

### **Upper Nidderdale Primary Federation**

## Maths Intent, Implementation and Intent Updated September 2023



At Upper Nidderdale Primary Federation, we will all approach everything we do in the CHAMPS way, help every child flourish into a caring, confident and resilient young person who has a **love of learning** and:

Chooses the right way and takes **responsibility** for their own actions Honest in everything they do and shows **compassion** for others Achieves the best they can with the talents they have and develop their **wisdom** Manners shown to everyone and treats everyone with **respect** Perseveres when situations are difficult and shows **courage** when they are challenged

**S**afety and knowing how to keep safe on and offline to ensure that everyone is kept physically and emotionally safe. This shows the special relationship we have with each other, where as a **community**, we look after each other, keeping each other safe – **Koinonia** 

As Rights Respecting schools, our intents are based around the following articles;

Article 23 You have the right to special education if you have a disability.

#### Article 28

### All children have the right to a good quality education.

#### Article 29

All children have the right to an education that helps to develop their talents and abilities.

### INTENT

### Intent of Maths

Across our federation, we have the firm belief that mathematics underpins much of our daily lives; both the ability to be adept with number and the vast skill-set of being able to problem solve and reason. Our curriculum is ambitiously planned in order to give all learners in-depth knowledge and the cultural capital they need to succeed in life.

Our curriculum is carefully designed, planned and sequenced representing our belief that it is the right of every child to access and succeed in an engaging, creative and meaningful Maths curriculum that develops pupils' number fluency and allows them to become critical thinkers when it comes to problem-solving. A successful maths curriculum should develop and promote a child's enthusiasm and resilience to fluency, problem solving and reasoning. Our aim is to allow pupils to make rich connections across mathematical ideas resulting in the development of fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

### <u>EYFS</u>

Children are taught number skills daily and are encouraged to use provision areas to apply their numerical knowledge. Children will be given the opportunity to use number in an appropriate context through the use of concrete manipulatives.

There will be many opportunities for pupils to explore mathematics including a designated 'Maths Investigation Area'. This will allow pupils to take charge of their own mathematical learning and allows the beginning of problem-solving. In our federation, we build automaticity of facts and methods through deliberate and explicit teaching sessions. This is built up sequentially in bespoke counting and multiplication fact sessions at the beginning of every maths lesson. In addition, children will build further automaticity through Fluent in Five sessions, twice a week, in order to ensure fluency in the methods of the four operations.

Our long term planning provides small-step planning that avoids moving pupils on too quickly to reasoning and problem-solving. We use same-day interventions as an approach to maths teaching that aims to ensure that no child is left behind and is built on the ethos and culture that everyone can achieve. Our lessons is structured to allow teachers to check for understanding throughout the session, in order to provide appropriate, immediate intervention to address any misconceptions. Following daily assessment, live-marking, same-day intervention and pre-teaching is used to help enable misconceptions to be addressed.

In our mixed aged classes, teachers will deliver inputs in particular stages to ensure all children are getting the necessary content for each year group.

In our intent, teachers will effectively adapt schemes and resources to meet the needs of our children and they will use their professional judgement to select and adapt. The vast majority of our teaching and learning will come from the following resources recommended by the maths leadership team:

- White Rose maths
- CGP books
- Target Maths
- NCETM PD Materials
- Power Maths

The maths subject leadership team will monitor the impact of these resources to ensure effective use for attainment of all pupils. Teacher will reflect upon the most suitable method for teaching a particular concept.

SEND Adaptions for Maths									
Cognit	tion and Learning	Communication and Interaction							
Subject Challenges for SEND	SEND Provision	Subject Challenges for SEND	SEND Provision						
Retaining number bonds and multiplication facts.	Use of times tables grids, hundred squares, practical examples of counting modelled clearly. These may be practiced to aid kinaesthetic learners through SuperMovers. Use of numicon and rekenreks to help support number facts	Expressing themselves and sharing their thoughts and opinions orally.	Use stem sentences to provide subject specific language in a particular format – this will enable children to accurately communicate their thoughts and opinions. Use flash cards supported by visuals to allow the children to explain mathematical						
correspondence	Pre-teach subject specific vocabulary. Draw		concepts. Appropriate modelling to aid understanding.						
Understanding of subject specific vocabulary.	particular attention to subject specific vocabulary which can be used in everyday speech	EAL pupils may find it difficult to access resources/learning.	Differentiated written resources can be supported by visuals and could be translated using Word. (Teachers click Review – Translate – Translate Document). This will fully translate the document and open in a						
Difficulty with comprehension of problem solving	Teachers to have steps modelled and diagrams, methods already prepared to support pupils not becoming overloaded. This includes using bar modelling to support teaching and learning.		new window.						

