Barrow CEVC Primary School

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MATHS IMPLEMENTATION

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Maths - Implementation

At Barrow, children study mathematics following the NCETM curriculum priotisation framework (CP), with at least 4 discrete Maths lessons taught per week. CP is a blocked scheme, which allows for depth and breadth of learning within each strand of mathematics. To learn mathematics effectively, some things have to be learned before others, e.g. place value needs to be understood before working with addition and subtraction, addition needs to be learnt before looking at multiplication (as a model of repeated addition). You will see this emphasis on number skills first, carefully ordered, throughout our curriculum. For some other topics, the order isn't as crucial, e.g. Shapes and Statistics need to come after number, but don't depend on each other. We try to mix these so pupils have as wide a variety of mathematical experiences as possible in each term and year.

Example Yearly overview:

	Unit	Unit name
Autumn 1	1	Previous Reception experiences and counting within 100
Autumn 2	2	Comparison of quantities and part–whole relationships
	3	Numbers 0 to 5
Spring 1	4	Recognise, compose, decompose and manipulate 2D and 3D shapes
	5	Numbers 0 to 10
Spring 2	6	Additive structures
	7	Addition and subtraction facts within 10
Summer 1	8	Numbers 0 to 20
Summer 2	9	Unitising and coin recognition
	10	Position and direction
	11	Time

Number and place value
Number facts
Addition and subtraction
Geometry
Other

Year 1

Curriculum map

NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

June 2021

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Within each strand, the learning is broken down into small steps, which may take a single lesson or short sequence to master. This may include recapping / consolidation of previous year's learning.

Example of small steps breakdown:

Learning outcomes

#	Title
1	Pupils compose pattern block images
2	Pupils copy, extend and develop repeating and radiating pattern block patterns
3	Pupils compose tangram images
4	Pupils investigate tetromino and pentomino arrangements
5	Pupils investigate ways that four cubes can be composed into different 3D models
6	Pupils explore, discuss and compare 3D shapes
7	Pupils identify 2D shapes within 3D shapes
8	Pupils explore, discuss and compare 2D shapes
9	Pupils explore, discuss and identify circles and shapes that are not circles from shape cut-outs
10	Pupils explore, discuss and identify triangles and shapes that are not triangles from shape cut-outs

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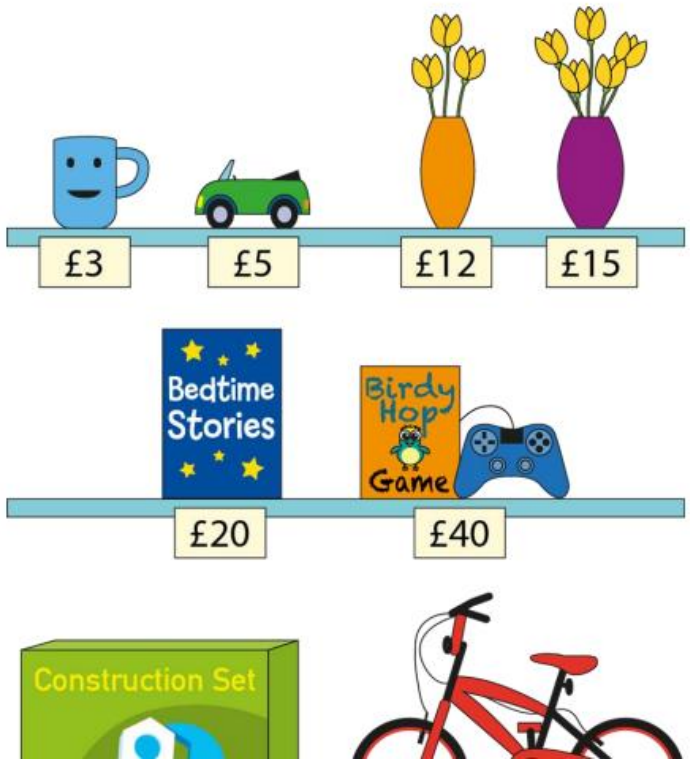
Within each small step guidance is given, explaining the key learning / teaching points for the step, key questions or stem sentences to use and also examples of questions or activities that the children may complete to improve their understanding. This is broken down into varied fluency, looking at the same concept in a number of different ways, and then applying the knowledge through reasoning and problem solving.

