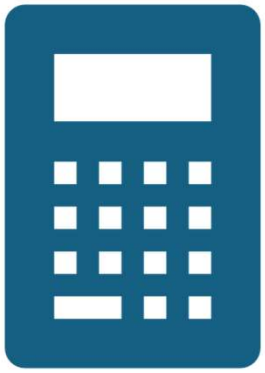
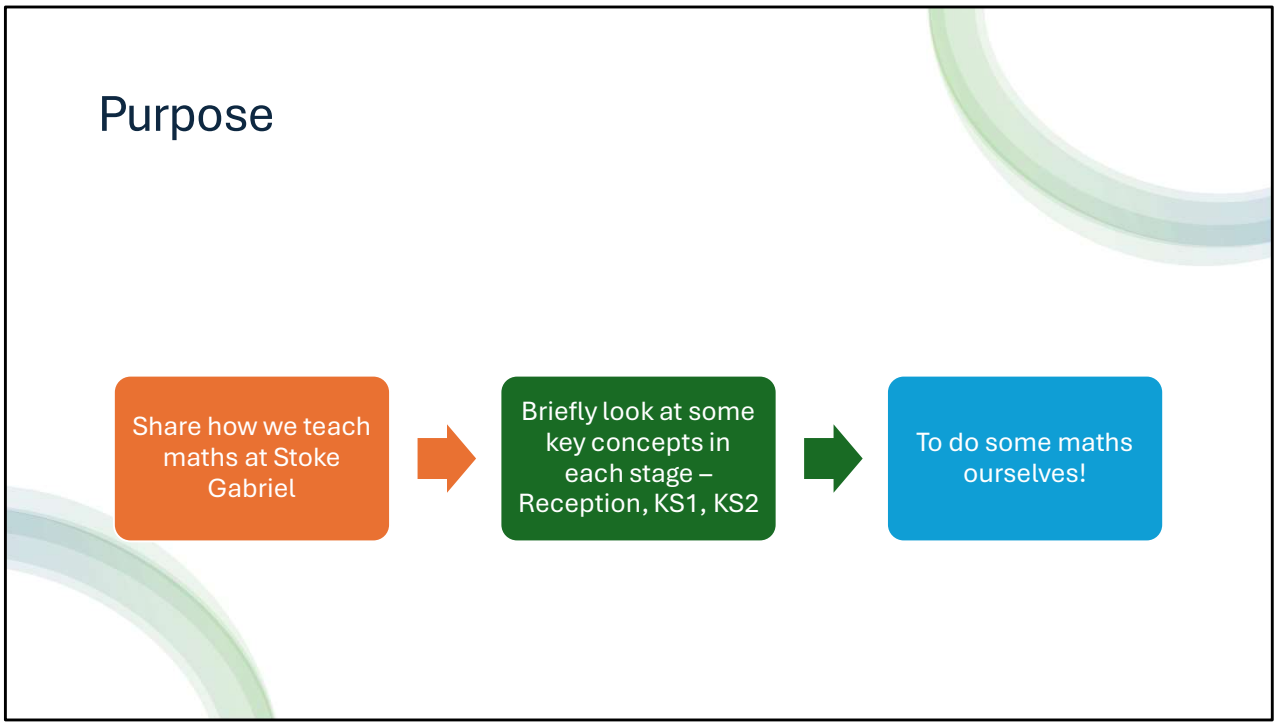


11th November 2025

Maths Workshop



Things may have changed slightly from when you were at school

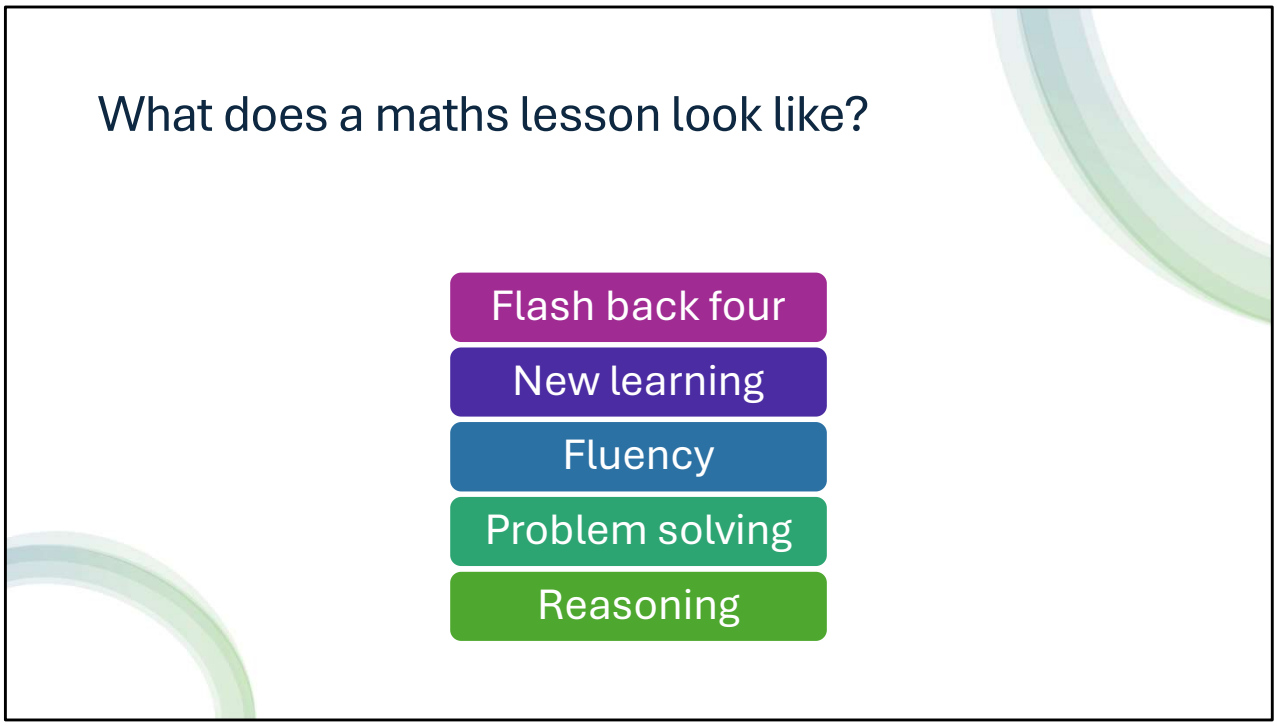
Lets do some maths

Doughnuts

What do you notice? I noticed that…

Shape, number bonds, arrays, counting, fractions, area

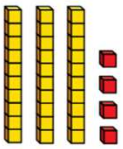
Questions like these show that maths is all around us and can be seen in so many different ways. It encourages maths talk – with everybody likely to be successful in spotting something.



All children experience every strand during the input but during the activities they do in there book some may focus more on fluency questions to build understanding or some may go quickly onto problem solving and reasoning as they have a good grasp and need to challenge their understanding.

Flash Back Four

1) $34 + 20 =$ ☐



2) Jack has 18 crayons.
Dora has 10 more crayons than Jack.
How many crayons does Dora have?

3) $25 + 4 =$ ☐

4) How much money is there?

Designed to recap learning. By constantly revisiting previous learning, helps children to remember and avoids gaps appearing due to forgotten knowledge/methods. There's so much for the children to learn and memorise and this just helps tick things over for them.

Question 1 is last lesson

Question 2 is last week

Question 3 is last unit

Question 4 is last term/year

EXAMPLES OF FLUENCY QUESTIONS

Use the column method to work out the additions.

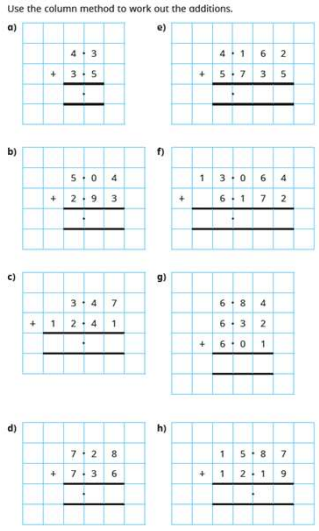
a) 41 + 56 **b)** 317 + 252 **c)** 405 + 361 **d)** 480 + 309

Write <, > or = to compare the numbers.

a) 47 ◯ 74 **d)** 71 ◯ 70

b) 19 ◯ 90 **e)** 8 tens ◯ 9 ones

c) 15 ones ◯ 2 tens **f)** 30 ones ◯ 3 tens



When looking at fluency the teacher is checking whether they are meeting the lesson objective. This is can often be in the form of written methods. We encourage children to use resources/drawings/representations to help them with their workings and prove their answer. The methods are all outlined in our calculation policy and you can see how each operation is developed and built on from nursery to year 6.

