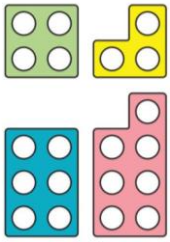
Newbold Verdon Primary School

Mathematics Policy

Maths Subject Lead: Lydia Davison



Introduction and Aims

This policy outlines the teaching, organisation and management of the mathematics teaching and learning at Newbold Verdon Primary School. The school's policy for mathematics is based on the current National Curriculum (2014). The implementation and upholding of this policy is the responsibility of all the teaching staff.

The 2014 National Curriculum intends to ensure that all pupils:

1. 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.

2. Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

3. 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.

Mathematics is a network of concepts and relationships which teaches us how to make sense of the world around us through developing the ability to calculate, to reason, to solve problems and to think in abstract ways. It is integral to all aspects of life and with this in mind, we endeavour to ensure that children develop a healthy and enthusiastic attitude towards mathematics that will stay with them in the future.

Teaching and Learning

As a school, we deliver Maths through the Numicon approach which is driven by three core principles:

- Communicating mathematically (being active, illustrating, talking)
- Generalising (conjecturing, finding a rule, understanding broadly)
- Exploring relationships (pattern spotting, asking questions, making links)

In Foundation Stage, teaching is also supported by Karen Wilding, namely creating an environment that is rich in Mathematics (particular focus on developing subitising through routine activities and continuous provision).

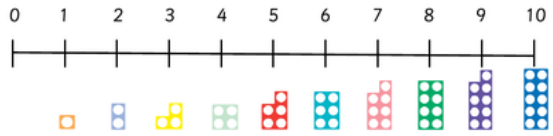
What does the Numicon approach look like in action?

During lessons, children in Pre School through to Year 6 have the opportunity to use a wide range of Numicon-specific resources as well as additional resources. Here are some of the resources children in every classroom have access to and make use of during mathematics.

Numicon shapes

Cuisenaire rods

Numicon pegs and baseboards



Number lines

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

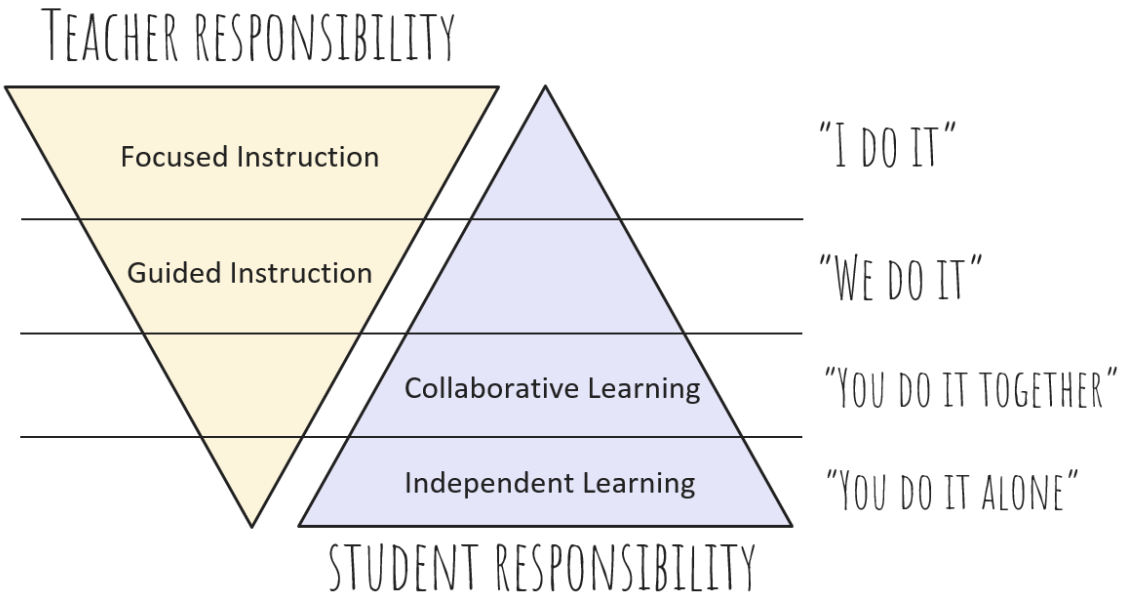
Hundred squares

Place value counters

Teachers use the CPA approach to teaching Mathematics at Newbold Verdon (concrete-pictorial-abstract) to support the exploration and understanding of new knowledge and concepts.

