

Maths

Intent



Maths

What is the overarching ethos of Maths at Abbots Green?

INTENT

At Abbots Green the overriding philosophy is reflected in the rainbow values which have a resonance in each individual, each classroom and each subject – Mathematics is no exception. There are many key qualities such as curiosity, desire and explorative thinking which foster mathematicians at the school but there are five key values, which underpin all that we do. We are looking to create both resilient and reflective individuals who take a brave and open-minded approach to their maths learning and above all are not afraid to make mistakes.

We follow a mastery teaching approach which enables all learners to immerse themselves within a subject topic via a teaching block and which allows for a rich and strengthened understanding of each step of their learning journey. It is also too simplistic to see Maths in isolation from other subjects; we also foster links with – in particular – Science, Geography and History.

In a nutshell, we want our children to be pupils who 'think mathematically'.

Maths

National Curriculum Aims for maths:

We use the National Curriculum 2014 and the Early Years Foundation Stage Early Learning Goals to plan our curriculum

Early Years:

At Abbots Green we understand the importance of early experiences of maths and have committed to EYFS Framework across our Evergreen Nursery and Reception. Our approach places a significant emphasis on developing a strong grounding in number – understanding that this is a necessary building block for children to excel in the subject.

Children at the expected level of development for number at the end of the reception year will:

- Have a deep understanding of number to 10, including the composition of each number
- Subitise (recognise quantities without counting) up to 5
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
- Verbally count beyond 20, recognising the pattern of the counting system.

Maths

Early Years (continued):

- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Practitioners provide daily creative and engaging opportunities for children to ignite their curiosity and enthusiasm for the subject and build upon and apply their developing understanding of number and spatial reasoning. Through the Curiosity approach concrete manipulatives are a key focus within each session, as is the use of pictorial representations including fives and tens Frames. Children are actively encouraged to use mathematical terminology within their understanding, with a focus on developing positive attitudes and interest in the subject.

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National Curriculum Aims for maths:

Years 1-6:

The National Curriculum has formal goals that we whole-heartedly embrace as a school:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that children have conceptual understanding and are able to recall and apply their 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 with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

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Abbots Green Aims for maths:

Aims of teaching Mathematics

- To help children understand their world through a confident application of their mathematical knowledge
- To encourage pupils to challenge themselves and not to be afraid to make mistakes.
- To develop children's reasoning and problem-solving skills through using discussion, paired work, group activities and individual reflection.
- To support a deep understanding of mathematical strategies using a full range of Concrete, Pictorial and Abstract resources, modelling and experience within the classroom
- To experience a rich and varied mathematical diet through use of quality resources such as NRich and NCETM within learning environments.
- To develop children's subject-specific vocabulary

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Why do we approach Maths this way?

A number of factors have influenced our approach:

1. Our catchment and cohorts which have low levels of Pupil Premium children (13.11% against National 22%) and SEND children (4.24% against National 14.8%) combined with up to 50% of children typically at or close to Greater Depth attainment.
2. General research relating to cognitive load theory, retrieval practice and more specific research relating to mathematics teaching (Rosenshine 'Principles in Action' and Mathematics Inside the Black Box (Hodgen and Wiliam)).
3. Strong parental engagement but many children who exhibit limited expectations

Maths

Implementation



Maths

By teaching maths daily and building through the small steps of the White Rose Curriculum framework, children are empowered to build upon their prior knowledge, vocabulary, understanding and skills. Our long-term curriculum has been carefully mapped out in conjunction with the White Rose progression documents and with an awareness of the DFE Ready-to-progress criteria (2020); this ensures that not only is coverage met but also that each year group builds upon the prior year and prepares for the following.

IMPLEMENTATION

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Spring	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Summer	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation
	Number: Place Value (within 10)	Number: Addition and Subtraction (within 10)	Number: Place Value (within 10)	Number: Addition and Subtraction (within 20)	Number: Place Value (within 50)	Measurement: Length and Height
	Number: Addition and Subtraction (within 20)	Number: Place Value (within 100)	Measurement: Length and Height	Measurement: Weight and Volume	Consolidation	Consolidation
	Number: Multiplication and Division	Number: Fractions	Position and Direction	Number: Place Value (within 100)	Measurement: Time	Consolidation

**Mathematics
guidance:
key stages 1 and 2**
Non-statutory guidance for the national
curriculum in England

June 2020

Maths

The White Rose Curriculum Mapping documents provide a framework for medium term planning and are utilised in conjunction with the Small Steps of the Scheme of Learning.

IMPLEMENTATION

Primary Progression – Place Value



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Place Value: Counting	<ul style="list-style-type: none"> count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count numbers to 100 in numerals; count in multiples of twos, fives and tens <p>Autumn 1 Autumn 4 Spring 2 Summer 4</p>	<ul style="list-style-type: none"> count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward <p>Autumn 1</p>	<ul style="list-style-type: none"> count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number <p>Autumn 1 Autumn 3</p>	<ul style="list-style-type: none"> count in multiples of 6, 7, 9, 25 and 1000 count backwards through zero to include negative numbers <p>Autumn 1 Autumn 4</p>	<ul style="list-style-type: none"> count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 count forwards and backwards with positive and negative whole numbers, including through zero <p>Autumn 1</p>	
	<ul style="list-style-type: none"> identify and represent numbers using objects and pictorial 	<ul style="list-style-type: none"> read and write numbers to at least 100 in numerals and 	<ul style="list-style-type: none"> identify, represent and estimate numbers using 	<ul style="list-style-type: none"> identify, represent and estimate numbers using 	<ul style="list-style-type: none"> read, write, (order and compare) numbers to at least 1 000 000 	<ul style="list-style-type: none"> read, write, (order and compare) numbers up to 10 000 000

Maths

Additional guidance is provided through the Trust's calculation policy which covers most aspects of Number and provides a range of strategies for all Year Groups from Nursery to Year 6.



Calculation Policy 2021-22

Maths - Years 1-6

Lesson structures in *Years 2-6* currently follow a similar format which incorporates the following:

1. Engagement of pupils
2. Vocabulary focus
3. Direct teaching incorporating My Turn/ Your Turn
4. A Talk Task to promote paired discussion
5. Directed independent work
6. A reasoning task

Year One operates a continuous provision structure for part of the academic year, before beginning to follow the above format at an appropriate point in the year.

Maths – Concrete, Pictorial, Abstract

All teachers are encouraged to use resources as appropriate for their year group cohort and make a range of concrete manipulatives available within the classroom. In Year One, each child has an individual manipulative box, whereas within Key Stage Two there is access to concrete resources for all children where required within a lesson.