Fluency Questions

Helps the teacher assess whether they have a clear understanding of the objective being taught

Often using resources, different representations and methods to demonstrate understanding

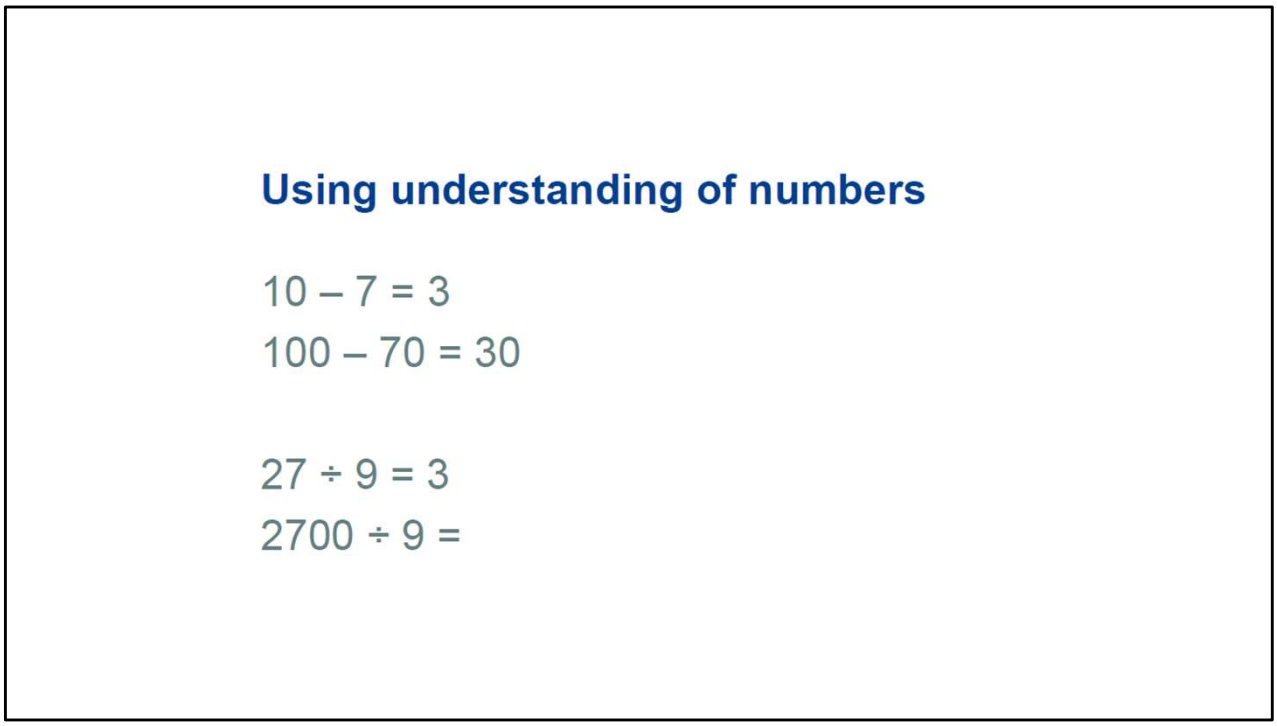
However…

How would you do …

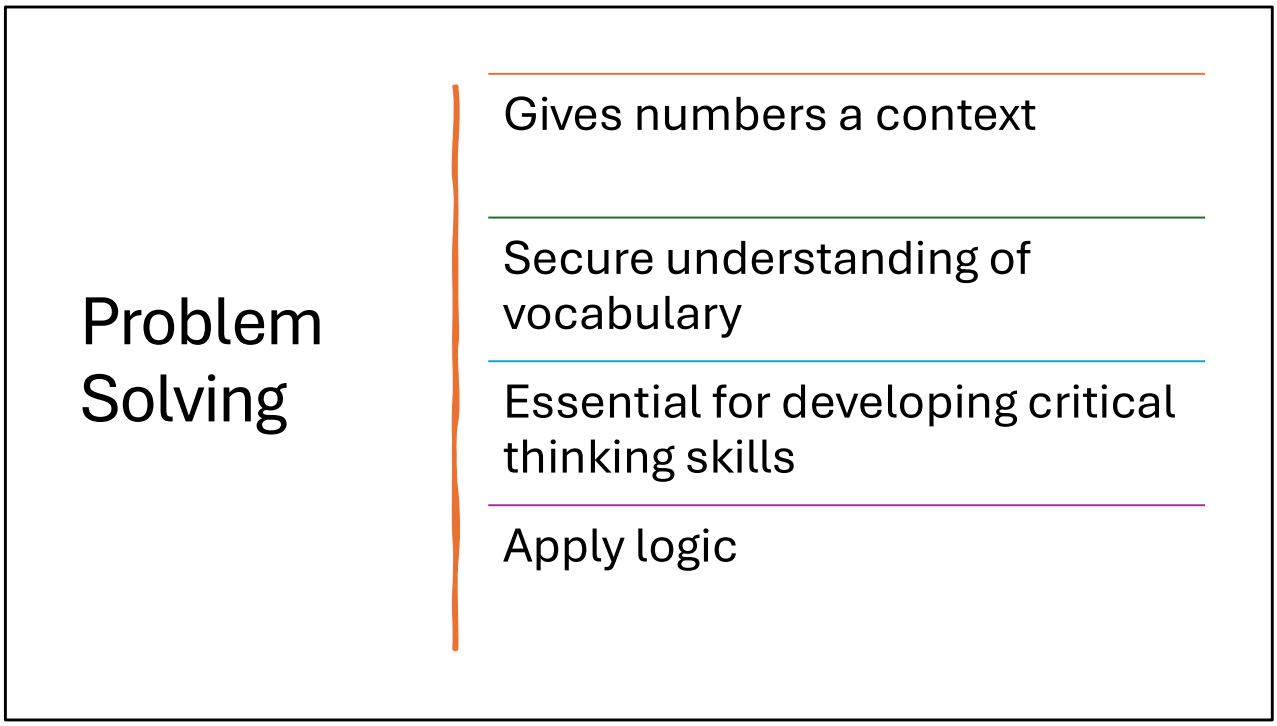
73 – 69

73 – 6

However, having fluency in maths isn't always necessarily number crunching and using formal written methods – it's about being efficient and choosing the most efficient method for simplicity and ease.



Although formal methods are important, we try and encourage children to find quicker and easier ways to solve problems as that shows a deeper understanding of what is being covered rather than an over reliance on using taught methods. This suggests that they have a surface level understanding and struggle to spot patterns and find other ways of doing something. We want the children to have a comfortableness within numbers to be able to find other ways of doing it. Find ways that they prefer.



Gives the children an opportunity to showcase their understanding through a context rather than just calculating numbers

Shows they have a secure understanding of the vocabulary used and the methods

Essential for developing critical thinking skills – analyse situations, identifying relevant information and use methods to solve problem.

Apply logic – approaching various challenges systematically

Examples

Ron makes a 3-digit number using the digit cards.

Ron subtracts 50 from his 3-digit number.

What number could Ron have now?

Alex collects stickers.

She has collected 286 stickers.

She only needs 69 more stickers to fill the album.

How many stickers does the album hold when full?

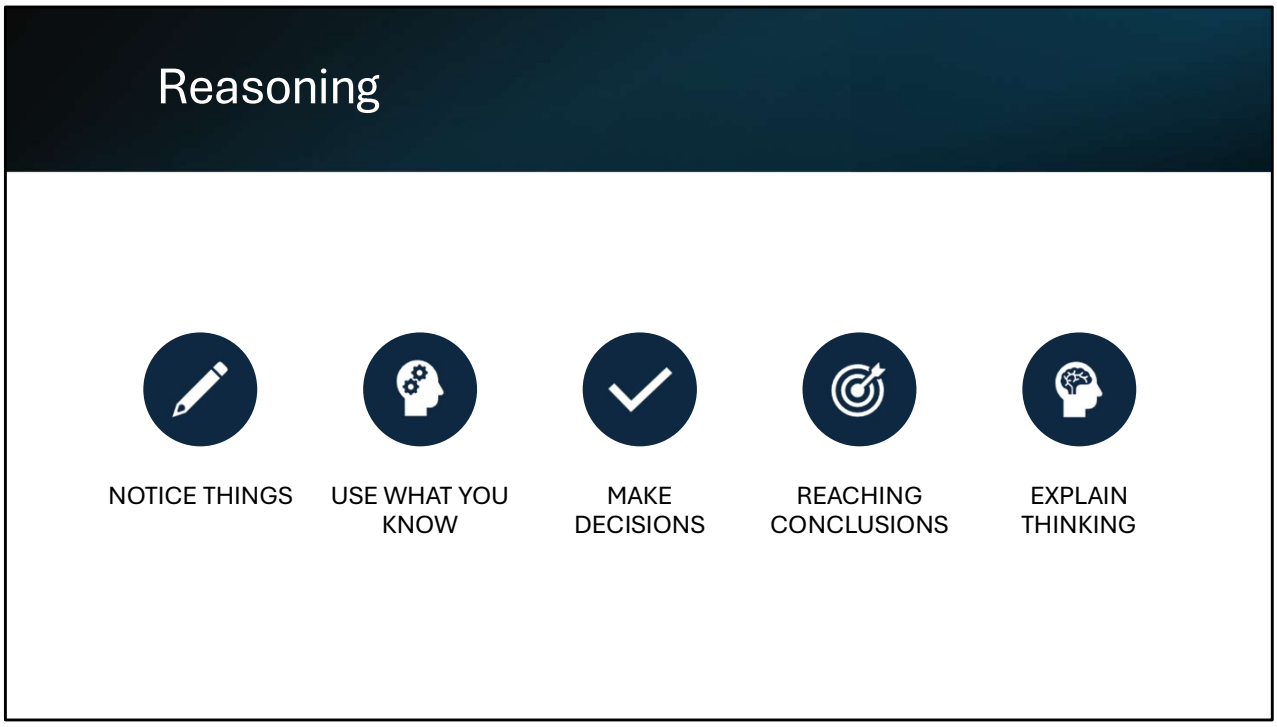
Gives the children an opportunity to showcase their understanding through a context rather than just calculating numbers

Shows they have a secure understanding of the vocabulary used and the methods

Essential for developing critical thinking skills – analyse situations, identifying relevant information and use methods to solve problem.