### SEND Adaptions for Maths

Sens	ory and Physical	SEMH			
Subject Challenges for SEND	SEND Provision	Subject Challenges for SEND	SEND Provision		
Fine motor skills/physical difficulties.	Teachers to be proactive in identifying appropriate resources and manipulatives for each individual child's need. For example, some children may require cross guard pencil grips . Speak to SENDCo if unsure.	Maths anxiety	. Relate mathematical concepts to everyday applications and other areas of the curriculum so pupils see how mathematics is relevant and how it can be applied – eg prepare questions where pupils can use their knowledge of the school or local area.		
Children with a visual impairment may find it difficult to view text/images.	Ensure that font size used in resources matches the specific font size specified in the child's report provided by the Visual Impairment Team (saved in SEND files on T Share). Enlarge images to appropriate sizes to aid access. Avoid the need for copying lots of information. For example, notes on interactive whiteboards can be printed off for all pupils. Use concrete or visual support for mathematical discussions whenever possible. Exploit the many forms of mathematical representation - eg pie charts, number lines, abacus, bar charts, tiles - and the connections between them. ICT can enable pupils to switch quickly between different representations.	Difficulties with social skills may result in children finding group work challenging.	Pre-teach key information and vocabulary so that children feel prepared for the lesson and can share their knowledge with their peers - resulting in raised self-esteem. Carefully consider seating arrangements during group work to ensure that children are placed next to patient, non-dominant children. Additional adult support can be deployed as necessary. Ensure children have access to usual aides such as ear defenders to reduce noise. Provide talking tins for children who struggle with impulsivity so that they can record their contributions as they think of them but can play them back to other children at the appropriate time.		

### Spiritual, Moral. Social and Cultural Development (SMSC)

Maths encompasses the teaching of SMSC by allowing children to converse in the classroom, as class discussions and group talk, on their mathematical reasoning. All children are able to further develop their mathematical knowledge through the application of knowledge to unknown situations – integrating maths into real life context. Pupils will see mathematics in practical life situations and through the community, i.e. entrepreneurialism. We enable children to voice their own opinions in all aspects of learning.

Maths provides the opportunities where children have to critically think about their reasoning, acknowledging others' opinions and children work collaboratively to succeed.

### Maths and Inclusion

Maths is taught to all pupils, regardless of ability or specific needs. Through our coherent maths curriculum and effective teaching, we provide learning opportunities that enable all pupils to make good progress. We make maths accessible to all pupils and ensure pupils with special needs, disabilities, EAL and more able succeed. As a collaboration, we have appropriate interventions to meet all pupil's needs in mathematics, such as Numicon.

### <u>Substantive</u>

 become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

### Disciplinary

- 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.

Planning -

When planning what to teach when, we refer to the agreed long term plans. In this way we can ensure that the skills and knowledge being taught and acquired are sequential and cumulative, in order not to overload Working Memory.

Planning ensures that a learning unit is coherent and cumulative, rather than a disjointed series of activities. When planning, staff will consider the following questions - Why this? Why now? We are concerned with what children are learning not what they are 'doing.' It is about building up knowledge and skills. This is reflected within our maths planning where choices about the order to teach knowledge/skills. Using the Lancashire progression document as a teaching tool to help break down objectives into progressive teaching steps.

We will build up pupil's knowledge and understanding, progressively moving students towards deeper understanding. Our aim is for pupils to know and remember more over time.

We will use higher order questioning (Blooms), persistently quizzing fluency, problem-solving and reasoning.

#### Example Planning

*) (()))	Le	arning Journ	ey - (Unit Tit	ie)				
		Key Vo	cabulary:	k the New 👘 👔				
Compare	Place Value	Digit	Negative Number	Partitioning	Rounding			
		Smal	Steps:	al with Snip				
		Windows logo	ay e Shift e Sj.					
						-		
		Vocabulary:					STEM Sentence:	
				N	Nonday	Tuesday	Wednesday	Thursday
		CHALL CTER						
		Counting and mu	Itiplication facts:					
		Teaching Input;						
		Independent Pro	actice					
		Scoffold / Sum	ont Machanisms					
		Scattora v Sab	ort mechanishis					

### Implementation

## Maths Guidelines Multiplication Facts

### **Mental Calculations**

An important aspect of pupils' fluency is being confident in multiplication facts. Every fortnight, all pupils will partake in a multiplication facts quiz. These are progressive and test fluency in multiplication variation. Our ultimate multiplication challenge is to solve 100 questions in the allocated time.

Teachers will practice **counting** and **multiplication facts** through various strategies at the beginning of every maths lesson in order to build the automaticity of number facts. This is the belief that Multiplication facts knowledge must be 'Taught not Caught'

We have a multiplication facts long term plan that highlights individual facts that each year group are expected to be fluent in.

