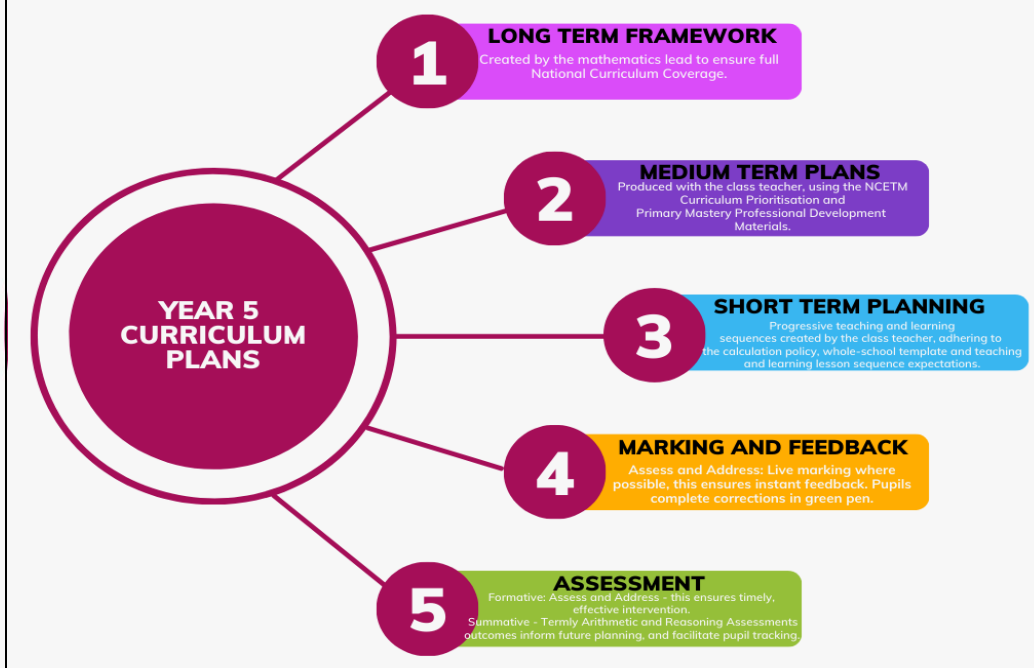
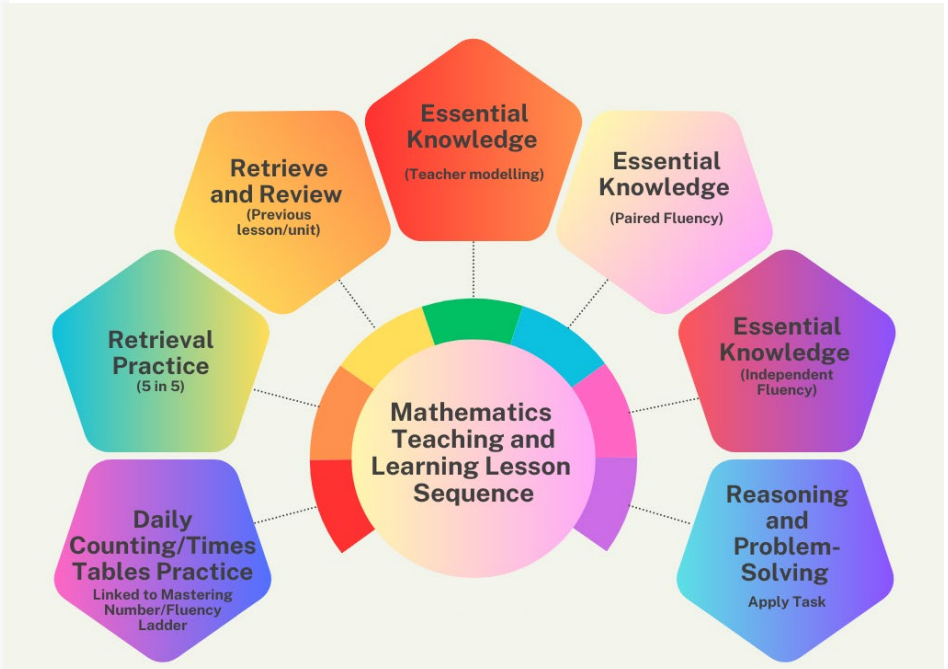
Brougham Primary School
Year 5 Mathematics

INTENT

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio. At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. Pupils should read, spell and pronounce mathematical vocabulary correctly (National Curriculum 2014).