Computing and digital software is used in the teaching of Mathematics through the Numicon IWB software (www.oxfordowl.co.uk) and digital devices (e.g. iPads and visualisers) are also used to support modelling and understanding.

As part of the whole school Teaching and Learning (see Teaching and Learning Policy), teachers follow the I-We-You approach to teaching Mathematics.



Gradual release of responsibility model (Pearson & Gallagher, 1983)

(Graphic: Lydia Davison 2023)

I do

- The teacher explicitly models the new step in learning or piece of knowledge to the children. This could be on the IWB software, whiteboard or flipchart.
- The teacher models the correct vocabulary as well as their thinking through each step.
- The teacher then models further like-for-like examples. The children are focused and attend to the model.

We do

- Guided instruction or guided practice.
- The teacher works through another closely related example and will ask for the children to collaborate in the learning process.
- Further examples will be worked through where children are gradually taking more responsibility for answering the question or working through a method.

You do it (together)

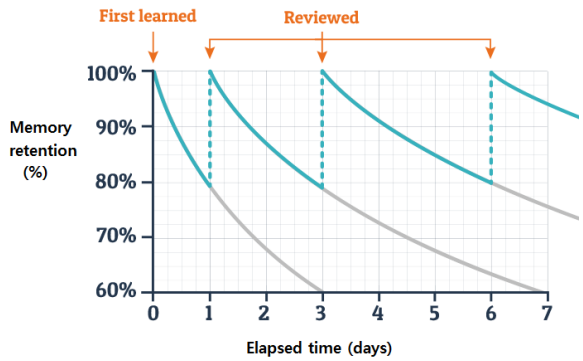
- Children have the opportunity to work in pairs or small groups to practice what has been modelled to them.
- In this time, children are encouraged to talk to each other mathematically and practice using the vocabulary with accuracy.
- The teacher circulates and assesses understanding and gives instant verbal feedback to address misconceptions, support or stretch.

You do it (alone)

- Children work independently to practice this skill.
- In KS2, the *Numicon Pupil Books* are used for Independent Practice (if further fluency practice is needed, teachers will *create their own* tailored questions for the children to complete, based upon the needs of the children in front of them).
- Going Deeper section of the Pupil Book is used to stretch all children, giving all children opportunity to reason and problem solve independently, but Gareth Metcalfe's iSeeReasoning documents are used to supplement and stretch further.

Memory and retrieval

Research shows that children need regular opportunities to retrieve knowledge in order for knowledge to be transferred to the long-term memory and not forgotten. Children need to practice remembering so that they become better at the physical act of drawing knowledge back into their working memory.



Ebbinghaus forgetting curve)

Every Maths lesson should start with a "Do Now" task. The purpose of this task is to retrieve prior learning. This should be deliberate and planned for by the teacher.

Do Now tasks should not be a recap of the previous day's learning, but a retrieval of a previous unit of work or concept.

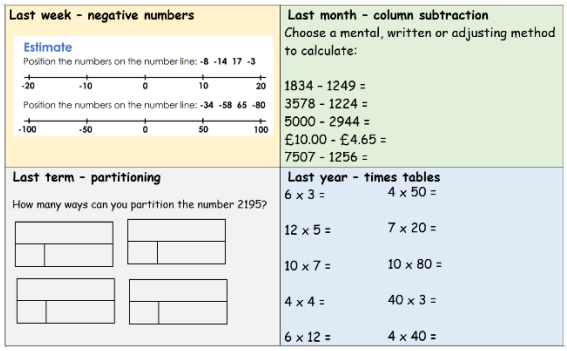
There may be a mixture of concepts on a Do Now task depending on the age and needs of the children.

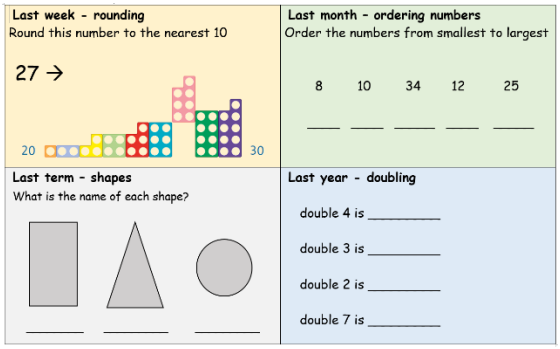
Homework

Maths homework is given weekly to children from Y1 to Y6.