Examples of small steps breakdown:

Teaching point 1:

Known strategies can be combined to add two multiples of ten to two single-digit numbers.

Steps in learning

	Guidance	Representations
1:1	Begin this segment by reviewing the following known concepts/strategies: • partitioning a given two-digit number into tens and ones • strategies for bridging ten • adding a single-digit number to a two-digit number • adding two multiples of ten • adding multiples of ten to a two-digit number A useful context is a shop with items priced as single-digit numbers, multiples of ten, teen numbers and other two-digit numbers. For the example items shown opposite, appropriate questions include: • *'How much does a mug and a toy car cost?'* (two single-digit numbers) • *'How much does a book and a computer game cost?'* (two multiples of ten)	Context for practising known concepts/strategies: 

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Teachers will also use the information from the NCETM ready-to-progress documentation to look for areas that need additional focus and to be the focus for recall and consolidation practice during the term:

Examples of Ready to Progress criteria:

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Curriculum prioritisation in primary maths 2020/21

Evaluation document: Current Year 4 pupils

Using the *2020 DfE guidance ready-to-progress criteria, listed in the table below, identify aspects that have:

- been taught in school to children by the class teacher
- been taught remotely, or by someone who does not know the children as well
- not been taught at all.

Reflect on how effectively pupils have learnt, remembered and are able to apply what has been taught. Where you are unsure, you should note this down.

From these reflections, prioritise criteria for teaching and learning and use the **Curriculum planning grid** to plan your curriculum for the remainder of this academic year. This evaluation, used continuously over the rest of the year, will also be a useful transition document for the next class teacher.

	Year 3 ready-to-progress criteria	Notes on provision, and priority for teaching	July 2021 update: transition notes for new teacher	Year 4 ready-to-progress criteria	Notes on provision, and priority for teaching	July 2021 update: transition notes for new teacher
Number and Place Value	**3NPV–1** Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.	*Recovered as intro to teaching 4-digit place value. Happy that vast majority are secure*		**4NPV–1** Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.	*Taught in Autumn 1. Will recover as speed maths and early morning recap activities.*	
	3NPV–2 Recognise the place value of each digit in three-digit numbers and compose and decompose three-digit numbers using standard and non-standard partitioning.	*Children re-taught as part of PV block. Most children very secure with standard partitioning. Non-standard to be covered again as recap activities.*		**4NPV–2** Recognise the place value of each digit in four-digit numbers and compose and decompose four-digit numbers using standard and non-standard partitioning.	*Children re-taught as part of PV block. Most children very secure with standard partitioning. Non-standard to be covered again as recap activities.*	

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Teachers use the NCETM CP materials and WR to formulate Medium Term Planning. This is recorded in the grid below and will include a recall focus for the lesson as we look to continually revisit and consolidate previous learning.

Examples of MTP:

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Medium Term MATHS Planning – Year 3 Spring 1 2023-2024