Apply logic – approaching various challenges systematically

A really good way to really assess someone's understanding of calculations/methods ask them to put their number sentence into contexts (a number sentence story). E.g. 43 – 5 = there are 43 apples on a tree, 5 fall off, how many apples are left on the tree. Listening to the vocabulary choices they make and the structure of their number sentence story is a good indication to their understanding of the mathematical structures they are using.



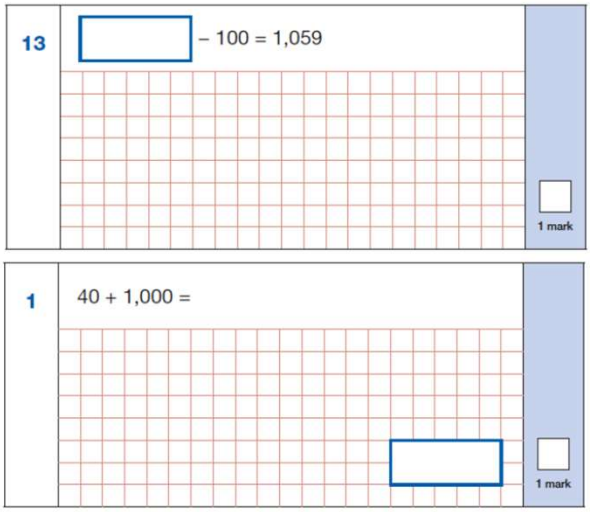
Everything we do is underpinned by reasoning and it is something we encourage throughout the whole lesson

- Getting the children to stop and notice – spot patterns, short cuts, make links with known facts (use what they know!)
- Make decisions – do they know multiple ways to solve a problem? Is their a more efficient method, an easier and quicker way?
- Reach conclusions and generalise – based on what they notice and discover
- Explain their thinking – can they become the expert and use verbal and written reasoning to explain clearly

This will create more efficient, confident mathmeticians

Prevents surface level understanding and children just calculating

IF YOU DON'T STOP AND NOTICE



You will be calculating rather than noticing

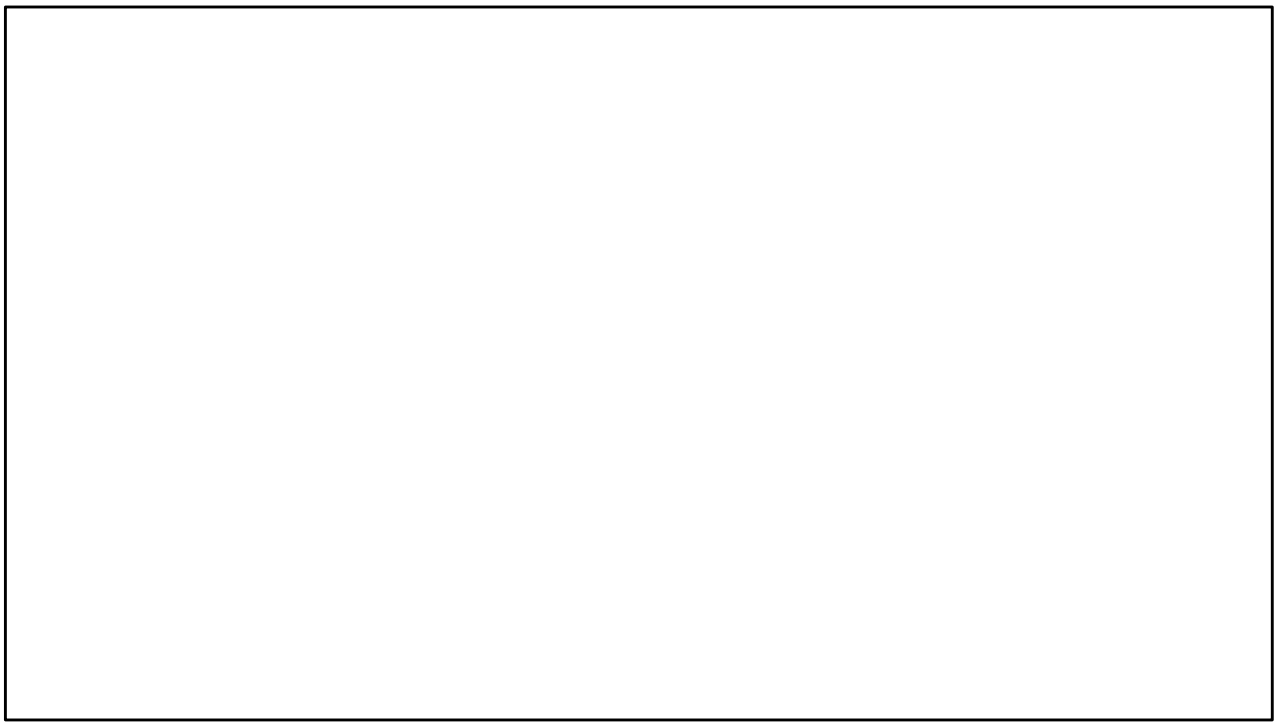
Even though there is huge space for 'working out', encouraging you to possibly use a formal written method, you can very quickly work these out mentally.

100 less than my original number is 1,059 so therefore my original number must be 100 more than 1,059.

1000 + 4 tens is 1040

WHAT ABOUT THIS?

- 68-75+28-25+32+72=?



Did you stop and notice anything? Did you just calculate from left to right? Was there a quicker way?

This is what we are aiming for

We aim for mathematicians that don't just do but stop and notice and spot patterns and manipulate it to make it easier.

Not just stick with the order you've been given.

Confidence to pattern spot.

Not relying on long written methods.

This knowledge is based on a year 2 objective – number bonds to 100 – not that we would give all our learners this style of question at that stage but the fundamental skill is from year 2.

WHAT ABOUT THIS?

•68-75+28-25+32+72=?

We aim for mathematicians that don't just do but have the confidence to stop and notice and spot patterns and manipulate it to make it easier for them.

Not relying on long written methods that can sometimes make it harder than it actually is.

This knowledge is based on a year 2 objective – number bonds to 100 – not that we would give all our yr 2 learners this style of question, but the fundamental skill is from year 2.

WHAT ABOUT THIS?

- 68+32=100
- -75-25=-100
- 28+72=100

All you had to do was 100 – 100 + 100 = 100

KS2
PAPER 3
2017

Chen uses these digit cards. 5 6 9

She make a 2-digit number and a 1-digit number.
She multiplies them together.
Her answer is a **multiple of 10.**
What could Chen's multiplication be?

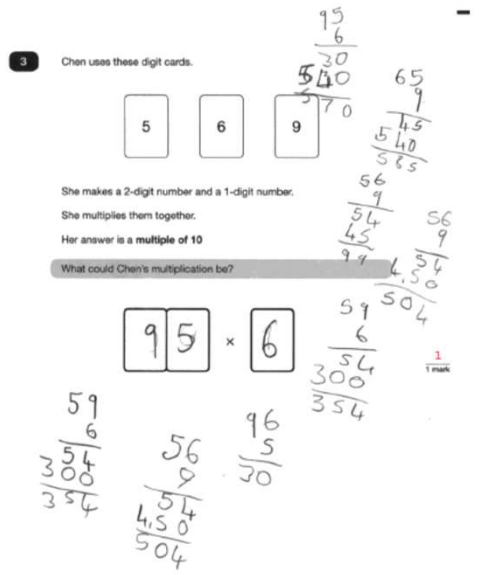
Again, this looks like a wordy, complicated question that children often find it hard to make sense of. However, if they use what they know about the 10 x table and the 5 x table (something they first learn in year 1 and 2), they can quite quickly come to the correct answer.