Adults to record weekly scores and how children achieve. Individually, children will highlight the first 3 facts that they have answered incorrectly and use these to practise. If children get 95% of answers correct for three consecutive weeks then they can move on to the next challenge.

Fortnightly, all children will complete an arithmetic to ensure automaticity of taught methods is complete. Where errors are made, these will be covered in DIRT time **twice per week**.

## Maths Guidelines

### Non-negotiables for Maths

Each unit of work :

- Begin with a learning journey
- Use the given planning format planning to be uploaded to the system so SLT can access whenever.
- At the end of a unit, children will complete a white rose unit assessment, misconceptions are then addressed.
- Assess and give immediate same-day intervention to address any misconceptions.

### Each lesson:

- Begin with counting session and multiplication facts. Refer to long term plan for each year group.
- Use High quality resources such as White rose/Power Maths/NCETM PD Materials

### Maths books:

- Number date (Year 4 upwards Roman Numeral Date)
- Learning focus
- Work needs to be evidenced daily if not working in books, annotated photos, photocopied posters / group work
- Daily EYFS input- whole class
- EYFS indoor and outdoor investigation areas
- EYFS observations on tapestry one per child weekly inc next steps and overview of progress
- Colour coded fluency, reasoning and problem solving

### DIRT:

• 2 x Fluent in Five sessions to be completed along with common arithmetic errors.

### Flency, Problem Solving and Reasoning

In every lesson, pupils are exposed to fluency, problem solving and reasoning. Great emphasis will be placed on fluency and not overcomplicating lessons by skipping over this and moving onto problem solving and reasoning. These are made explicit to one another and the definitions are made clear to the children. Each challenge will be colour coded to highlight which area the children's learning identifies.

BLUE - FLUENCY GREEN - PROBLEM SOLVING YELLOW - REASONING

### Long Term Planning

	R	Y1	Y2	Y3	Y4	Y5	Y6
Autumn 1	Number to 5	Place value	Place Value	Place Value	Place Value	Place Value	Place Value
/ acarmin 1							
		Addition and	Addition and	Addition and	Addition and	Addition and	Addition and
		subtraction	subtraction	subtraction	subtraction	subtraction	subtraction
Autumn 2	1 more/less within 5	Addition and	Addition and	Addition and	Multiplication and	Multiplication and	Multiplication and
Autumniz	, -	subtraction	subtraction	subtraction	division	division	division
			Marialization and			• • • • • • • • • • • • • • • • •	
		Place Value 50	Multiplication and	Multiplication and	Area and perimeter	Area and perimeter	Area and perimeter
			urvision	unision			
Spring 1	Add and subtract	Add and subtract up to	Fractions	Fractions and decimals	Fractions and decimals	Fractions, decimals	Fractions, decimals
1 5	WILLIIII 5	20				and percentage	and percentages
				Measure- mass and	volume		
		Multiplication and		capacity	-	volume	Volume
		division	Measure- mass,				
			capacity and				
			temperature				tio
							ratio
Coring 2	Add and subtract with	Measures-length and	Measures- length and	Measures- length and	Measures	Measures- converting	Measures- converting
Spring 2	in 10	height	height	perimeter		units	units
		Chatiatian	Chatiatian	Chatiatian	Statistics	Chatiatian	Chatiatian
		Statistics	Statistics	Statistics		Statistics	Statistics
		Shape	Shape, position and	shape			Shape, angles
			direction				
		Position and direction					
							algebra
Cummon 1	Addition and	Time	Time	Time	Time	Time	Time
Summer 1	subtraction beyond 10	Time	, inite	linic		Time	Time
	,						
		Place value 100	Money	money	money	Position and direction	Position and direction
		fractions					
		Indecions					
					-		
Summer 2	Multiplication and	Measures-weight and	Angles, position and	Angles, position and	Geometry properties	Shape, angles	
	halving)	volume	urrection	urection	or shape		
	naiving)						
					Geometry position and		
	Position and direction		1		direction		

### Marking and Feedback

### Marking and Feedback in Mathematics

During a maths lesson, the adults' roles in the classroom are to constantly 'live mark' so that children can respond, and progress immediately.

Anything that is correct must be ticked in pink.

An incorrect answer is a purple dot.

Children respond to feedback and any self-marking in green.

Challenges or additional work must be indicated in **purple** as well as **PIT** stickers for same day intervention to plug gaps in knowledge

65 al XXVI.V.XXI We are developing our knowledge of percentages A) No, because it is rout a) Is 1% of this bar model shaded? ng 100 rand not 10 150 Explain your reasoning it would be 10%. b) What percentage of each bar model is shaded? BI) 30%. Ba) 70%. 6 Passengers are boarding a plane. The plane has 100 seats. a) 10% of the seats are already full. A) There are 10 people already. How many passengers are already on the plane? b) 15% of the seats have not been booked. How many seats have been booked? c) How many passengers still need to board the plane? B) 15 seats have not been booked. 85 seets have been booked C) 75 prossengers still need to board. 5 passengers need to board.



