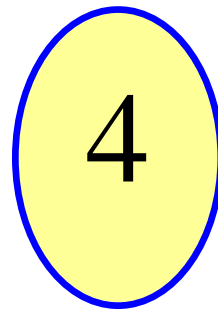
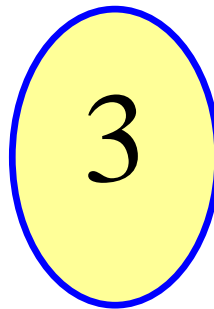
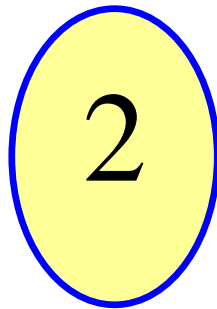
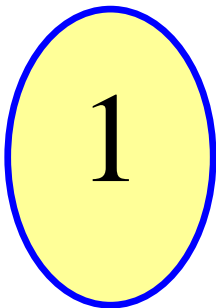




INVESTIGATION



Add one to four



MathSphere

Add one to four investigation

Starter

1

2

3

4

Use each of these digits once only to make as many addition sums as you can.



Hello!

I've started you off by doing two addition sums below... but I don't think I'm working in a very systematic way!!

$$12 + 3 + 4 = 19$$

$$2 + 413 = 415$$

How many addition sums can you make?

Some Ideas

Work in a methodical way, recording your results carefully as you go.

There is more to this investigation than you might think.

Remember that you must use each digit once only - but you can use the addition sign as often as you like.

So, have a think - what is the least number of times you can use the addition sign?

What is the most number of times you can use the addition sign?

This should help you - why don't you try all the sums that use the addition sign just once?



What's the biggest answer that you can make?

Hang on - what about the smallest answer?



Try to find as many rules and patterns as you can.

Answer Guide

To complete this investigation successfully children need to be confident with simple addition and be able to add a single digit to a hundreds number, as well as adding two, two digit numbers.

Probably the best way to start this investigation is to look for all the addition sums that can be made by adding a single digit to a tens number.

Thus, working in a logical order can be encouraged, by looking for all the 3 digit numbers that can be added to one:

$$1 + 234 \quad 1 + 243 \quad 1 + 324 \quad 1 + 342 \quad 1 + 423 \quad 1 + 432$$

then continuing with 2, 3 and 4 in turn.

It would be useful to show this methodical way as part of the class introduction to the investigation - inviting children to find all the sums which involve an addition of one to a three digit number.

Hopefully they will note that there are 6 possibilities, and this should help them when adding 2 to a three digit number.

Whilst doing this children can also be looking for the largest and smallest possible answers.

Children should also be clear that

$$1 + 2 + 3 + 4 \text{ is the same as}$$

$$4 + 3 + 2 + 1$$