Week	Maths Strand	Overview of the week	Recall Focus	Outcomes and skills NCETM	Stem Sentences	Resources
1 08/01	Numbers to 1000	White Rose Mass and Capacity unit: https://whiteroseeducation.com/resources?year=year-3-new&subject=maths	division links to 100 and 1000	**WhiteRose:** Measure capacity and volume in millilitres and litres		
			Time o'clock	**WhiteRose:** Equivalent capacities and volumes (l and ml)	There are ____ ml in 1 litre." "The capacity/volume is/is not equivalent to 1 litre because ..."	
			Time half past	**WhiteRose:** Compare capacity and volume		
			Draw hands to show time	**WhiteRose:** Add & Subtract capacity and volume		
2 15/01	Right angles	https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-3-right-angles/ Mathematics guidance: key stages 1 and 2 (covers years 1 to 6) (publishing.service.gov.uk) (p133-137)	Time quarter past	Learning outcome 1: Pupils rotate two lines about a fixed point to make different sized angles		Seesaw
			Time quarter to	Learning outcome 2: Pupils draw triangles and quadrilaterals and identify vertices		Seesaw
			10 more or less	Learning outcome 3: Pupils learn that a right angle is a 'square corner' and identify them in the environment		Seesaw
			100 more or less	Learning outcome 4: Pupils learn that a rectangle is a 4-sided polygon with four right angles		
3 22/01	Right angles	https://www.ncetm.org.uk/classroom-resources/cp-year-3-unit-3-right-angles/ Mathematics guidance: key stages 1 and 2 (covers years 1 to 6) (publishing.service.gov.uk) (p133-137)	Fractions 1/2	Learning outcome 5: Pupils learn that a square is a rectangle in which the four sides are equal length		
			Fractions 1/4	Learning outcome 6: Pupils cut rectangles and squares on the diagonals and investigate the shapes they make		Seesaw
			Fractions 1/3	Learning outcome 7: Pupils join four right angles at a point using different right-angled polygons		
			Fractions 2/3 & 3/4	Learning outcome 8: Pupils investigate and draw other polygons with right angles		

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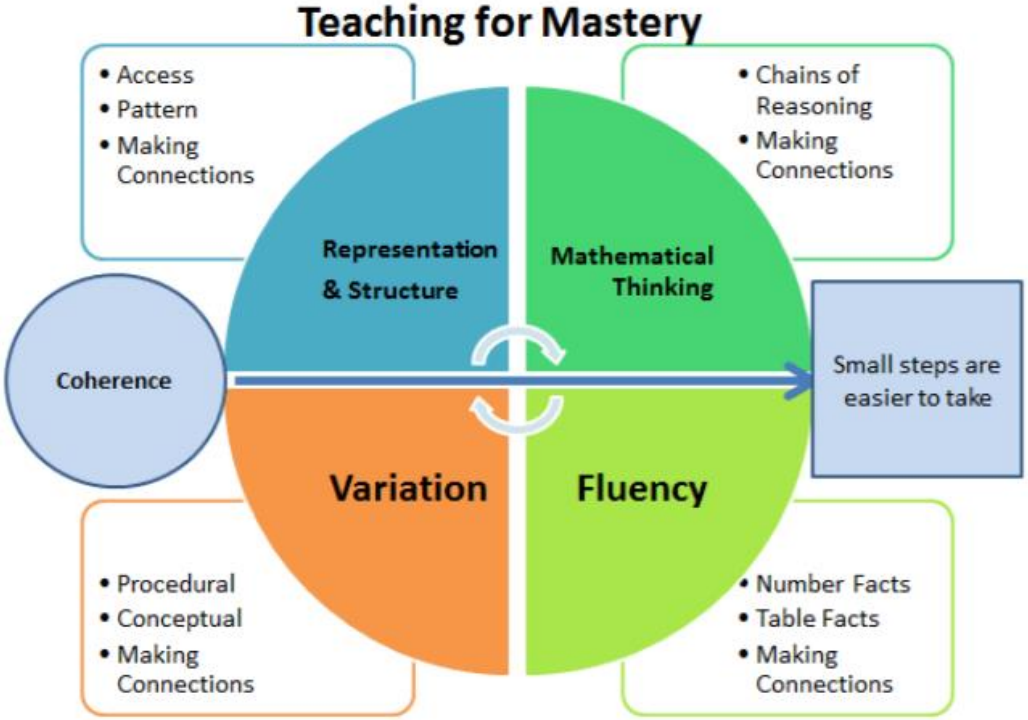
Individual lessons will include an element of retrieval of previous learning, to aid fluency– often record using a slip with the retriever symbol

Round these nubers to the nearest 100:

342	568	650
4528	1458	1074

Lessons are built on the use of the 5 big ideas of mastery with a use of range of models or structures and examples chosen with procedural or conceptual variation to promote deeper understanding.



