

The background of the slide is a collage of various numbers in different colors (yellow, green, blue, pink, orange) and sizes, some of which are slightly blurred. The numbers are scattered across the entire page, creating a math-themed pattern.

**Parent's Maths
Workshop 1
16th October 2019**

Aims:

- To know what the National Curriculum says about Maths
- To understand what Emerging, Expected and Exceeding is
- To know how this links with our School's assessment steps

The Confidence Trap

- Are you guilty of saying the following?
 - I can't do that
 - I don't know how Maths is taught today
 - My partner does the Maths; I do the Literacy
 - I didn't like Maths at school
 - Oh that's really hard!
 - I am rubbish at Maths
 - No...you do it this way
 - That's not how you do it!
 - I didn't do it that way when I was at school



- Try saying
 - That's what I need to learn next
 - This is a challenge – can we work it out together
 - You thought really carefully to solve those problems
 - I wish I learned Maths the way you are learning it now
 - That looks like a problem we can try and solve
 - Can you show me how you worked that out?



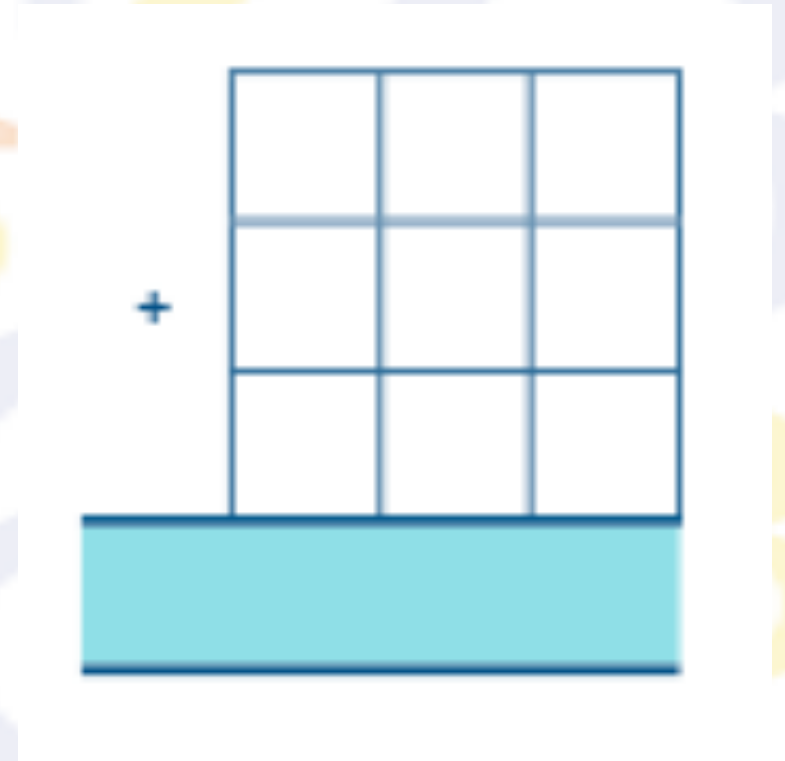
Lets do some Maths! - Dicey Operations!

