

Rakegate Primary School



Mathematics Policy

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1. Our Rakegate Mathematics Vision

At Rakegate Primary School, we believe that maths is a key skill which children will use throughout their lives. During their time with us, we intend for all children to gain essential knowledge and understanding of mathematical concepts in preparation for the wider world through our mathematics curriculum and cross-curricular opportunities. This will be implemented through carefully sequenced lessons, each with small steps in learning to enable all pupils to progress within each lesson. Using this mastery way of teaching, we aim for pupils to become resilient, independent mathematicians.

As a school, we have created a shared vision and intent for mathematics lessons at Rakegate:

- ✓ Pupils to be able to choose their own level of challenge which will also help to create independent learners.
- ✓ Encourage a growth mindset towards mathematics by creating an environment and culture where it is acceptable to make mistakes.
- ✓ Concrete resources to be available for all children, in all maths lessons, for all abilities.
- ✓ Pupils to have the opportunity to develop their understanding for real-life mathematics.
- ✓ Mathematics should be fun!

2. Curriculum Intent, Implementation and Impact

Our mathematics curriculum intends to ensure that children will become fluent, confident and competent mathematicians throughout their time with us at Rakegate. Instead of children simply learning mathematical procedures by rote, they will be taught the underlying principles in-line with the Teaching for Mastery approach, which will allow them to have a deeper understanding of concepts. By teaching in this way, it will enable children to apply their knowledge to a wide range of situations. Through mathematical talk, children will develop the ability to articulate, discuss and explain their thinking, as well as being able to support each other when tackling mathematical problems instead of going straight to an adult for help.

We have adapted our curriculum to ensure that the following has been implemented:

- ✓ Adequate time is spent teaching in small steps allowing all children to be exposed to learning in a carefully constructed lesson order.

- ✓ The large majority of our pupils progress through the curriculum content at the same pace which ensures that all learners are exposed to the same quality teaching and resources.
- ✓ Differentiation is achieved by support (where needed), variation, relative starting points for our 'rapid graspers', pre-teaching and same-day interventions.
- ✓ Use of Talk Partners, rehearsal and consolidation are vital to our curriculum so that children become confident and clear about their learning.
- ✓ High quality resources from NumberBlocks, Power Maths, NCETM PD Spine and White Rose Maths support our Teaching for Mastery curriculum and expose consistent representations and structures.
- ✓ Precise questioning in lessons is used to assess conceptual and procedural knowledge, and assess pupils regularly to identify those requiring intervention so that all pupils keep up rather than have to catch-up.
- ✓ Concrete, pictorial and abstract approach (CPA) is used to ensure that all learners are exposed to essential representations and structures (The school's calculation policy supports this).
- ✓ Challenge for pupils grasping concepts quickly is provided through depth and breadth of experience.

By organising our curriculum in this way, it is allowing a 'keep up' rather than 'catch-up' philosophy and fosters an 'All children can achieve' approach.

In order to achieve this, we have implemented a Teaching for Mastery approach across school. We are receiving regular training from our local Maths Hub and we have adapted our long term plan to allow for more flexibility for teachers to spend longer or shorter amounts of time on each teaching block/unit. A range of varied fluency, reasoning and problem solving are taught by staff for each objective to extend and deepen the understanding of pupils within each year group and this is supplemented with a range of resources in order to ensure children are receiving a broad and balanced mathematics curriculum.

The impact of the curriculum design above will lead to all pupils leaving Rakegate with a growth mindset and resilience towards mathematics. Most pupils will leave in-line with Age Related Expectations and will have mastered the primary maths curriculum in a variety of ways. Mistakes will no longer be a taboo, but instead, will be used as a learning opportunity to problem solve in a different way.

3. Multiplication and The Multiplication Check

We believe that the fluent and rapid recall of multiplication facts is an essential skill which can be applied in many areas maths as children progress through their mathematic journey. The teaching of this is embedded throughout the maths curriculum for Years 1 to Year 4. KS2 have an additional arithmetic lesson where these facts can be taught and applied to formal multiplication and

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

66 facts the coloured ones are 42 of them... 36 left,
nines trick... 29 left...
elevens... 23 left...
square numbers... 16 left...

division facts. The rule of the commutative law can also be applied to ensure pupils understand that if they know 3×4 gives a product of 12, then 4×3 will also give a product of 12. The table below demonstrates how the commutative law can be applied. The facts in colour are considered ones children are expected to know by the end of KS1. This leaves 36 facts for children to

learn by the end of Year 4 when they will sit the Multiplication Tables Check; this will become statutory in June 2022.

In order to support the teaching of this, the Times Tables Rock Stars programme is used at Rakegate. It is a sequenced programme of daily times tables practice which helps to aid the rapid recall of multiplication and division facts for KS1, KS2 as well as KS3 children. Each week concentrates on a different times table, with a recommended consolidation week for rehearsing the tables that have recently been practiced every third week or so. With the aid of rock music and time limits, TTRS is a programme which engages children and makes the learning of times tables fun.

Progress can be tracked weekly and the aim is to, not only improve times tables knowledge, but also the speed at which facts are recalled.