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Assessment

Post lesson, staff complete a distant making pro forma, indicating those children who have demonstrated understanding of the concept, those who hare not secure and those who demonstrated a greater depth of understanding.

Subject- MATHS

Year 4

W/C _____

Key:

0 Taught, but not yet understood

1 Some evidence, but not yet secure

2 Objective secured

3 Working at greater depth

Context				
Number and Place Value				
Addition and Subtraction				
Multiplication and division				
Fractions, Decimals and percentages				
Measure				
Geometry				
Statistics				

Albie					Whole class next steps:
Arthur					
Charlie					
Dolcie					
Edward					
Ellie					
Elsie					
Emilia					
Emily					
Esme					
George A					
George B					
George C					
Isabella					
Isabelle					
Isla					
Jack					
James					
Jessica					
Laurence					
Lizzie					
Maisie					
Morgan					
Neve					
Olivia					
Ted					
Teddy					
Theo					
Tristan					

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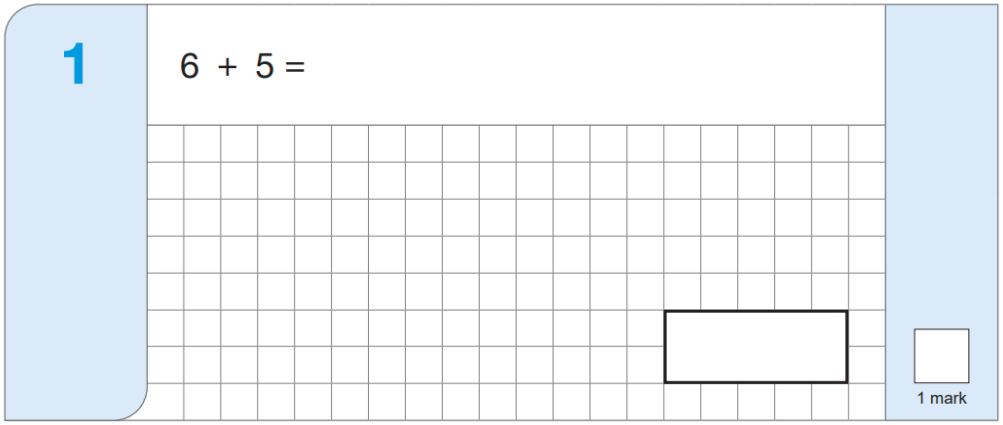
Assessment (cont.)

Children from Year 2 onwards are periodically tested about their understanding of a completed unit using Testbase materials for both arithmetic and reasoning and White Rose end of unit tests if appropriate.