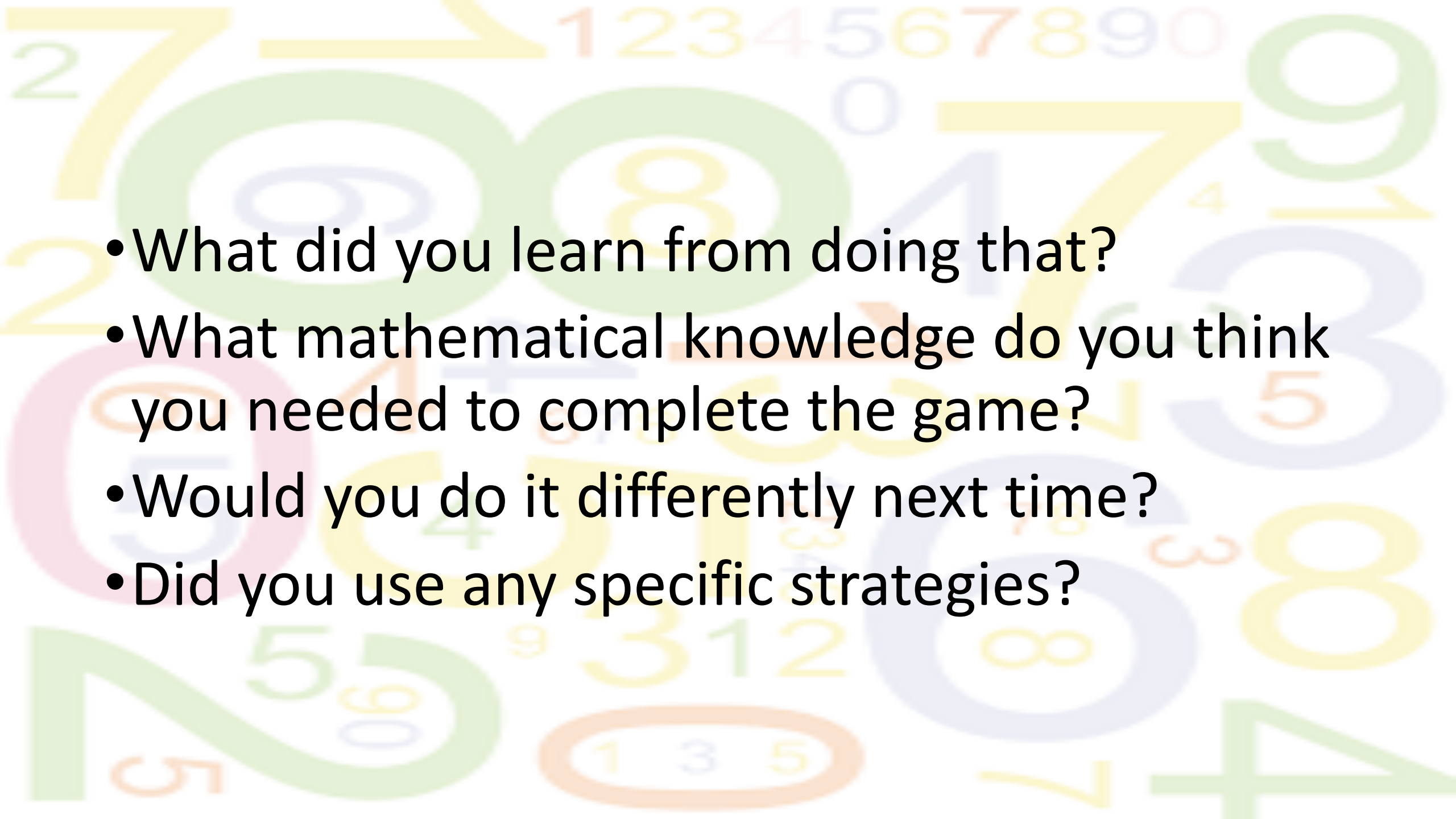
Find a partner. Each draw a grid like the one opposite.

Take turns to roll a die and decide which cells to fill in

Throw the die 9 times each until the cells are full

Whoever has the closest number to 1000 wins!



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- The background of the slide is a light-colored surface covered with various numbers and mathematical symbols in different colors and sizes. Some numbers are large and bold, while others are smaller and more faded. The colors include shades of green, yellow, blue, orange, and pink. Symbols like a plus sign and a percent sign are also visible.
- What did you learn from doing that?
 - What mathematical knowledge do you think you needed to complete the game?
 - Would you do it differently next time?
 - Did you use any specific strategies?

Programme
of Study
(Content)