IMPLEMENTATION



Maths – Reasoning

At Abbots Green, we ensure the primacy of children’s reasoning skills within KS2 by incorporating reasoning and problem solving into every lesson and making this an area of maths that children aspire to develop, as well as promoting this through a variety of experiences within the classroom and on the classroom working walls.

IMPLEMENTATION




Teaching for Mastery
Questions, tasks and activities to support assessment

Year 3
Mike Askew, Sarah Bishop, Clare Christie, Sarah Eaton, Pete Griffin and Debbie Morgan

Can you tackle the mega maths CHALLENGE?

Solve Ready for today's challenge?

A box of 8 oranges cost £8.
How much do 30 oranges cost? Show your method!

$$\begin{array}{r} £8.00 \\ \times 10 = 10 \\ \hline £80.00 \\ \times 2 = 20 \\ \hline £200.00 \\ \hline £280.00 \end{array}$$

Explain it

First we did $10 \times 8 = 80$ then we did $10 \times £8.00 = £80.00$
 $6 \times 8 = 48.00$ then we put them together and got £280.

Prove it

$$\begin{array}{r} 10 \times £8.00 = £80.00 \\ 6 \times £8.00 = £48.00 \\ \hline £80.00 \\ + £48.00 \\ \hline £128.00 \\ \hline £280.00 \end{array}$$

$$\begin{array}{r} 10 \times 8 = 80 \\ 6 \times 8 = 48 \\ \hline 80 \\ + 48 \\ \hline 128 \\ \hline 128 \times 10 = 1280 \\ \hline \text{Answer} = £280.00 \end{array}$$

Mastery

Write the four number facts that this bar model shows.

540	
300	240

+ =
 + =
 - =
 - =

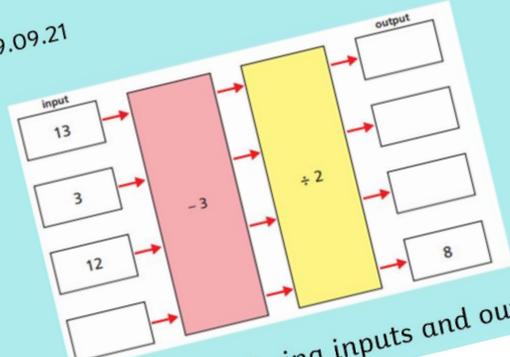
Maths – Research

We actively base much of our maths approach on critically accepted research, for example, retrieval practice, cognitive load theory and aspects of the EEF mathematics research recommendations. Our lesson starters to engage pupils and Maths Meetings will regularly re-visit key concepts.

IMPLEMENTATION

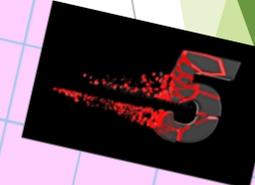
29.09.21

MATHS MEETING



Can you complete the missing inputs and outputs?

FAST FIVE!



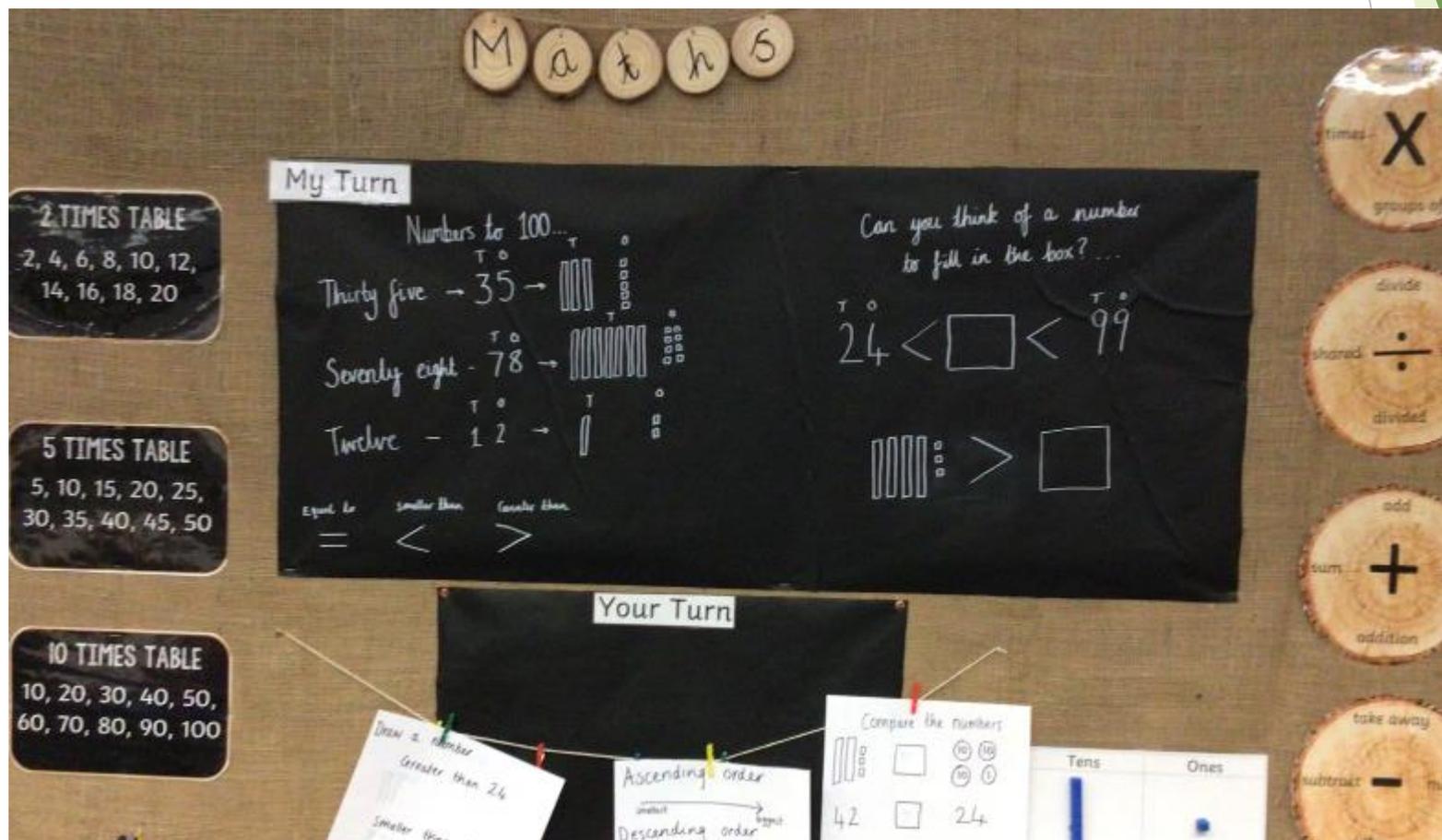
27.09.2021

1. Add 5,421 to 72,819
2. Round 692,827 to nearest 100,000
3. Find all the factor pairs for 20
4. If a temperature drops by 12°C to -4°C what was it originally?
5. Order 81,314, 81,431, 81,742 and 80,746

Maths – Classrooms

Each classroom has a Maths area which acts as both a working wall and as a space to exhibit children's work. This will often display the My Turn Your Turn worked on during a lesson, as well as covering key concepts and vocabulary relevant to the topic being taught.