Multiple of 10 must end in zero

Multiple of 5 ends in zero or 5 – a zero when multiplied by an even number, 5 when multiplied by an odd number

If you don't it may look something like this…

THE OUTCOME



3 Chen uses these digit cards.

5 6 9

She makes a 2-digit number and a 1-digit number.

She multiplies them together.

Her answer is a **multiple of 10**

What could Chen's multiplication be?

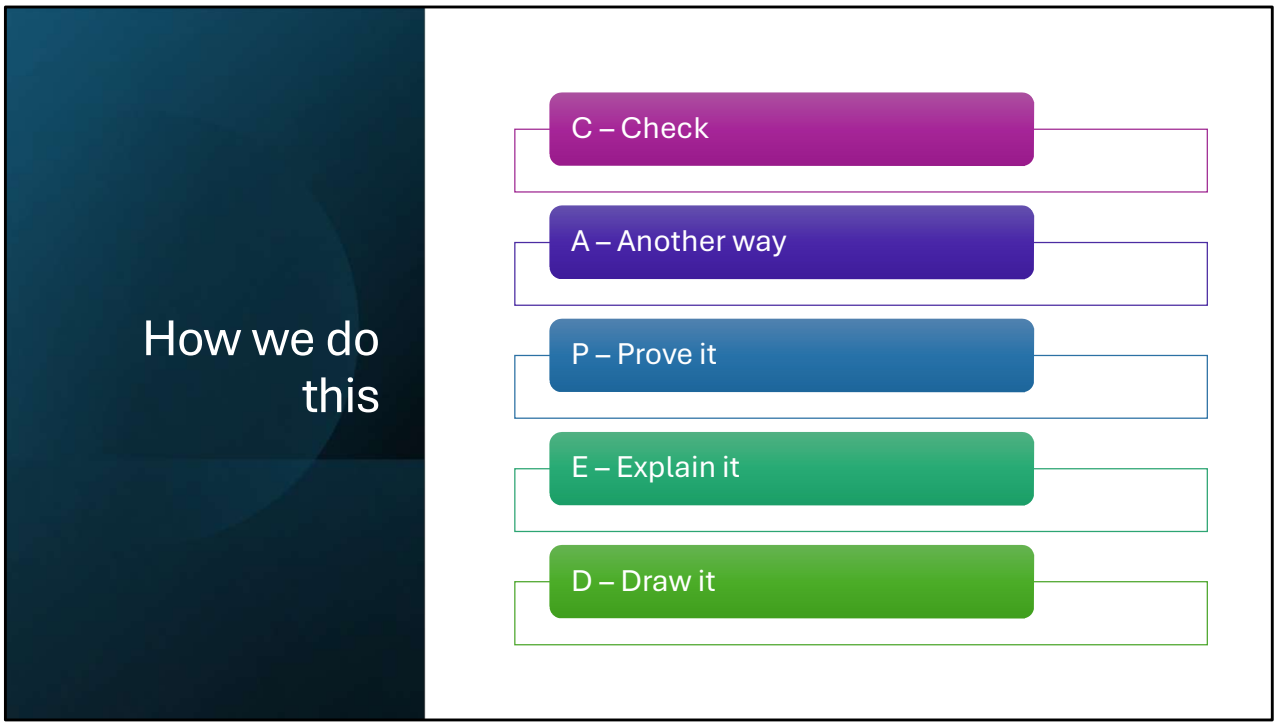
95 × 6

1 mark

- This will have taken a huge amount of time – all for 1 mark
- Stopping and noticing and really trying to use what you know, prevents a surface level understanding based on using taught methods.

Thinking is at the heart of mathematics and therefore should be at the heart of mathematics teaching and learning.

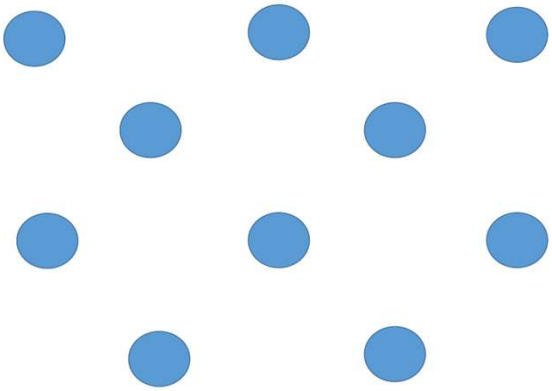
We are strong believers that (quote)



Therefore, throughout our maths lessons, we use reasoning to help the children to 'talk maths', spot patterns, see relationships, connect ideas, reason logically, explain, conjecture and prove

Key Concepts across the years

Let’s do some maths

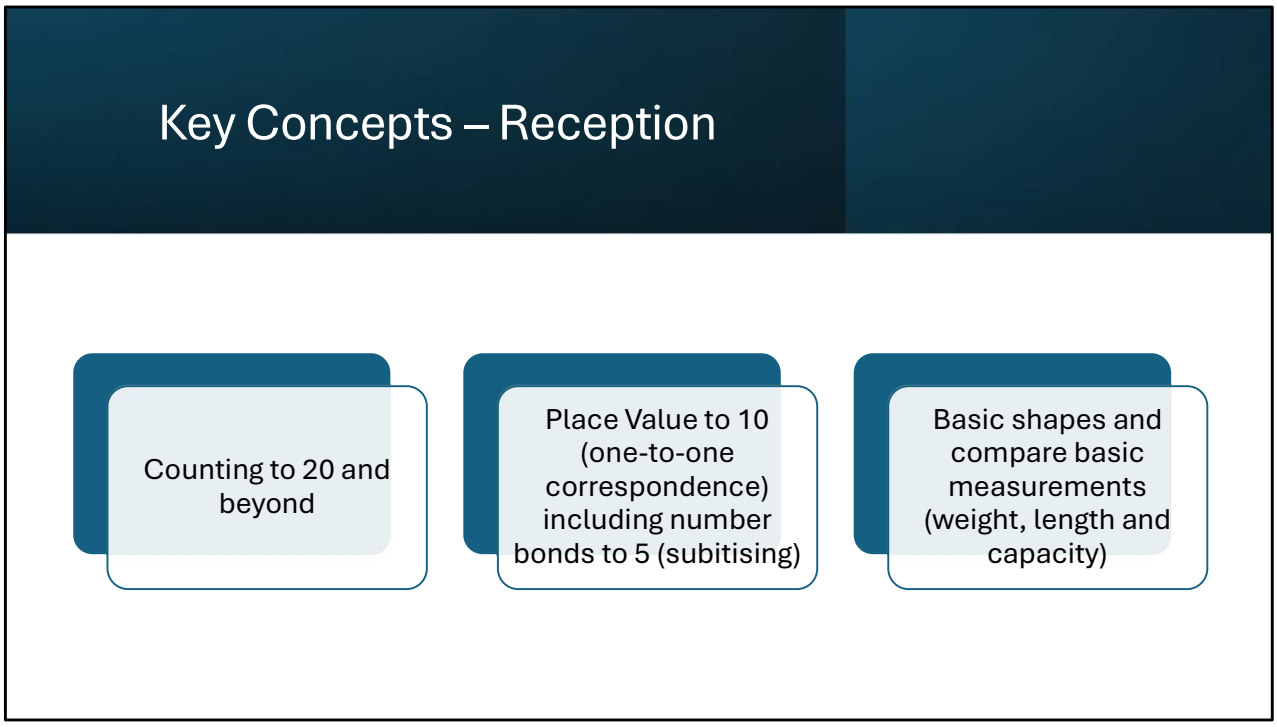


How many?

How did you count them? How else could you count them?

In ones? Or did you make groups? Did you use shapes?

Lots of learners see things differently and get to the same answer. It is great for children to share their methods but also to listen to other ways of doing the same thing.