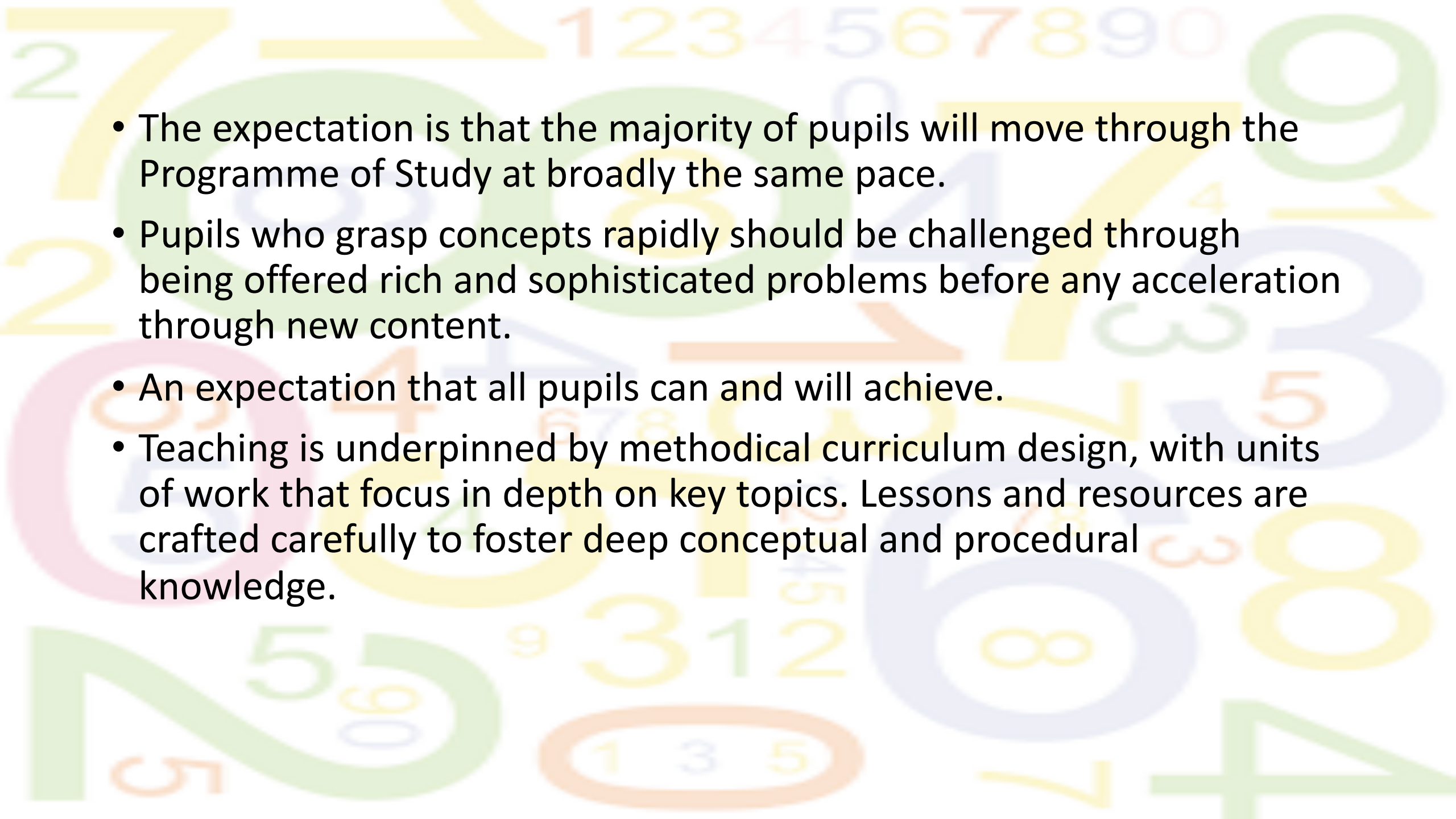
National
Curriculum

Working towards
(Emerging), Working
at the Expected
Standard (Expected)
or Working at
Greater Depth
(Exceeding)

Fluency,
Reasoning,
Problem
Solving

What the Curriculum says

- The National Curriculum for mathematics aims to ensure that all pupils:
- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems

- 
- The background of the slide is a light-colored surface covered with various mathematical symbols and numbers in different colors and sizes. The symbols include numbers from 0 to 9, the infinity symbol (∞), and the plus sign (+). The colors used are yellow, green, blue, orange, and pink. The symbols are scattered across the page, some overlapping each other, creating a math-themed pattern.
- The expectation is that the majority of pupils will move through the Programme of Study at broadly the same pace.
 - Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.
 - An expectation that all pupils can and will achieve.
 - Teaching is underpinned by methodical curriculum design, with units of work that focus in depth on key topics. Lessons and resources are crafted carefully to foster deep conceptual and procedural knowledge.

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graph TD; A[Programme of Study (Content)] --- B[National Curriculum]; B --- C["Working towards (Emerging), Working at the Expected Standard (Expected) or Working at Greater Depth (Exceeding)"]; B --- D["Fluency, Reasoning, Problem Solving"]
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What does fluency, reasoning and problem solving look like?

Problem solving

Apply mathematics

Break down problems & persevere

Reasoning

Conjecture relationships & generalisations

Mathematical language

Fluency

Rapid & accurate recall

Conceptual understanding

Ready, Steady, Bake!



Signature Bake - Fluency

- I know how to do it (**operations and their relationships**)
- It becomes automatic and I don't need to think about it – to make a cake I need to add flour, eggs, sugar and butter (**mental arithmetic**)
- I'm really good at doing it (**speed**)
- I can show someone else how to do it (**understanding**)

Technical Bake - Varied Fluency

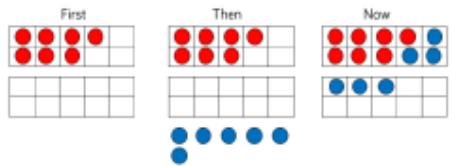
Varied Fluency

- 1 Complete the sentences.