IMPLEMENTATION





YEAR 5 ESSENTIAL KNOWLEDGE

YEAR 5 NATIONAL CURRICULUM LONG TERM FRAMEWORK

Brougham Primary School

Year 5

Long Term Framework

	14 Week Term (11 weeks of planning before data collection)					
Autumn	Place Value including negative numbers (4 weeks)	Addition and Subtraction including Money (3 weeks)	Perimeter (1 week)	Assessment week NCETM	Short Multiplication and Short Division (4 weeks)	Christmas Maths (1 week)
	11 Week Term (9 weeks planning before data collection)					
Spring	NCETM Area, scaling, volume (3 weeks)	NCETM Decimal Fractions including Calculating with Decimal Fractions & percentage equivalents (5 weeks)		Assessment week	NCETM Factors, Multiples and Primes (2 weeks)	
	13 Week Term (10 weeks planning before data collection)					
Summer	NCETM Fractions (4 weeks) .	NCETM Converting Units (2 weeks)	Statistics (1 Week)	NCETM Angles and Coordinates (3 weeks)	Assessment Week	Time (2 weeks)

YEAR 5 FLUENCY LADDER

Fluency Training Ladder
Year 5

Week	Fluency Facts to learn
39	Arithmetic test followed by daily half tests
38	Divide whole numbers and those involving decimals by 10, 100 and 1000
37	Multiply whole numbers and those involving decimals by 10, 100 and 1000
36	Divide 4 digits by 1 digit
35	Multiply 4 digits by 2 digits
34	Subtract decimals including numbers with decimals to different number of decimal places
33	Column subtraction up to 4 digits
32	Add decimals including numbers with decimals to different number of decimal places
31	Column addition up to 4 digits
30	NCETM KS2 Mastering Number Programme
29	NCETM KS2 Mastering Number Programme
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3	NCETM KS2 Mastering Number Programme
2	NCETM KS2 Mastering Number Programme
1	NCETM KS2 Mastering Number Programme

YEAR 5 FLUENCY TRAINING

Pupils access short, daily NCETM Mastering Number sessions, in which they are taught to develop and demonstrate automaticity in multilpication and division facts through regular practice.

Lessons seek to build automaticity of fact recall through the use of intentional teaching strategies focused on developing fluency in knowledge, understanding and application of multiplicative concepts.

Once the 30 week programme has been completed, pupils receive a weekly fluency training lesson focussed upon the remaining steps of the ladder. This is followed by 15 minutes daily independent fluency training each day.

YEAR 5 KEY INSTANT RECALL FACTS

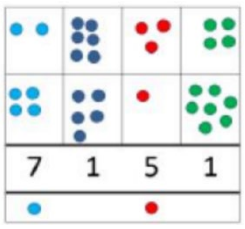
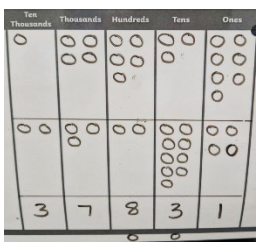
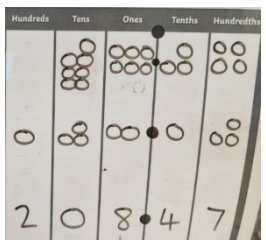
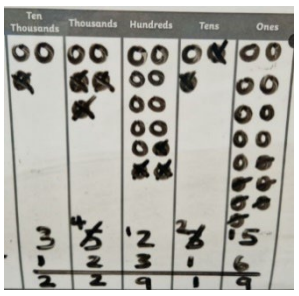
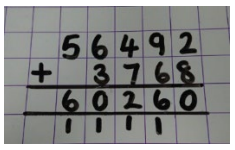
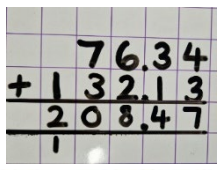
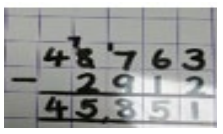
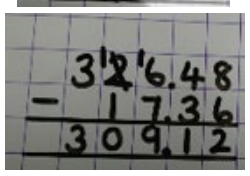
Year 5 Facts Square Numbers