IMPLEMENTATION



Maths – Vocabulary

Each lesson will have a focus on Maths vocabulary which will incorporate a range of Tier 2 or Tier 3 words that will be recapped, revised and revisited through a teaching unit to ensure that children embed this vocabulary. Teachers are encouraged to use maths language in their planning and teaching and maths dictionaries are regularly used in the classroom.

IMPLEMENTATION

LO: To add two 4-digit numbers

27.09.2021

Vocabulary

- Place Value
- Column
- Exchange

Ten-Thousands	Thousands	Hundreds	Tens	Ones
10000	1000	100	10	1



Maths - Oracy

Each lesson will have a talk task which will be an opportunity to discuss a problem with a talk partner following the main teaching input. Children are encouraged to discuss strategies and concepts with their partners before sharing with the class. Children are encouraged to use full sentences and this follows through to responding in a similar fashion to reasoning and problem-solving in their books.

IMPLEMENTATION

LO: To add two 4-digit numbers

27.09.2021



Talk Task!

What is the missing 4-digit number?

	Th	H	T	O
	—	—	—	—
+	6	3	9	5
	8	9	4	9

Maths

Impact



Maths

IMPACT

As a result of our aims and approach to maths teaching and learning at Abbots Green, you will see:

- Engaged children who are regularly challenged
- Confident children who can talk about maths
- Lessons that use a variety of resources
- Different representations of maths in classrooms and books
- Learning that is tracked and monitored to ensure that children make good progress

The impact is assessed and reviewed using an iAbacus tool.

Maths

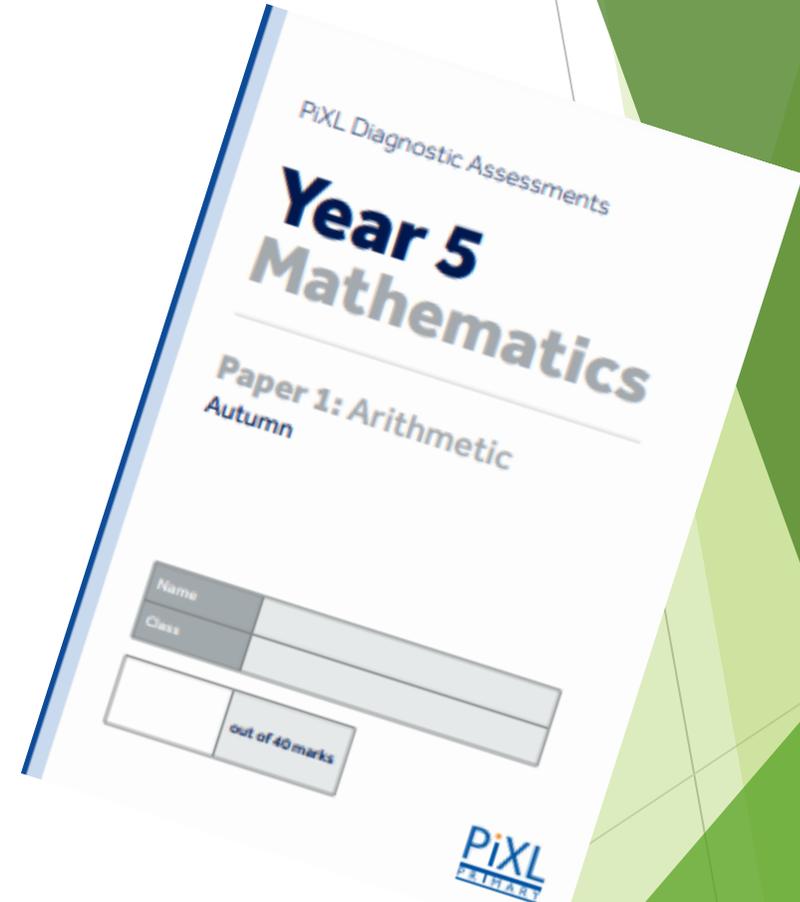
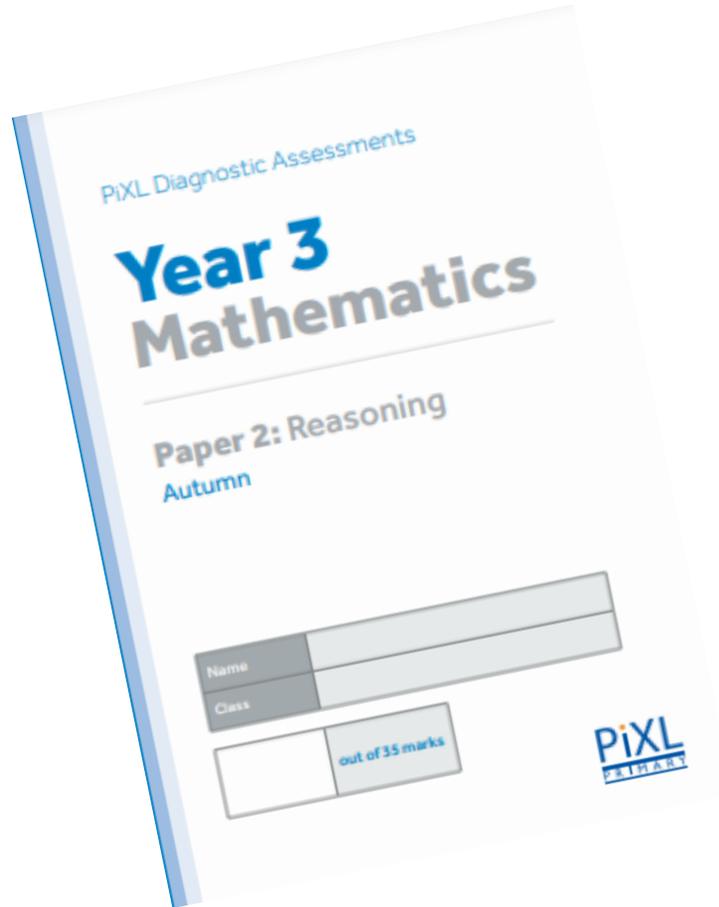
The impact of our maths curriculum and approach to Maths at Abbots Green is reviewed through Learning Walks, Book Reviews, Pupil Book Studies and more formal assessments.

