 5 to 11 ⭐

Calling all detectives! You will need to think creatively, use your reasoning skills and your problem solving strategies to find the mystery number from the list below.


- The number has two digits.
- Both of the digits are even.
- The digit in the tens place is greater that the digit in the ones place.
- The ones digit is not in the three times table.
- The tens digit is not double the ones digit.
- The sum of the two digits is a multiple of five.

18	86
120	42
46	64
80	8
22	83

Ring a Ring of Numbers

Here is a picture of four numbers placed in squares on a circle so that each number is joined to two others:
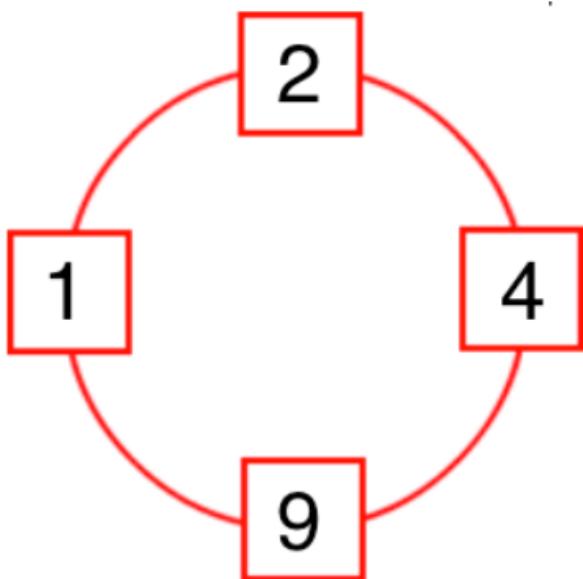
What do you see?
What do you notice?

Choose four numbers from this list: 1, 2, 3, 4, 5, 6, 7, 8, 9 to put in the squares so that the difference between joined squares is odd.
Only one number is allowed in each square. You must use four different numbers.
What can you say about the sum of each pair of joined squares?

What must you do to make the difference even?
What do you notice about the sum of the pairs now?

Zios and Zepts

Age 7 to 11 ⭐

On the planet Vuv there are two sorts of creatures. The Zios have 3 legs and the Zepts have 7 legs.
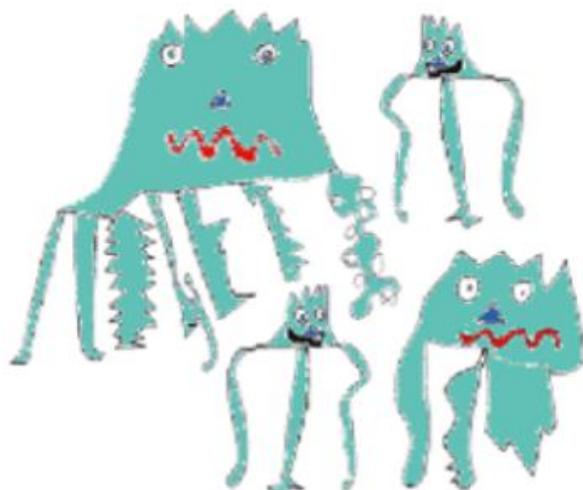
The great planetary explorer Nico, who first discovered the planet, saw a crowd of Zios and Zepts. He managed to see that there was more than one of each kind of creature before they saw him. Suddenly they all rolled over onto their backs and put their legs in the air.

He counted 52 legs. How many Zios and how many Zepts were there?
Do you think there are any different answers?
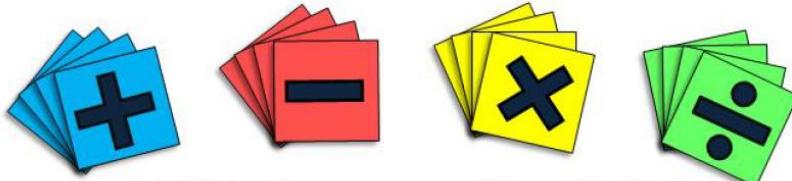
A Square of Numbers

Age 7 to 11 ★

Can you put the numbers 1 to 8 into the circles so that the four calculations are correct?

$$\boxed{?} \div \boxed{?} = \boxed{?}$$

$$- \boxed{?} \qquad \times \boxed{?}$$

$$\boxed{?} + \boxed{?} = \boxed{?}$$

Reach 100

Age 7 to 14

Here is a grid of four "boxes":
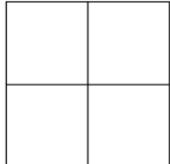
You must choose four **different** digits from $1-9$ and put one in each box. For example:

This gives four two-digit numbers:

52(reading along the 1st row)
19(reading along the 2nd row)
51(reading down the left hand column)
29(reading down the right hand column)

In this case their sum is 151.

Try a few examples of your own.
Is there a quick way to tell if the total is going to be even or odd?

Your challenge is to find four **different** digits that give four two-digit numbers which add to a total of 100.

How many ways can you find of doing it?

This problem is adapted from Make 200 from 'Mathematical Challenges for Able Pupils Key Stages 1 and 2', published by DfES.