One-to-one correspondence – understanding of number value in the number system knowing that one object is worth one number

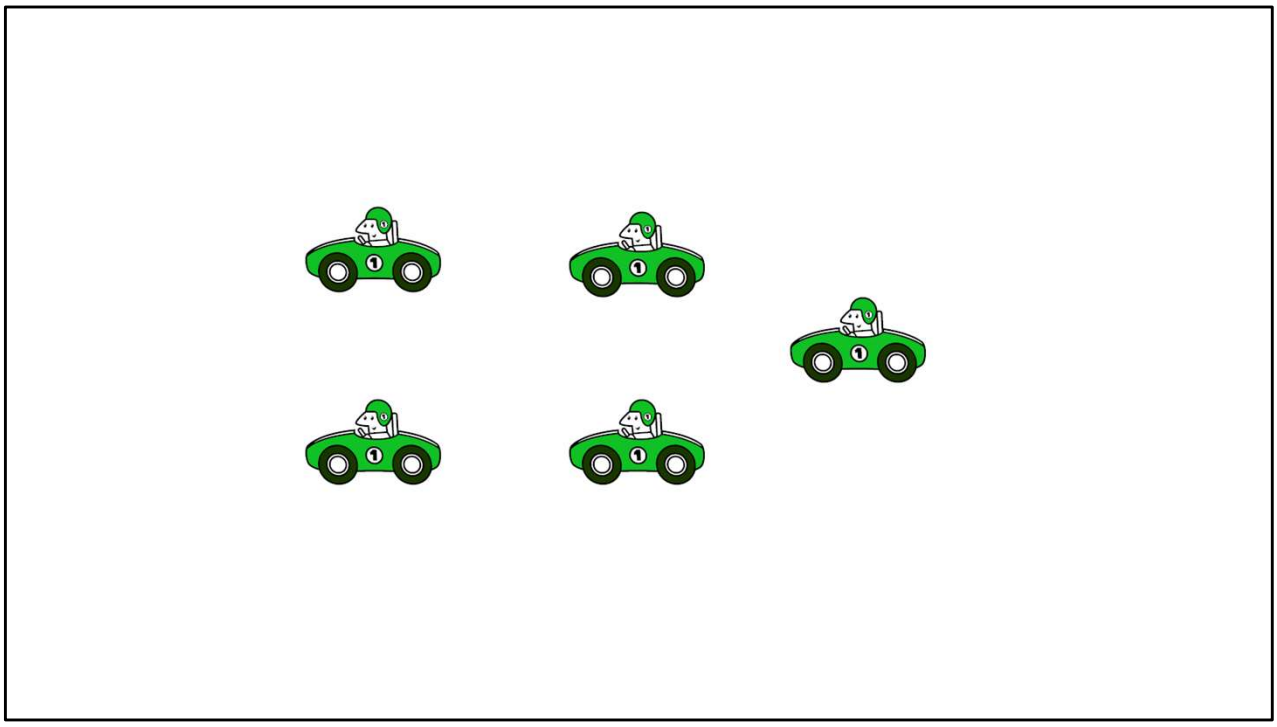
Subitising – ability to look at small groups of objects and instantly know its value. Think numbers on a dice – we don't need to count the dots on the dice, we just know how many.

We are going to explore subitising a little…

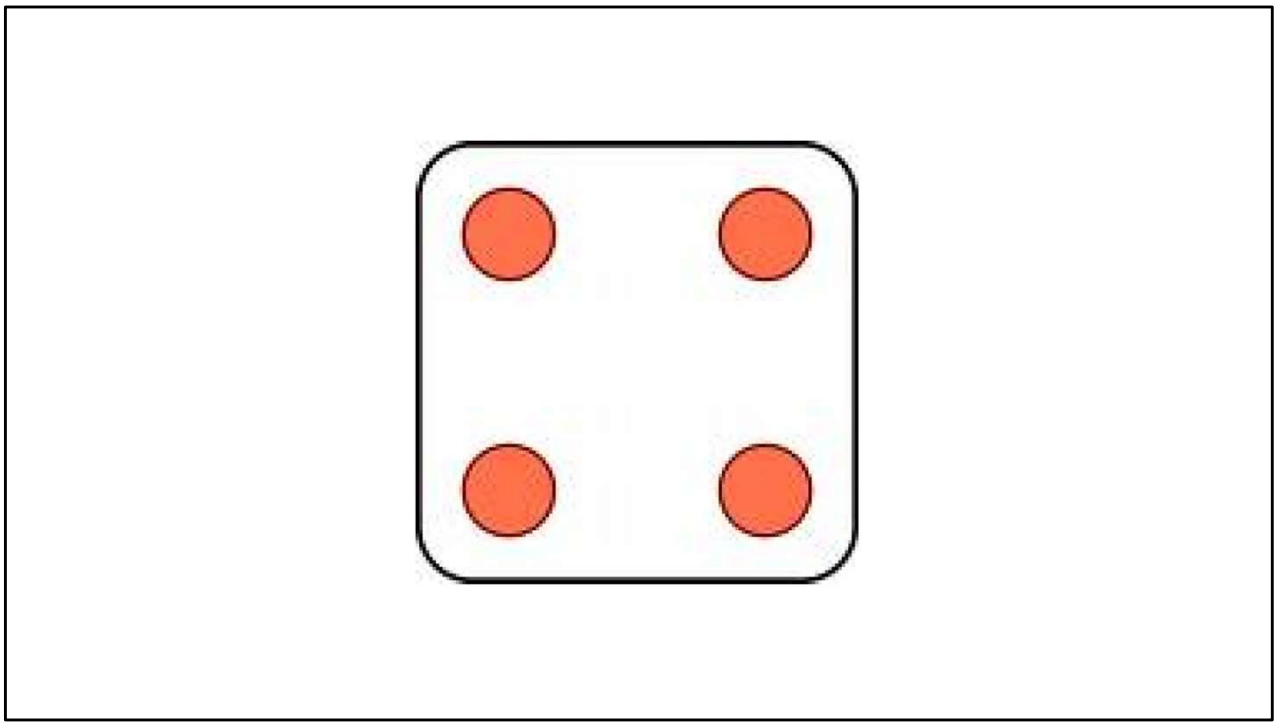
How many?

Importance of being able to subitise fluently

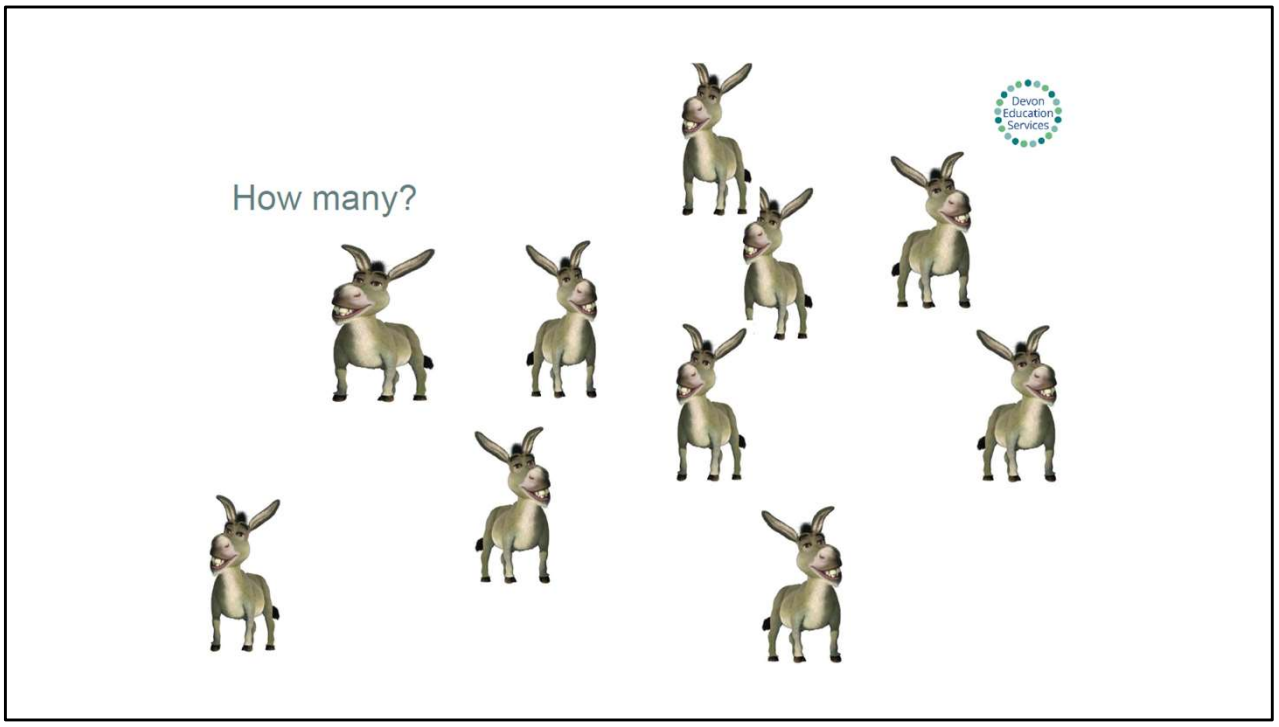
How many?