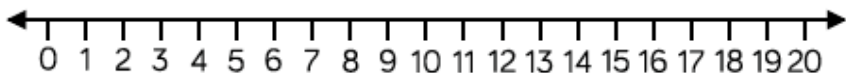
First there were ___ turtles.
 Then ___ more joined the group.
 Now there are ___ turtles.

- 2 Use ten frames to help you fill in the missing numbers.



First there were ____.
 Then ____ more were added.
 Now there is ____.

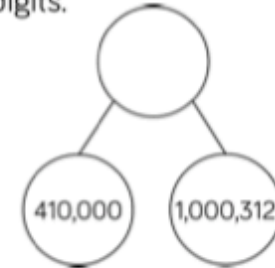
- 3 Jo has 13 prize tokens.
 She wins 5 more.
 How many prize tokens does Jo have now?
 Show your calculation on the number line.



Varied Fluency

- Match the representations to the numbers in digits.

One million, four hundred and one thousand,
 three hundred and twelve.



1,401,312

1,041,312

1,410,312

- Complete the missing numbers.

$$6,305,400 = \underline{\hspace{2cm}} + 300,000 + \underline{\hspace{2cm}} + 400$$

$$7,001,001 = 7,000,000 + \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$42,550 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + 50$$

- Teddy's number is 306,042
 He adds 5,000 to his number.
 What is his new number?

Signature Challenge – Reasoning & Problem Solving

- Deep and sustainable learning
- The ability to build on something that has already been sufficiently mastered
- The ability to reason about a concept and make connections
- Conceptual understanding (comprehension of mathematical concepts, operations and relations) and procedural fluency (ability to formulate, represent and solve mathematical problems).



*“Reasoning is the
“glue” that helps
mathematics make
sense.”*

Check Calculations

Reasoning and Problem Solving

Emily did the following calculation:

$$12 - 8 = 4$$

She checked it by using the inverse.

She did $12 + 8 = 20$ and said that her first calculation was wrong.

What advice would you give her?

It should have
been $8 + 4 = 12$

Theo is checking Ellen's work but doesn't do an inverse calculation.

He says, "these calculations can't be right."

How might he know?

$$\begin{aligned}24 + 6 &= 84 \\25 - 23 &= 12 \\18 - 3 &= 21\end{aligned}$$

All of the
calculations
involve errors:

6 has been added
to the tens instead
of the ones.

25 and 23 are
very close in value
and therefore can't
result in such a
large difference.

18 and 3 have
been added
instead of
subtracted.

Now your turn....more Maths!

- Using the cuisenaire rods.....
 - How many different ways can you put two rods together to make the same length as the orange?
 - What could the orange represent?
 - What strategy did you use to work that out?



SATs sample question 2016



- On Saturday Laura read $\frac{2}{5}$ of her book
- On Sunday she read the last 90 pages
- How many pages in the book altogether?

Maths GCSE 2019

- 6 machines work at a factory to produce boxes
- When all 6 machines are working at the same work rate, it takes them 9 days to produce all the boxes they need
- If on the first day, 3 machines were being used, on the second day 4, the third day 5 machines and the rest of the days 6 machines, how many days would it take for them to produce all their boxes?

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The National Curriculum and EYFS Content

EYFS

- Numbers


- Children estimate a number of objects and check quantities by counting up to 20.
- They solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups.

- Shape, space and measures

- Children estimate, measure, weigh and compare and order objects and talk about properties, position and time.

Y1-6 Content

- Number
 - Place Value
 - Addition and Subtraction
 - Multiplication and Division
- Fractions
- Statistics (Y2-6)
- Ratio and Proportion (Y6 only)
- Algebra (Y6 only)