# Assessment

-Use White Rose assessment at the end of each unit of work with scores recorded on TEAMS with unit and score.

-Fortnightly Times Table review

-Monthly multiplication check using TTRS soundcheck for Year 4

-Fortnightly Rising Stars arithmetic quiz

-Termly PUMA with analysis in order to make overall judgement and provide next steps in learning.

-Regular entry on Tapestry to show number and number pattern in EYFS

-Data to be entered on to EAZMAG



Do	ubles		Hab	ves	Bond	To 20	Fractions		2D	Shapes	Turns										
11	22		22 24	11	0	20	1/	1/2 one half		Quadrilateral	Four straight sides Four vertices	Q	uarter turn	Thr	Three-quarter turn						
13	26	1	26	13	2	18	1/3 one third		Pentagon	Five straight sides Five vertices											
14	30		30	14	4	17	2/	2/3 two thirds		Hexagon	Six straight sides Six vertices										
16	32		32	16	5	15	1/	4	one quarter		Polygon	A closed shape with three or more									
18	36		36	18	7	13	3/	4	three	e quar	ters		A shape where all								
19	38		38	19	8	12	1/	5	0	ne fift	1	Regular Shape	sides are equal and all angles are equal		Time						
20	40	4	40	20	9 10	11 10	1/2 = 2/4		Irregular Shape	A shape with sides or angles of different sizes	Ouarter P	ast 9	The minute hand points to three and								
		Bon	ds u	p to 2	0		Multiplication Tables Has a line of				Has a line of	572		8765	8 7 6 5 4 the hour ha						
	19 = 0 + 19 = 1 + 19 = 1 + 19 = 10 + 100	19		19	9 = 5 + 1 9 = 6 + 1	= 5 + 14 = 6 + 13		2	3	5	10	symmetry	52		C10	C 10 5					
	19 = 2 +	17		19	9 = 7 + 12 9 = 8 + 11 9 = 9 + 10		9 = 7 + 12		9 = 7 + 12		1	2	3	5	10				10 11 12 1	2	The minute hand
	19 = 3 + 19 = 4 + 19 = 4 + 19 = 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10	16		19			2	2 4 6 10 20 Does not have a line of		Quarter To 9 3 hour hand points to him											
		-		1.5			3	6	9	15	30	symmetry			7 6		the next nour.				
Derived Facts			4	8	12	20	40				Number	s to 1000	1								
	- 7	3					5	5 10 15 25 50 3D Shapes		Shapes	100	one hundred	600	six hundred							
	4	rare	6 12 18 30 60 Faces, Edge a		ge and Vertices	200	200 two hundred 70		seven hundred												
	Part Part		7	14	21	35	70		Edge	300	three hundred	800	eight hundred								
_	art + or		whole		3+1	= 4	8	16	24	40	80	Face		400	four hundred	900	nine hundred				
F	art + pa	art =	whole	e	1+3	= 4	9	18	27	45	90		Vertex	500	five hundred	1000	one thousand				
	vhole =	part -	+ par	7	4 = 3	+3	10	20	30	50	100			Place Value Grid							

### Year Two Maths Organiser

## Working Walls Guidelines

Permanently available	Current teaching and learning
<ul> <li>Support for numbers / place value / the 'size of a number' which will vary depending on age range taught - e.g. hundred square, number lines, arrow cards, Place Value grids</li> <li>Resources that support the Maths Passport targets</li> <li>Resources that support Oral/Mental Starter sessions</li> <li>Calculation strategies - in keeping with the agreed calculation policy</li> <li>Calculation and '=' sign vocabulary - ideally on individual cards so that they can be actively used in the lesson and can be moved as and when appropriate</li> <li>The 'stuff I need to know' - i.e. the things that children find difficult to remember - e.g. conversion tables for measures</li> </ul>	<ul> <li>Key vocabulary</li> <li>What is being taught</li> <li>Relevant calculations</li> <li>Using and Applying (problem-solving, communicating and reasoning) should be the thread running through the 'Learning Journey'</li> <li>Added to as the unit is taught</li> </ul>





### Impact

### **Impact**

Externally:

- Attainment in mathematics is measured through statutory assessments at the end of Key Stage One and Two. These results are measured against the maths attainment of children nationally.
- Attainment of fluency through the Y4 Multiplication Check.
- Children in EYFS will be observed throughout the year and given a final assessment by staff of emerging, expected or exceeding.

Internally:

- Termly PUMA Tests / WR assessments
- Fortnightly Times Table and Arithmetic Tests (Y1 onwards)
- Internal Maths Assessments
- TTR Maths analysis (KS2)
- Low-stakes assessment