The rationale behind the choice and structure of homework is to support the teaching of mathematics and help children to remember. It is part of the "over-learning" process, which supports the transference of knowledge to the long-term memory.

"Last week, last month, last term, last year"





Questions should be selected for each section of the grid, which children should be familiar with and able to answer. This should be a mixture of calculations, identifying the odd one out, writing a written explanation etc.

All children have a TT Rockstars account and this should be encouraged for home use to develop children's recall of multiplication and division Facts.

Vocabulary

New vocabulary for an area of learning will be shared with the children at the beginning of the learning sequence. The teacher discusses the meaning of unfamiliar words with the children and make links back to prior learning. The vocabulary is taken from the Numicon Teaching Handbook (words to use in conversation). This vocabulary will be in the children's books and children refer to it during their learning. Teachers model vocabulary precisely during their teaching (I do) and has high expectations for children's use of it. Teachers correct children to ensure they are using the correct mathematical language. There is evidence of understanding of vocabulary in children's books, in their written answers or explanations.

Teachers use quizzes, hinge questions or Oracy games to check understanding of key vocabulary.

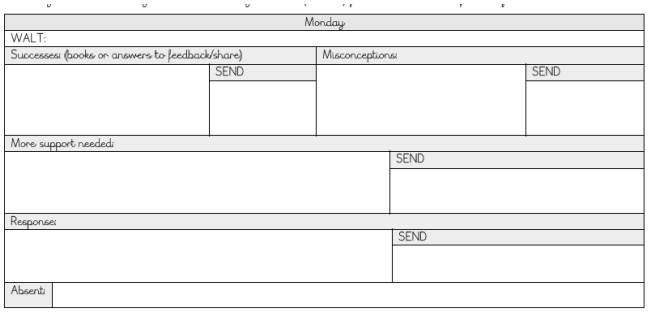
Feedback and assessment

KS1 and KS2 summative assessments take place in the Autumn Term, Spring Term and Summer Term. Children complete the NFer assessments from Y1 to Y6. All children complete their current year group assessment, except for the very few children working significantly below their age-related expectations.

Formative assessments take place throughout Maths lessons. Teachers use a variety of strategies to formatively assess the children's understanding (mini whiteboards, verbal questioning, hinge questions, *You do* tasks).

Teachers give instant feedback during lessons to support children's understanding and move learning on.

As part of the Feedback policy, teachers analyse the lesson and record findings on the learning analysis form (see below). They identify misconceptions, children who require more support, children who have understood well and books/pieces of work to share with the class in the subsequent lesson. From this, teachers identify a response/next step that they will take forward to move learning on.



Monday			
WALT:			
Successes: (books or answers to feedback/share)		Misconceptions:	
	SEND		SEND
More support needed:			
		SEND	
Response:			
		SEND	
Absent:			

Children in KS2 self-mark in purple pen, and teachers ensure time is left at the end of the lesson for this to happen.

SEND

We strive to provide a broad and balanced education to all children, whatever their ability. The daily mathematics lesson is appropriate for almost all pupils. Teachers will include all pupils through differentiation, providing learning opportunities that are matched to the needs of children with learning difficulties. Lessons will be scaffolded appropriately to ensure less able/ SEND pupils can access the appropriate year group's curriculum. Work in mathematics takes into account the targets set for individual children with Special Educational Needs. We also use LSAs to support children with statements and other identified children. All children benefit from the emphasis on oral and mental work and participating in watching and listening to other children demonstrating and explaining their methods.

Management and Monitoring

Monitoring of the standards of children's work and teaching in Mathematics is the responsibility of the Mathematics Subject Leader (Lydia Davison) and Achievement Leaders (Nicola Dewis and Lydia Davison).

The role of the Maths Subject Leader involves supporting teachers and LSAs to develop their knowledge and understanding of how to teach Mathematics, as well as sharing current developments and research within the subject. It is their responsibility to provide a strategic lead and direction for the subject in the school, to organise and lead appropriate CPD.

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