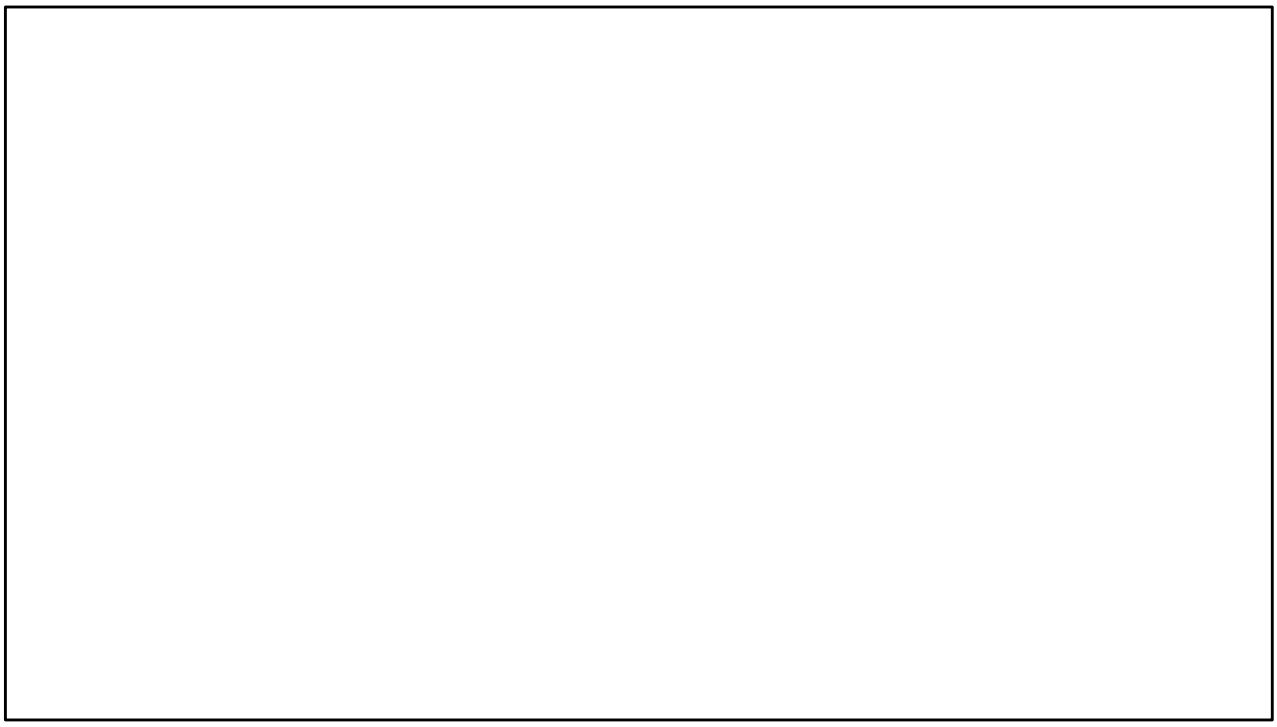
How many?

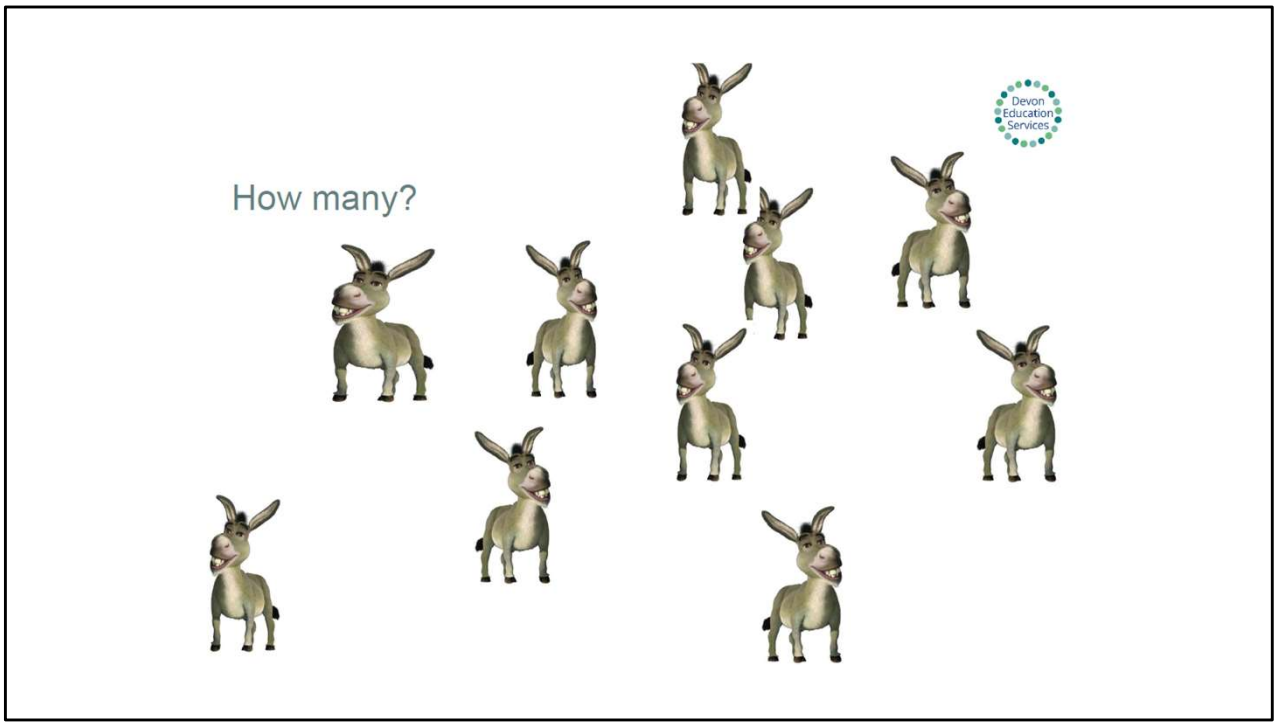


How many?



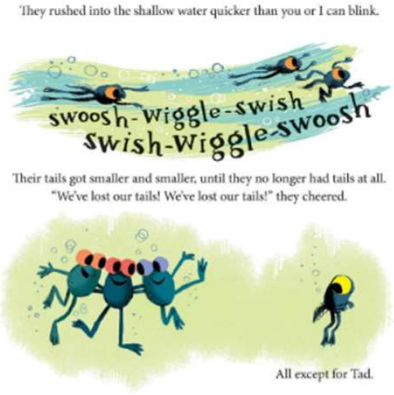
The highest number you can subitise is 5. After that you are counting in 1s or grouping into 2s, 3s, 4s, 5s. You can use this to count efficiently and quickly rather than going 1, 2, 3, 4, 5 etc





The highest number you can subitise is 5. After that you need to calculate either by counting in 1s or grouping into 2s, 3s, 4s, 5s. For speed and efficiency, we encourage children to use their subitising skills to spot groups of numbers and put them together. You don't always have to start from 1,2,3,4,5…

Subitising is everywhere



2 and 3 more is 5

1 and 1 and 1 is 3

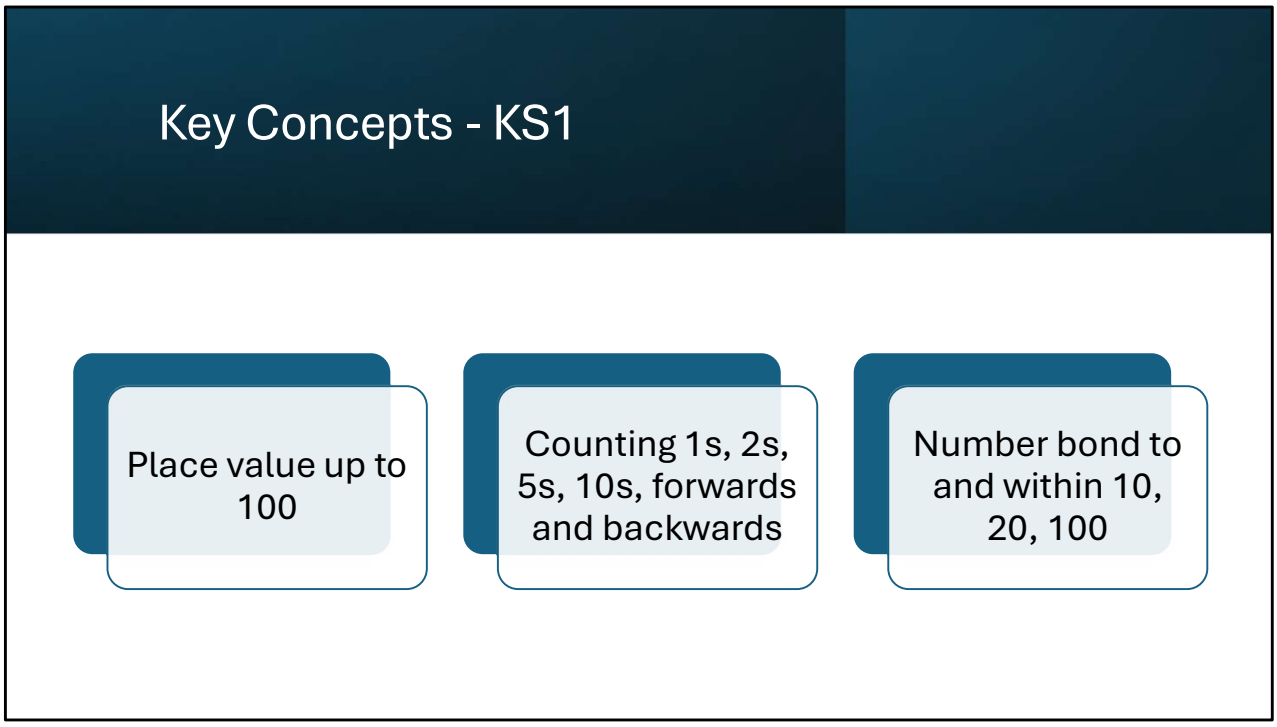
1 and 2 is 3

3 and 1 is 4

Gives a strong sense of quantity and is one of the very first building blocks of addition.