IMPACT

In Years 2-6 we assess the children using PiXL or SATs assessment materials on a termly basis. The outcomes are 'triangulated' by reference to the Maths Governor, the Headteacher and the Trust Maths advisor to ensure a robust approach is undertaken.

Maths – Measuring Impact (Formal Assessment)

IMPACT



Arithmetic and Reasoning papers from PiXL are used as a summative assessment tool.

Maths – Early Years

IMPACT



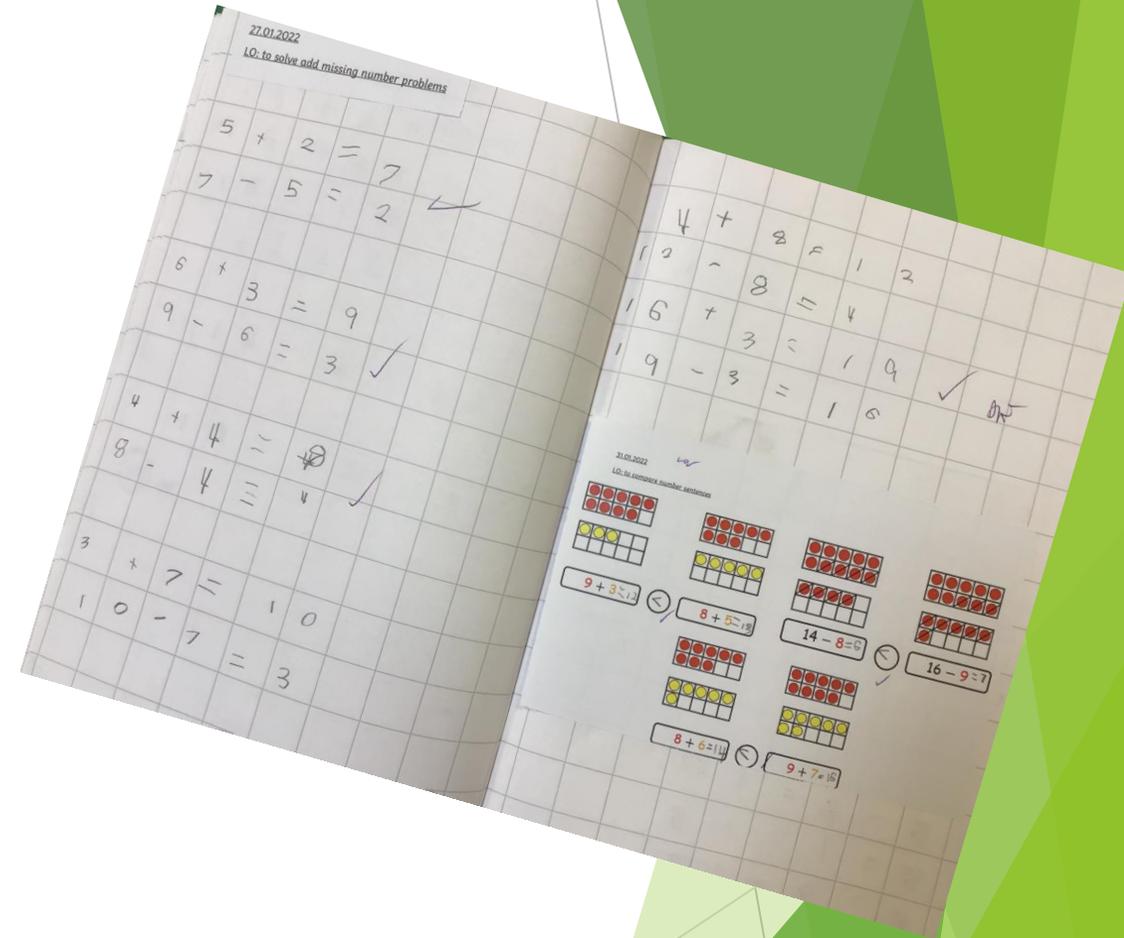
**Counting, sequencing and
sorting within the Early Years
Classrooms.**