TTRS activities should be completed at least three times per week in lower KS2, and twice a week from summer term of Year 2, in order to prepare children for the Multiplication Tables Check which is a statutory test for Year 4 pupils in the Summer Term.

4. Planning

Staff are expected to follow the Long-Term Plan provided by the maths lead and staff are encouraged to use a variety of resources such as Power Maths, White Rose Maths, NCETM PD spines and NCETM Curriculum Prioritisation

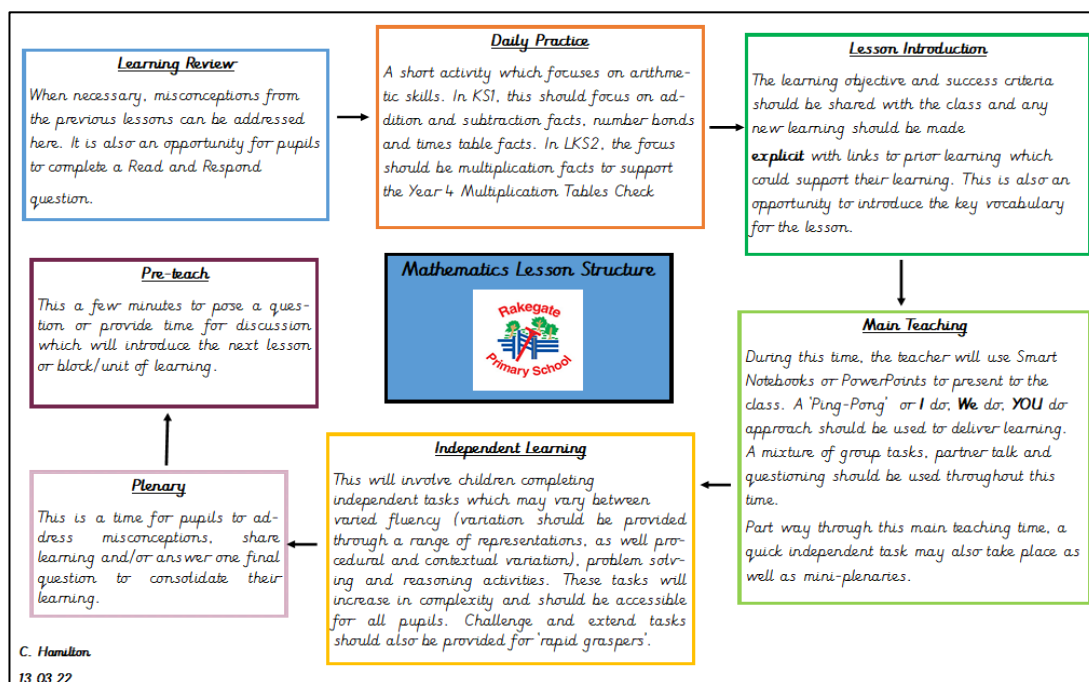
documents. Planning and resources should be accessible for all pupils and show progression in skill, complexity and challenge. Short term plans are expected in the form of Smart Notebooks or PowerPoints and must be uploaded weekly to CloudW. To guide planning, all staff are reminded of the importance of the following aspects of teaching and learning:

- ✓ Clear learning objective
- ✓ Appropriate success criteria
- ✓ A variant of concrete, pictorial and abstract approaches
- ✓ A range of pictorial representations used throughout the lesson
- ✓ Time for discussion and practising of new learning
- ✓ A range of independent activities which increase in complexity should be provided and accessible for all pupils
- ✓ Varied fluency (variation should be provided through a range of representations, as well procedural and contextual variation), problem solving and reasoning should be embedded in all independent tasks
- ✓ Questioning – to deepen understanding and draw out mathematical vocabulary.
- ✓ Plenaries and reviews that move the learning forward.
- ✓ On-going assessment through observation and questioning.
- ✓ Previewing where the learning is going next.

Planning is reviewed as part of the monitoring cycle by Middle and Senior Leadership Team on a regular basis.

5. Lesson Structure

All maths lessons in KS1 and KS2 will follow the lesson structure below:



6. Maths across the curriculum

Like English, maths is also an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.

Programmes of study are, by necessity, organised into distinct blocks/units, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects – this is strongly encouraged at Rakegate Primary School and is monitored by all subject leaders. (National Curriculum Programme of Study, DFE website, July 2014)

7. The learning environment

All classrooms must contain a Maths Working Wall to aid the children's current learning. Maths Working Wall must:

- ✓ Be in a place where children can find key information about their current learning and in a place which has visual impact
- ✓ Be added to over a series of lessons
- ✓ Be a place where anyone can make a contribution
- ✓ Display key vocabulary, guidance, images and diagrams can be found
- ✓ Be frequently changed so that it relates to current teaching and learning
- ✓ Acknowledge the children's contributions
- ✓ Constantly be used and referred to
- ✓ Be a place for planning/structure of children's work
- ✓ Be a teaching aid reinforcing teaching points.

8. Links to other policies

Calculation Policy

Curriculum Policy

Homework Policy

Marking and Feedback Policy

Inclusion Policy

Assessment Policy

CPD Policy

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Subject Leader for Mathematics: Ms Conni Hamilton

Signed: _____ Head teacher

Signed: _____ Governor