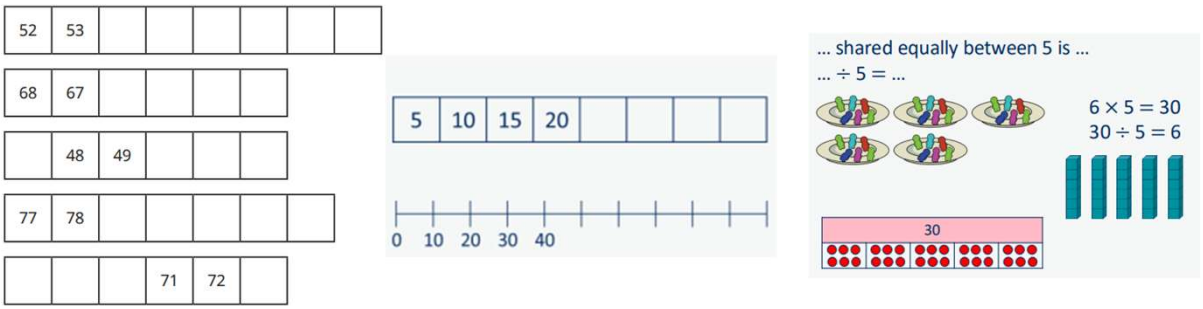
Next time you are reading a book to your child in reception or year 1, have a go at doing this and see if they count from 1 every time or they subitise.

Or you could do it when shopping or eating dinner or outside in nature– flowers, spots on a ladybird etc



Place value – knowing what each digit is worth in terms of tens and ones

Counting



Like reading is key in English, counting is key in maths. Constant practise is needed for fluency within our number system.

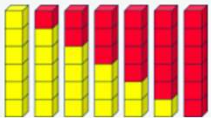
Being able to count confidently, forwards, backwards, from any number is the fundamental skill that lays the groundwork for so many more complex mathematical concepts. It shows they fully understand our number system. This includes then counting in 2s, 5s, 10s forwards, backwards and from any number.

A lot of board games are brilliant for early counting – snakes and ladders etc

Using physical coins for pocket money is a great way for counting in 2s, 5s, 10s – I remember counting my grandad's penny jar

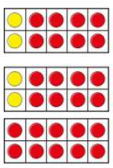
Number bonds

... is made of ... and ...
... and ... make ...

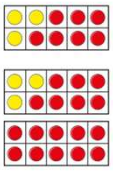


Complete the additions to match the ten frames.

a)



b)



What do you notice?

$5 + 2 = 7$
$15 + 2 = 17$

$7 = 5 + 2$
$17 = 15 + 2$

$8 - 3 = 5$
$18 - 3 = 15$
$28 - 3 = 25...$

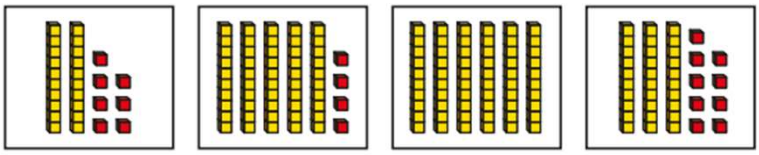
Number bonds to 10, 20 and 100 are also crucial. They are the quick recall of pairs of numbers that you add / subtract to make 10, 20, 100 or within 10, 20, 100 – this is essential for mental arithmetic and is so beneficial as they move up the school, needing less reliance using their fingers.

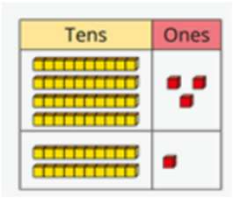
Having fluency this can really you to manipulate numbers and solve problems quickly and efficiently.

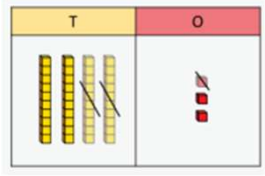
It gives children the comfortableness to use related facts – I know ___ so ____

Place Value

What numbers are shown?







Understanding the place value of each digit is another key concept that is essential for understanding the arithmetic operations.

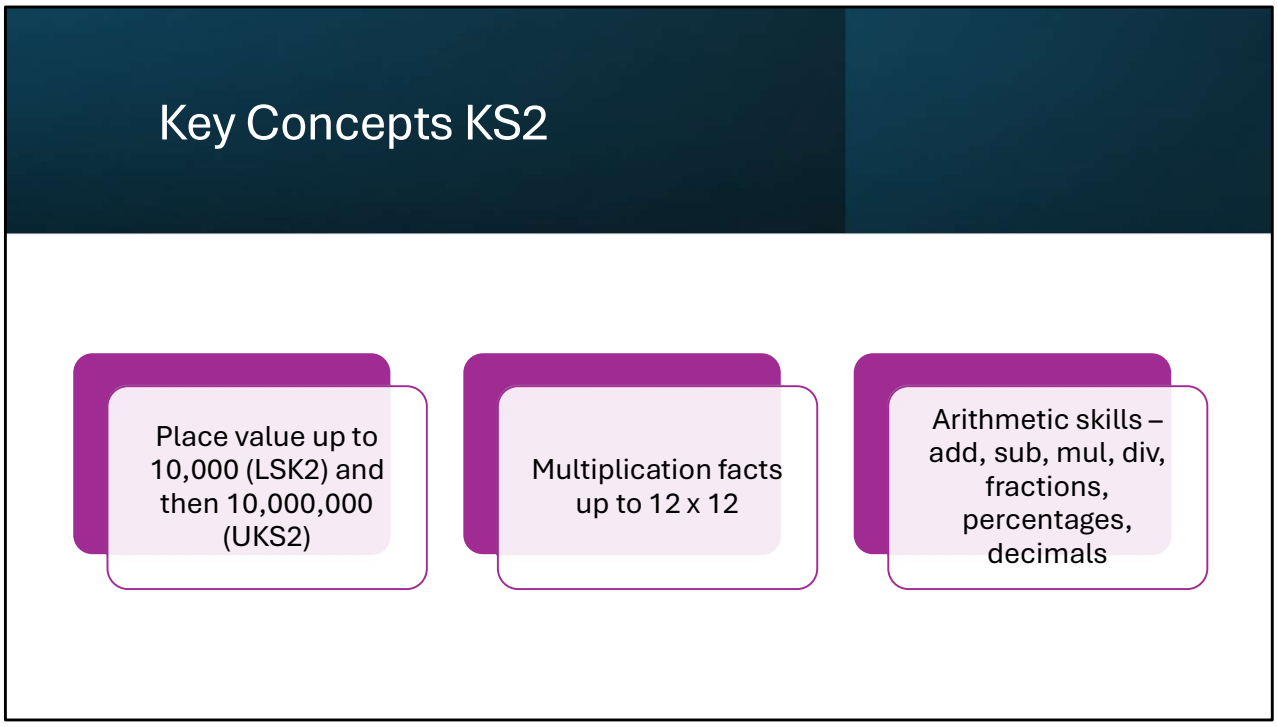
Addition and subtraction – without this understanding a lot of children make mistakes.