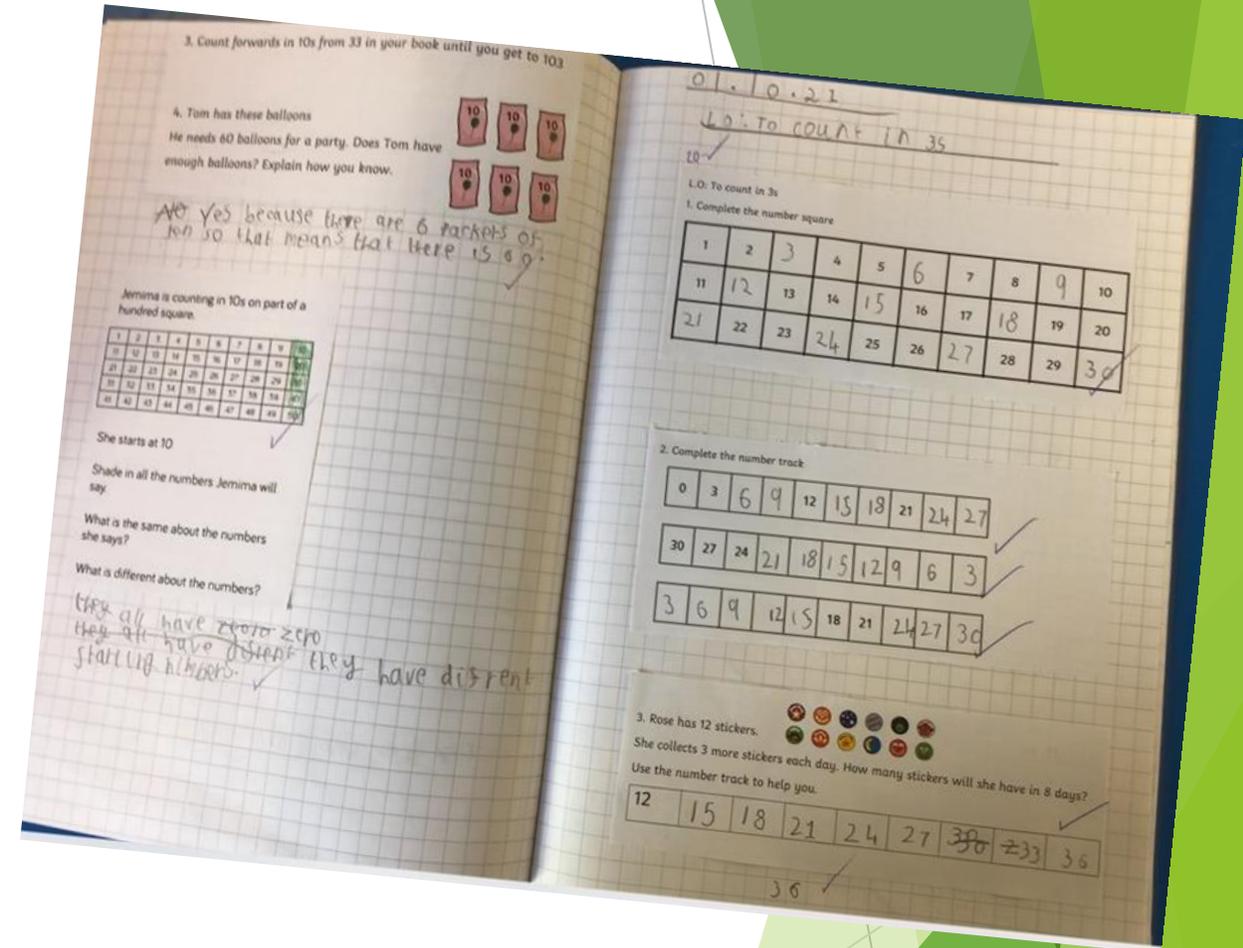
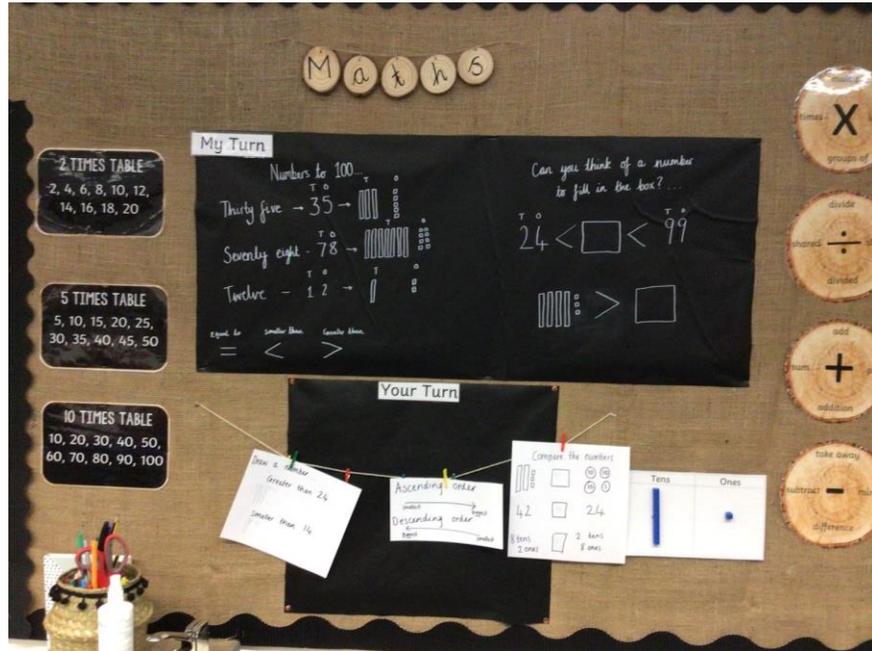
Maths