											1 x 1 = 1
										2 x 2 = 4	1 x 2 = 2
									3 x 3 = 9	2 x 3 = 6	1 x 3 = 3
								4 x 4 = 16	3 x 4 = 12	2 x 4 = 8	1 x 4 = 4
							5 x 5 = 25	4 x 5 = 20	3 x 5 = 15	2 x 5 = 10	1 x 5 = 5
						6 x 6 = 36	5 x 6 = 30	4 x 6 = 24	3 x 6 = 18	2 x 6 = 12	1 x 6 = 6
					7 x 7 = 49	6 x 7 = 42	5 x 7 = 35	4 x 7 = 28	3 x 7 = 21	2 x 7 = 14	1 x 7 = 7
				8 x 8 = 64	7 x 8 = 56	6 x 8 = 48	5 x 8 = 40	4 x 8 = 32	3 x 8 = 24	2 x 8 = 16	1 x 8 = 8
			9 x 9 = 81	8 x 9 = 72	7 x 9 = 63	6 x 9 = 54	5 x 9 = 45	4 x 9 = 36	3 x 9 = 27	2 x 9 = 18	1 x 9 = 9
		10 x 10 = 100	9 x 10 = 90	8 x 10 = 80	7 x 10 = 70	6 x 10 = 60	5 x 10 = 50	4 x 10 = 40	3 x 10 = 30	2 x 10 = 20	1 x 10 = 10
	11 x 11 = 121	10 x 11 = 110	9 x 11 = 99	8 x 11 = 88	7 x 11 = 77	6 x 11 = 66	5 x 11 = 55	4 x 11 = 44	3 x 11 = 33	2 x 11 = 22	1 x 11 = 11
12 x 12 = 144	11 x 12 = 132	10 x 12 = 120	9 x 12 = 108	8 x 12 = 96	7 x 12 = 84	6 x 12 = 72	5 x 12 = 60	4 x 12 = 48	3 x 12 = 36	2 x 12 = 24	1 x 12 = 12
12	11	10	9	8	7	6	5	4	3	2	1 x

KIRF Benchmarks for Automaticity are used as part of the termly assessment process for mathematics. The aim is that by the end of the year, the pupil is able to fluently and accurately recall the facts for their year group benchmark – this will aid their mental maths fluency, agility and application when faced with a range of mathematical concepts.

PROGRESSION IN CALCULATION

	Year 4	Year 5	Year 6
Addition	Column method - regrouping. (up to 4 digits)	Column method - regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)	Column method - regrouping. (Decimals- with different amounts of decimal places)
Subtraction	Column method with regrouping (up to 4digits)	Column method - regrouping. (with more than 4 digits) (Decimals- with the same amount of decimal places)	Column method - regrouping. (Decimals- with different amounts of decimal places)
Multiplication	Column multiplication (2 and 3 digit multiplied by 1 digit)	Column multiplication (up to 4-digit numbers multiplied by 1 or 2 digits)	Column multiplication (multi digit up to 4 digits by a 2-digit number
Division	Division within arrays Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)	Short division (up to 4 digits by a 1-digit number interpret remainders appropriately for the context)	Short division Long division (up to 4 digits by a 2 digit numberinterpret remainders as whole numbers, fractions or round)

YEAR 5 CONCRETE RESOURCES	YEAR 5 PICTORIAL REPRESENTATIONS	YEAR 5 ABSTRACT CALCULATION REPRESENTATIONS
Dienes Numicon Place Value Counters	Bar model Place value grid    	    2741 × 6 becomes 2 7 4 1 × 6 1 6 4 4 6 4 2 124 × 26 becomes 1 2 1 2 4 × 2 6 7 4 4 2 4 8 0 3 2 2 4 1 1 432 ÷ 5 becomes 8 6 r 2 5 4 3 2 3 24 48 72 96 120 144 168 192 216 240 3,524 R 6 24 85,582 72 12 5 12 0 58 48 102 96 6

PUPILS WITH SEND

For pupils who are working significantly below age-related expectations, Sandwell Testing is used. This assesses the child's mathematical age and identifies key concepts which the child is not secure in. These key concepts are then identified on a child's Individual Education Plan and provision is put in place for the child to access the wave 3 intervention required.

CELEBRATING SUCCESS

- Weekly Maths Star of the Week is nominated by the class teacher and awarded by the class Maths Ambassador
- Maths Star of the Week is awarded a certificate and the maths bag of activities to take home and share with their family for one week.
- There is a weekly award for the Year 5 highest earner on Times Table Rockstars.
- An opportunity to win the 'You Rock' trophy for the highest earning class on Times Table Rockstars each week.
- Y5 Maths Ambassadors.
- Y5 Parent/Pupil Maths Workshop in Autumn term.

HOME LEARNING & EXTRA- CURRICULAR OPPORTUNITIES

- Low stakes home learning is set weekly. Pupils are provided with a fundamental number facts-based activity, which links to Mastering Number/the Fluency Ladder and encourages them to practise their fluency skills or number concepts.
- Pupils are expected to complete 15 minutes per day times table practice on either a paper document provided or the TTRS app.
- Key Instant Recall Facts are shared with parents in order for them to support their children with learning these facts at home.
- Y5 Mathmagician Club every Thursday.