How to help

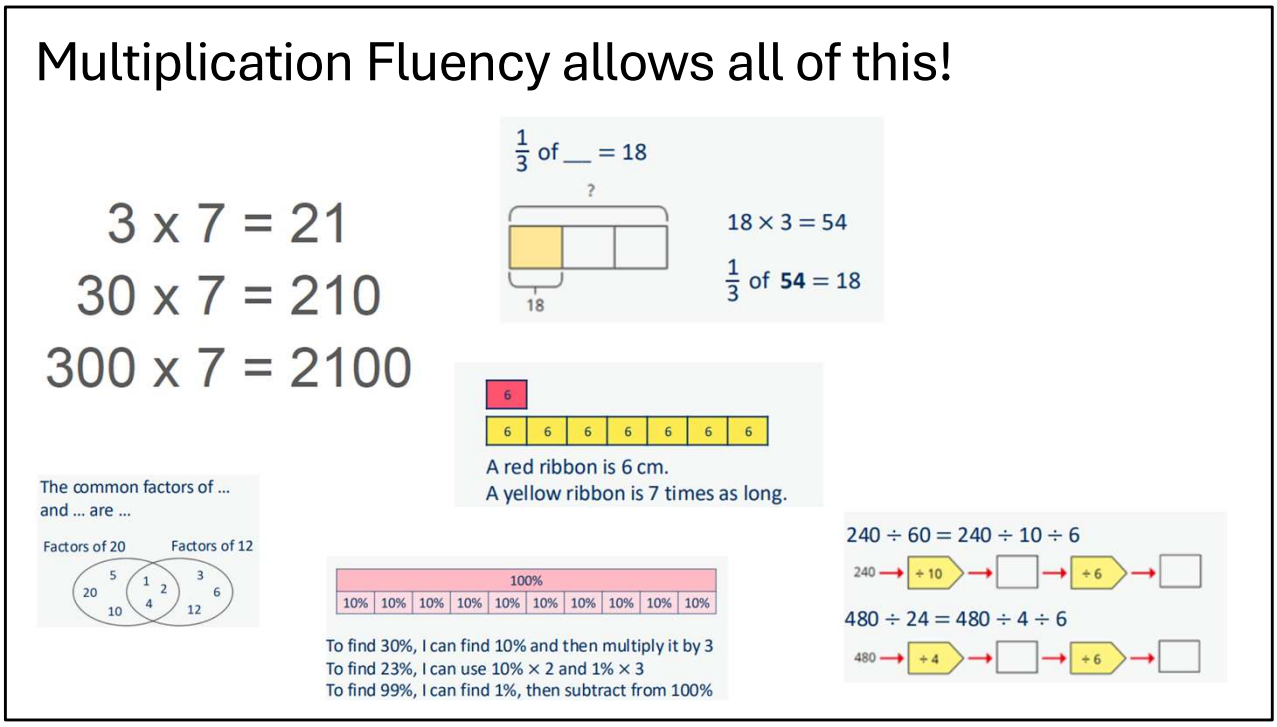
- Play board games
- Get children using coins (brilliant for place value and counting)
- Help with your shopping/cooking
- Any form of sorting game – into 2s, 5s, 10s
- Quickfire addition subtraction within 10 and 20
- Make towers of 10/20 with two different lego blocks

A lot of board games are brilliant for early counting – snakes and ladders etc

Using physical coins for pocket money is a great way for counting in 2s, 5s, 10s – I remember counting my grandad's penny jar



Then by the end of year 6 you are needing to understanding everything taught and be able to problem solve and reason comfortably within all objectives across the curriculum.



Multiplication can be a barrier to so many other concepts, especially coming to UPKS2.

It is crucial in so many concepts.

- Fractions
- Decimals
- Percentages
- Square and cubed numbers
- Scaling

- Having them at your fingertips and being able to quickly manipulate and calculate them can be so beneficial.

- Can either learn by rote (skip counting) or use what you know – so many times I get 'I don't know my 6s' – I don't know my fours

- 2s double, 5s end in 0 and 5 and 10s end in 0 – these are overlearned
- 11s are easy
- 3s are comfortable
- 4s are double 2s

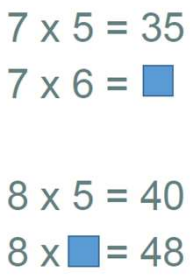
- 6s are double the 3s or 5 x __ plus one group
- 8s are double, double, double
- 9s there lots of rules to help – digits add up to 9 – 9 less than the 10s answer
- 12s double 6s or 10 times add 2 times

- 7s are only ones you really need to know but if you know the rest you only need to learn 7x7

- Things to avoid is counting on in ones

How can you help

- TTRS Practise
- Rote learning through skip counting and 1x7 is 7, 2x7 is 14…
- Avoid counting up in ones using fingers
- Learn and master the rules of each multiplication
- Use related facts



- Can either learn by rote (skip counting) or use what you know – so many times I get 'I don't know my 6s' – I don't know my fours

If you learn and master the rules for each multiplication, there aren't that many multiplication facts the children have to remember.

- 2s double, 5s end in 0 and 5 and 10s end in 0 – these are overlearned
- 11s are easy
- 3s are comfortable
- 4s are double 2s
- 6s are double the 3s or 5 x __ plus one group
- 8s are double, double, double
- 9s there lots of rules to help – digits add up to 9 – 9 less than the 10s answer – tens go up by one as ones go down by one
- 12s double 6s or 10 times add 2 times

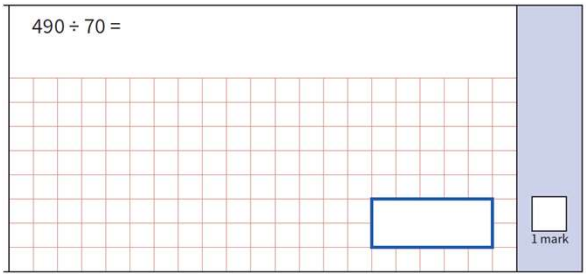
- 7s are only ones you really need to know but if you know the rest you only need to learn 7x7

- Things to avoid is counting on in ones – instead think of it as 8+8+8+8 but if your mental arithmetic isn't strong from previous years children tend to fall back on

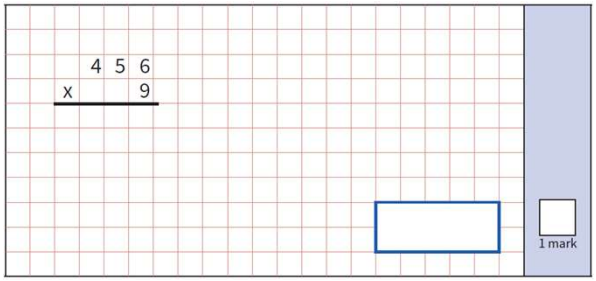
counting using fingers

Arithmetic

- Mental strategies



- Written Methods

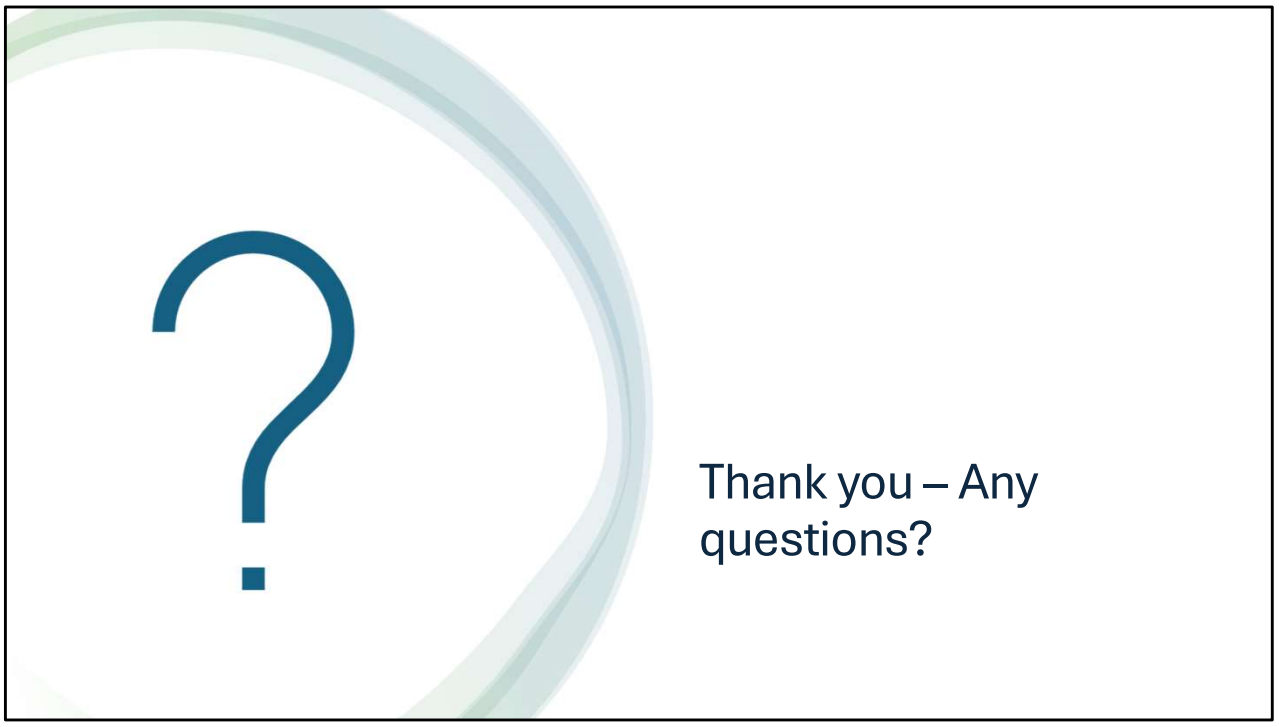


Confidence with arithmetic is also key across the years. But as mentioned throughout, we teach them to try and choose the most efficient methods.

Calculation policy is a great place to go to see our methods and practise them with your children. Year 5 and 6 set maths homework which is often arithmetic practise.

Final thoughts

1. Getting your children to stop and notice
2. Arithmetic practise – see calculation policy for methods
3. Multiplication practise – rote learning or mental strategies (TTRS)
4. Helping the children consolidate and practise key checkpoints for each year – see key concept document
5. Keep maths talk positive and have fun spotting maths out and about in the real world


Thank you – Any questions?