Year 1

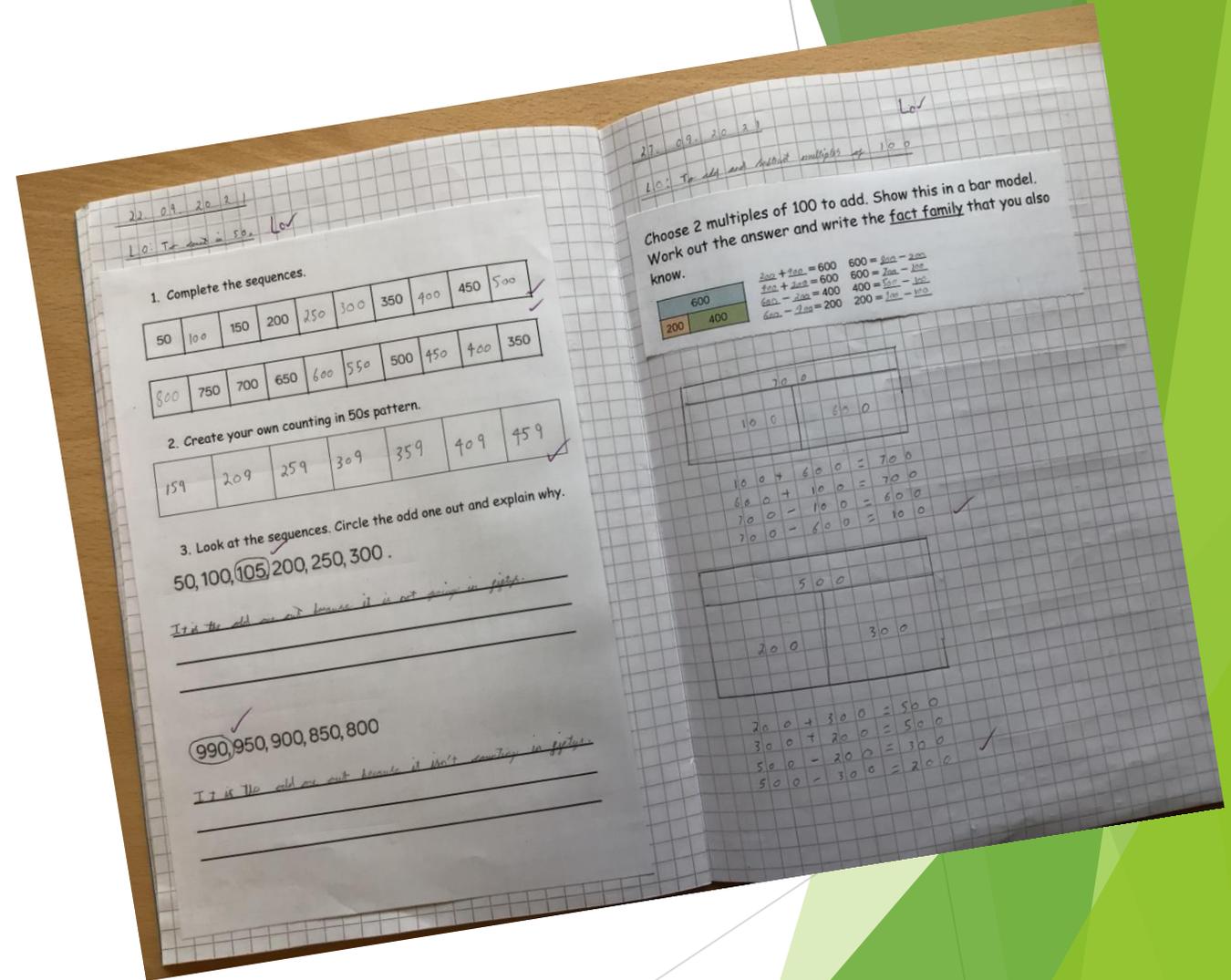
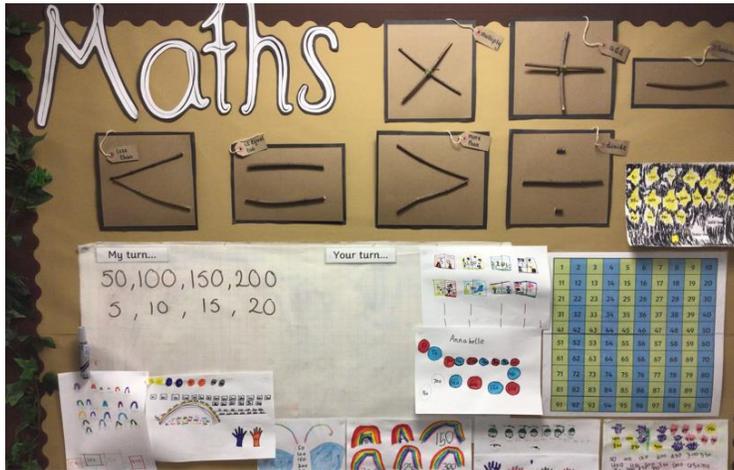
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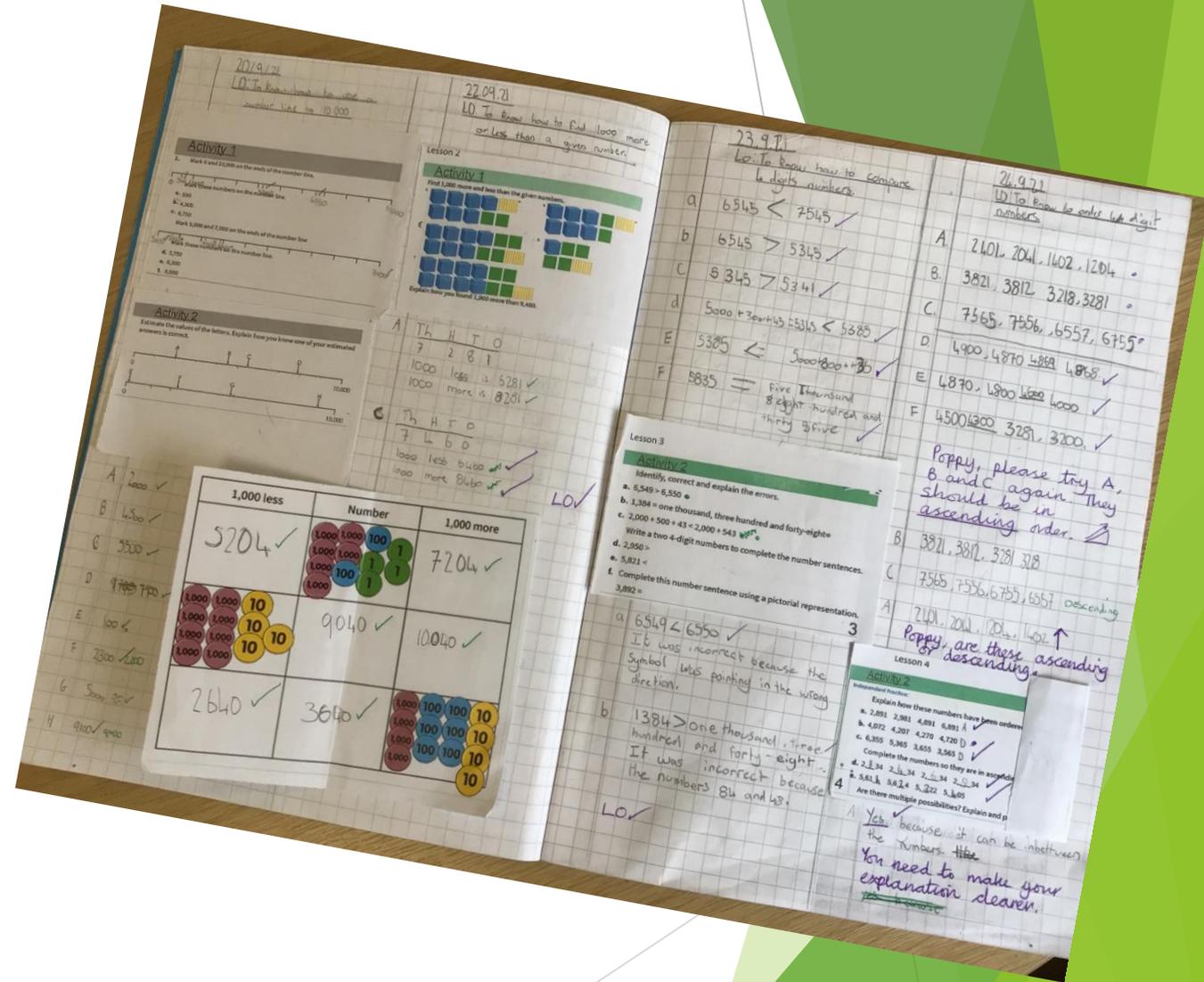
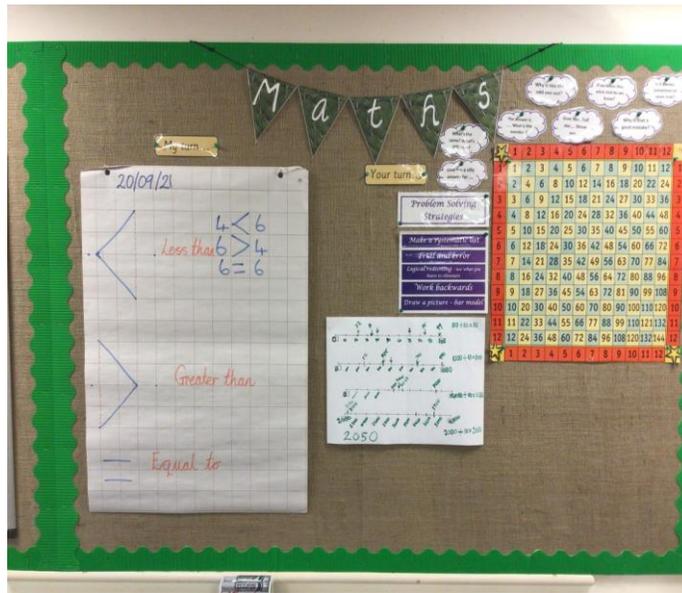