1 Write the number **six hundred and seven** in numerals.

1 mark

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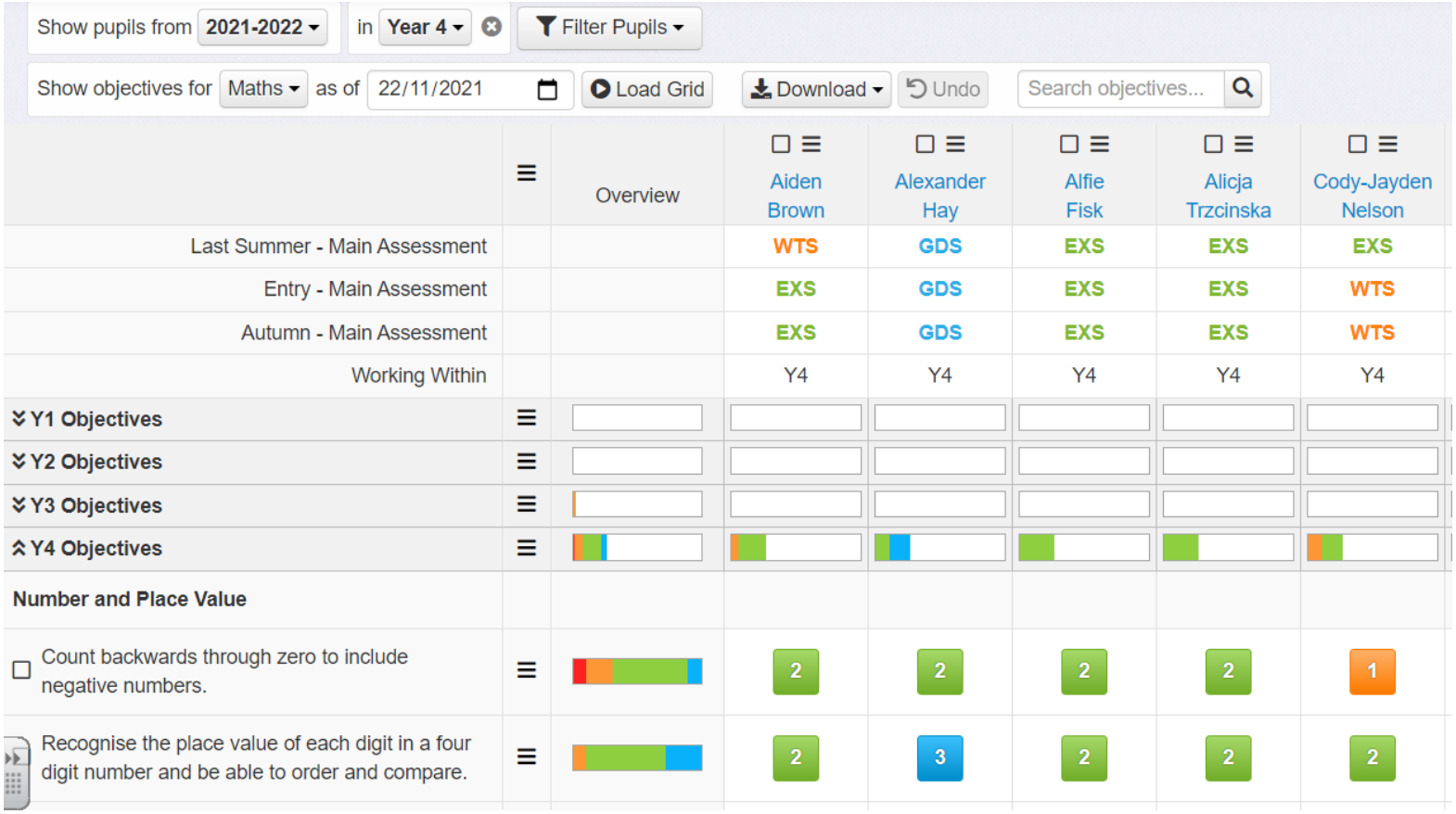
Assessment (cont.)

Summative and teacher judgement data is collated with the school's Insight data management system, allowing easy access and manipulation for all school leaders.



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Continuous Professional Development

Barrow school staff have completed the teaching for mastery 'Developing Mastery' program and are currently enrolled onto the 'Embedding Mastery' program, both run by the Angles Maths Hub. These have given the Maths lead and other staff to develop their practice and work in collaboration with other local schools on expanding understanding on a mastery approach to teaching Maths.

MATHSHUBS ANGLES

All staff have undergone CPD in Cognitive Load Theory, Spaced Practice Retrieval Theory and planning the wider curriculum which has supported the development of a modular wider curriculum.

In addition, staff have been trained in the Theory of Reading which emphasises the importance of teaching reading across all subjects and how to teach vocabulary – including etymology and morphology.

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Continuous Professional Development

Maths is monitored by the subject lead and SLT using a range of evidence sources; this being used to inform about CPD needs:

Gathering Evidence of Impact Across the Curriculum

- Learning walks/lesson visits
- Work scrutiny
- Pupil Book Study Sessions
- Planning scrutiny / coverage check
- Informal progression check - staff meeting
- Formative assessment – distance marking/live feedback
- Summative assessment – testing/quizzing
- Data overviews and analysis / pupil progress meetings
- Teacher perceptions
- Staff skills audits
- Pupils perceptions
- Parent views
- Display – visual evidence, photographs etc.
- External review from Standards & Excellence Partner and External Advisor
- Governor monitoring
- Seesaw evidence
- Evidence of enrichment activities