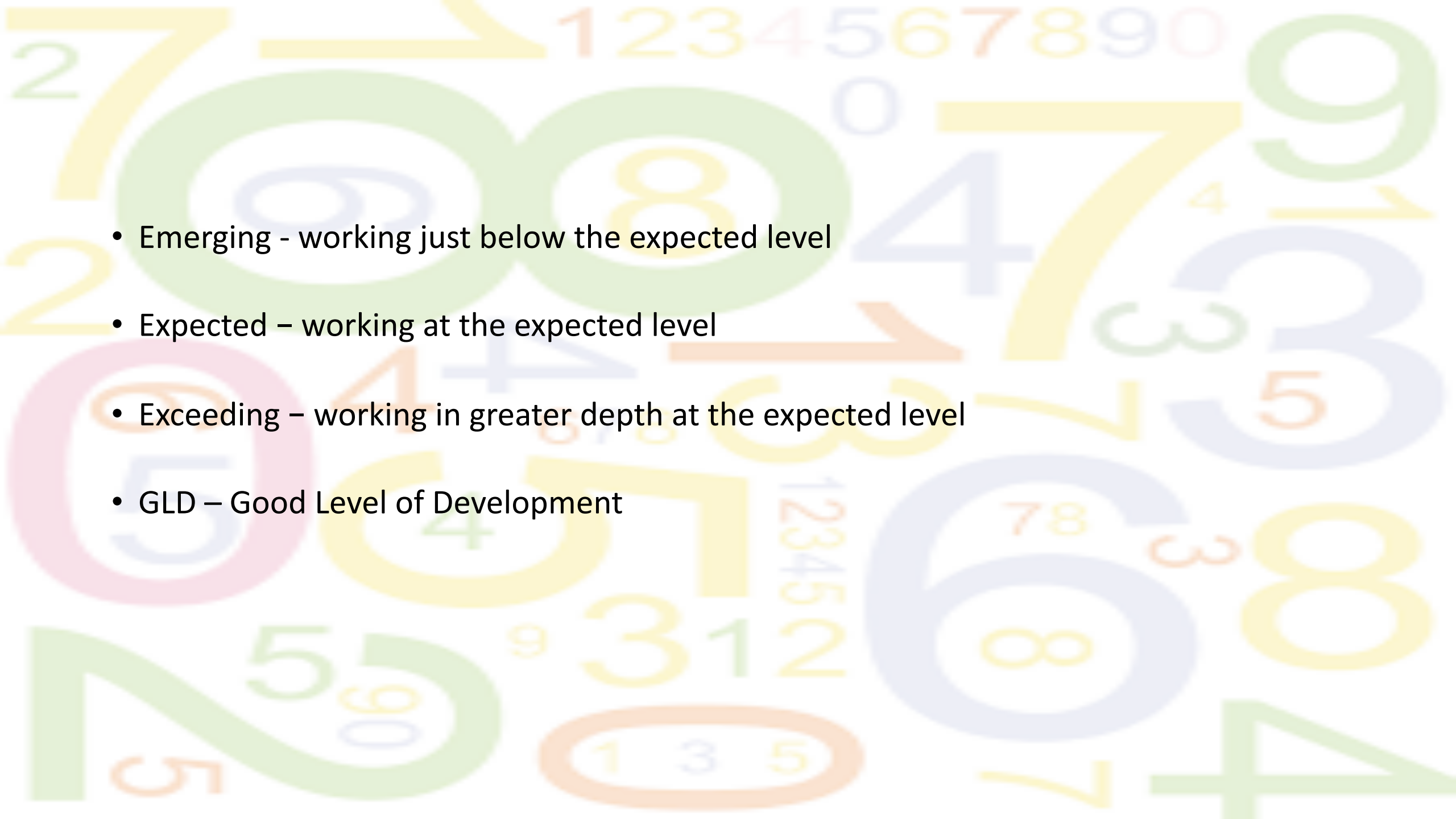
- 
- Measurement
 - Length/Height
 - Mass/Weight
 - Time
 - Money
 - Capacity/Volume
 - Geometry
 - Shape and their properties
 - Position and Direction

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- 
- Emerging - working just below the expected level
 - Expected - working at the expected level
 - Exceeding - working in greater depth at the expected level
 - GLD - Good Level of Development

Year 2 Number and Place Value

	Number and Place Value	Addition and Subtraction	Multiplication and Division	Fractions
Working at the Expected Standard	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward. <input type="checkbox"/> Recognise the place value of each digit in a two-digit number (tens, ones). <input type="checkbox"/> Identify, represent and estimate numbers using different representations, including the number line. <input type="checkbox"/> Compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs. <input type="checkbox"/> Read and write numbers to at least 100 in numerals and in words. <input type="checkbox"/> Use place value and number facts to solve problems. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Solve problems with addition and subtraction: <input type="checkbox"/> Using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods. <input type="checkbox"/> Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. <input type="checkbox"/> Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers. <input type="checkbox"/> Add three one-digit numbers. <input type="checkbox"/> Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. <input type="checkbox"/> Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. <input type="checkbox"/> Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs. <input type="checkbox"/> Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. <input type="checkbox"/> Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Recognise, find, name and write fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ of a length, shape, set of objects or quantity. <input type="checkbox"/> Write simple fractions for example, $\frac{1}{2}$ of $6 = 3$ and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Year 2 Geometry and Measures