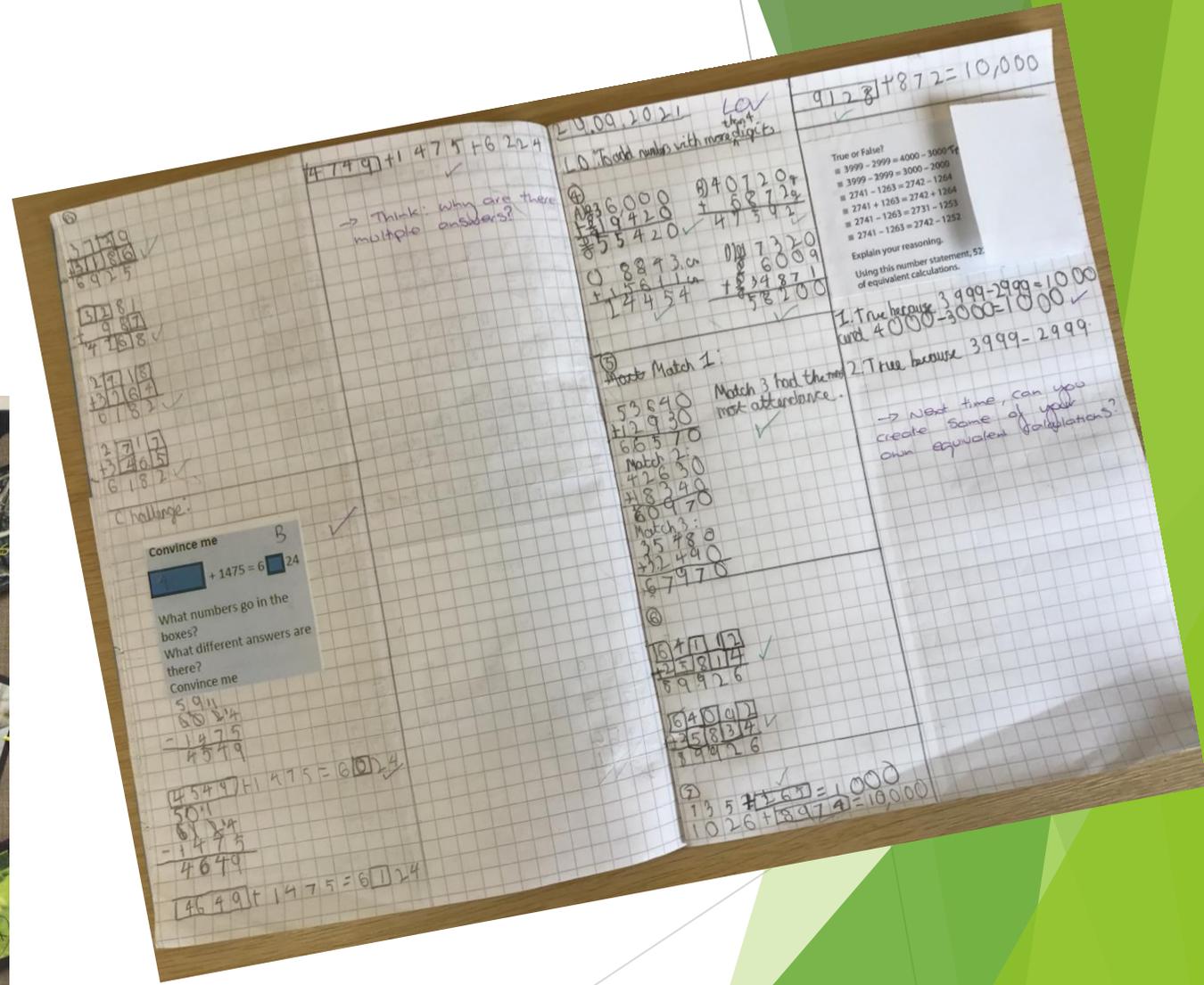
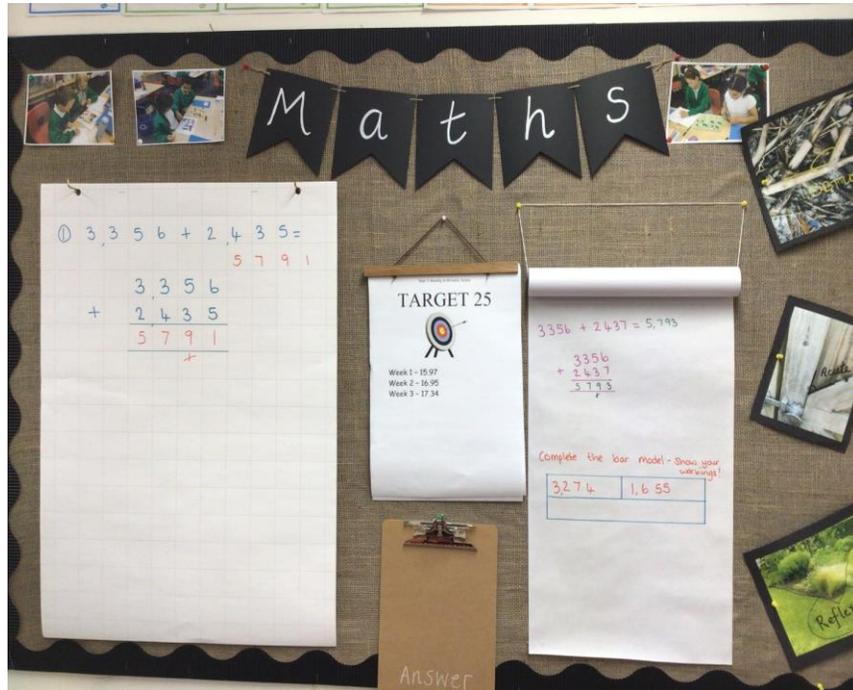
Example working wall and book work



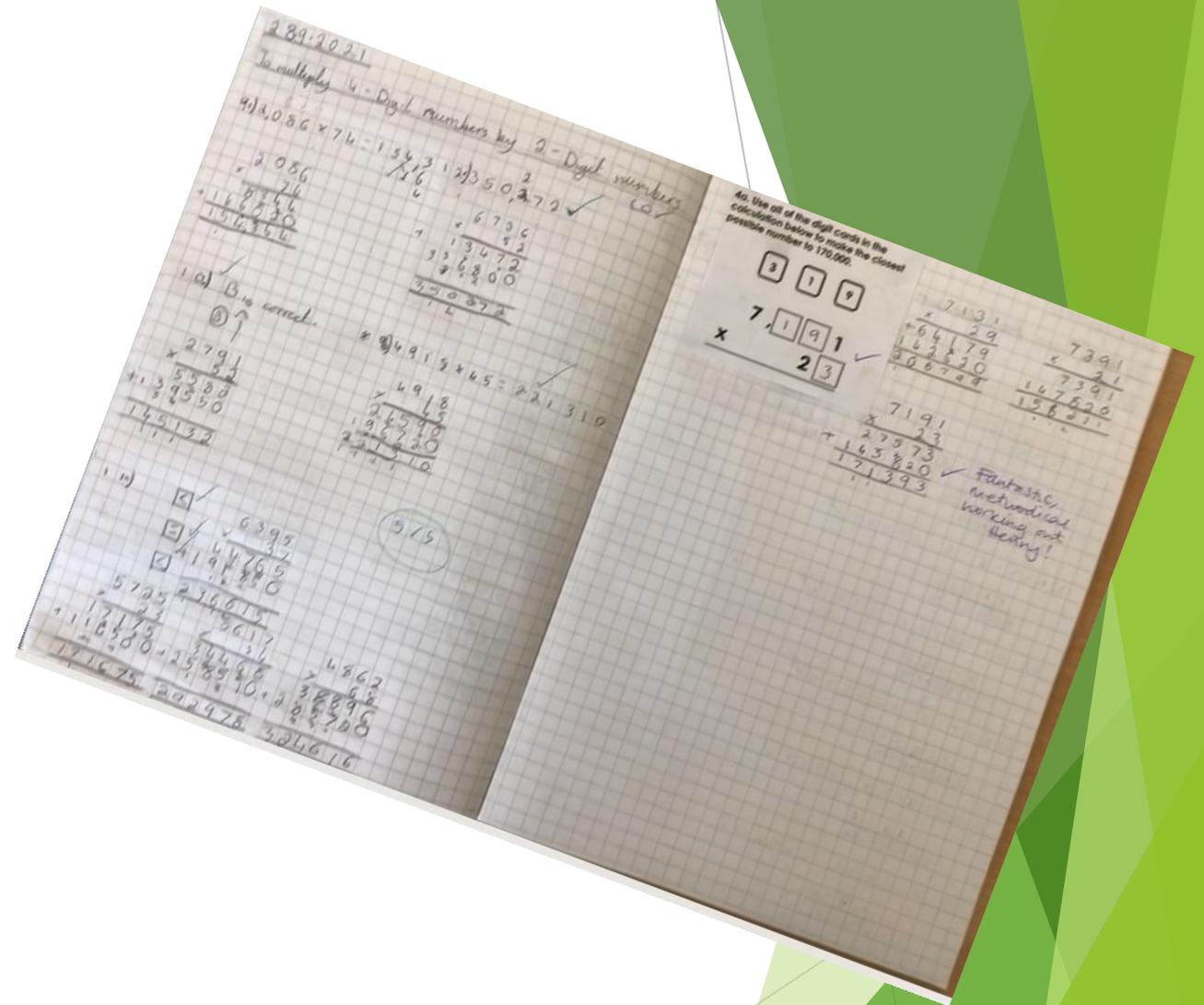
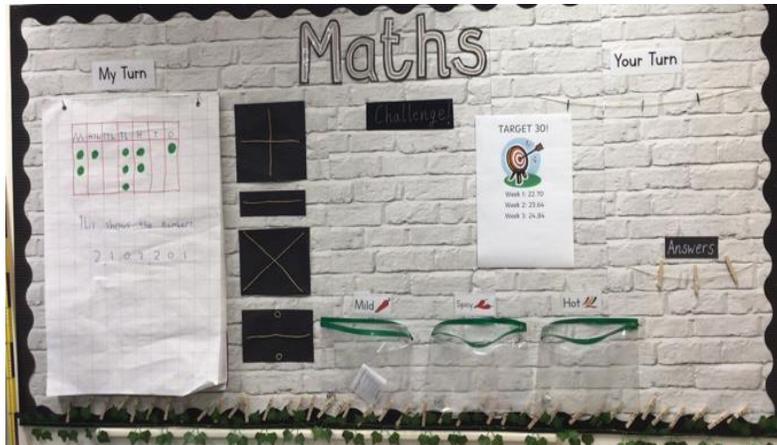
Example working wall and book work





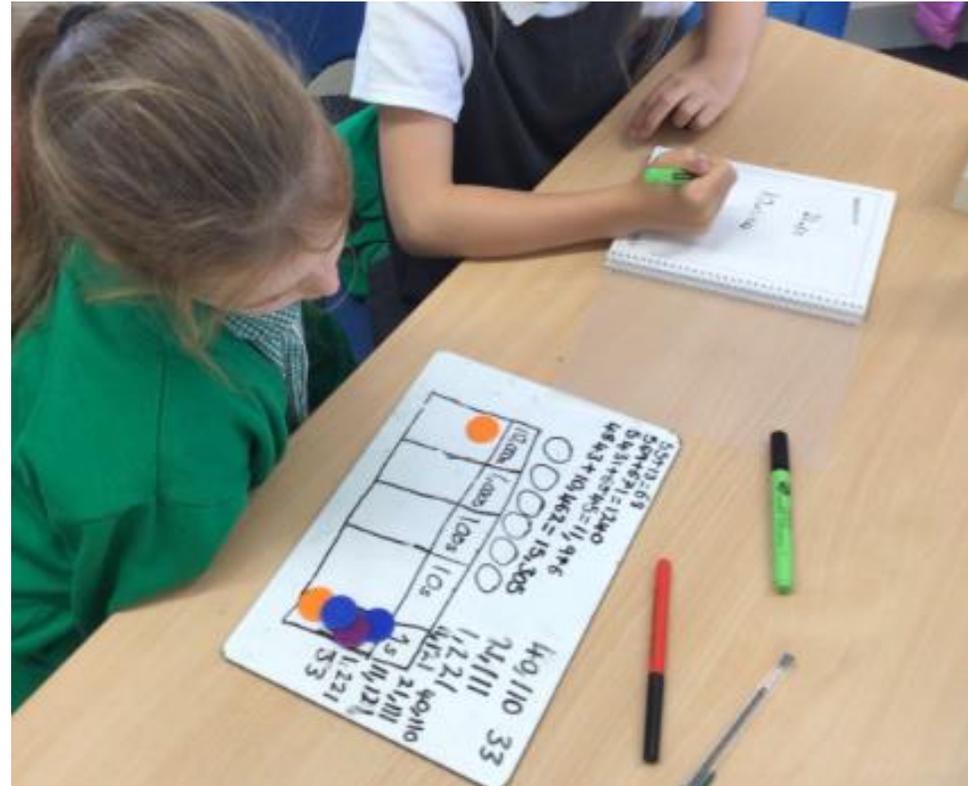


Example working wall and book work



Maths – Measuring Impact (Informal Assessment)

IMPACT



Formative assessment tools are used daily within the classroom to assess gaps and aid children's progression.