	Measures	Geometry – Properties of Shapes	Geometry – Position and Movement	Statistics
Working at the Expected Standard	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. <input type="checkbox"/> Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$. <input type="checkbox"/> Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value <input type="checkbox"/> Find different combinations of coins that equal the same amounts of money. <input type="checkbox"/> Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change. <input type="checkbox"/> Compare and sequence intervals of time. <input type="checkbox"/> Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. <input type="checkbox"/> Know the number of minutes in an hour and the number of hours in a day. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. <input type="checkbox"/> Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces <input type="checkbox"/> Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] <input type="checkbox"/> Compare and sort common 2-D and 3-D shapes and everyday objects. 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Order and arrange combinations of mathematical objects in patterns and sequences. <input type="checkbox"/> Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise). 	<p>Sufficient evidence shows the ability to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. <input type="checkbox"/> Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. <input type="checkbox"/> Ask and answer questions about totalling and comparing categorical data.

So what does it mean at Brabourne? EYFS Overall

1	2	3
Emerging	GLD Expected	Exceeding

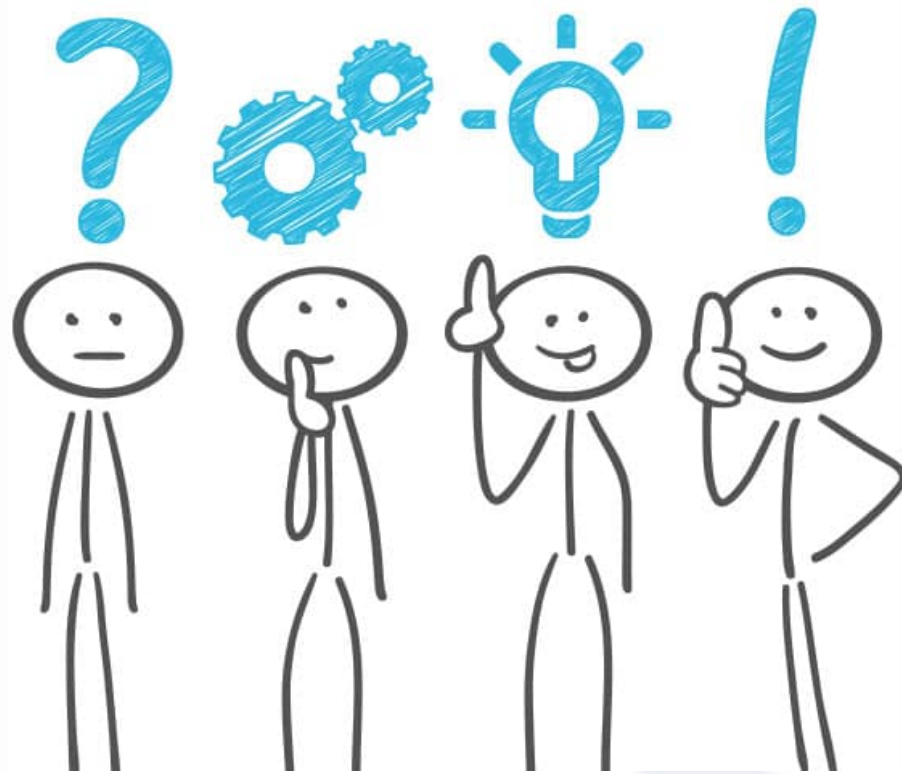
GLD can only be achieved in Maths if they have a good level of development in the prime areas which are Personal, Social and Emotional development; communication and language and physical development

For example: If they are exceeding in Maths (3), but emerging in PSED (1), they will NOT be said to have a GLD

Y1-6

Emerging 1	Developing 2	Consolidating 3	Secure 4	Advanced 5
Emerging (Working towards the Expected Standard)			Expected (Working at the Expected Standard)	Exceeding / Greater Depth (Working in Greater Depth within the expected standard)

Questions and Feedback



Next Workshop - Term 2 tbc

- White Rose – The CPA Approach (Concrete, Pictorial, Abstract)
- Calculation Policy
- Resources and Strategies used to support your child in learning Maths
- Mathletics
- TT Rock Stars