Roskear Primary and Nursery School - Mathematics Policy

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General Aims

Mathematics is planned and delivered to all pupils across the EYFS, KS1 and KS2. It offers a broad foundation of mathematical experiences designed to provide our pupils with the understanding, skills and knowledge needed to deal with everyday situations and experiences.

We aim to ensure that all children at Roskear School have appropriate experience of a broad and balanced mathematics curriculum based on the National Curriculum 2014.

Thus, our children will become fluent in the fundamentals of mathematics, developing secure conceptual understanding and be able to apply their mathematical knowledge and skills to solve problems and develop mathematical reasoning.

We aim to encourage a positive attitude to mathematics by:

- Fostering an early and continuing enthusiasm for mathematics.
- Ensuring that learning is introduced in a way that creates interest, curiosity and motivation, so that the children can gain pleasure and enjoyment.
- Helping children to see purpose and relevance in their learning.
- Encouraging the children to achieve a breadth of mathematical knowledge, skills and understanding, which they are able to apply to real life situations.
- Helping the children at all levels of attainment to have confidence in their own abilities.
- Encouraging the children to be resilient and so enable a sense of personal pride in their achievements.

We believe mathematics is an important element of communication. It can be used to describe, illustrate, interpret, predict and explain. It provides a way of understanding much of what is in and happens within the world around us. It is interesting, challenging, creative and enjoyable.

Mathematical Language

Children are encouraged to use mathematical vocabulary throughout their maths lessons and also across the curriculum where appropriate. They are taught and provided with opportunities to use the correct mathematical language and notation and to discuss their mathematics and explain their thinking. Children must be assisted in making their thinking clear to themselves as well as others, and teachers will ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

There is a consistent use by staff of correct mathematical language, which progresses over each year group, to be found in the Roskear Calculations Policy document. Children

have access to the vocabulary being taught daily through the use of a vocabulary slide during the whole class input and via the 'working walls' in each classroom (some classrooms may choose to have their daily vocabulary displayed elsewhere dependent on the location of their working wall). We also encourage the use of 'stem sentences' (for example, I know… because…) to help children justify their answers. These are also on display in every classroom from Y1-Y6 for children to use during lesson time.

The Organisation of Mathematics

Maths is taught by the class teacher and other adults:

- To the whole class introducing new concepts and reinforcing previous work
- In cross curricular work
- In Enhanced Learning
- To individual pupils, referring to ILPs when appropriate
- As an intervention through Maths Whizz
- Through the 'Number Sense' program for number and times tables fluency

From Year 1 onwards, all pupils will have a daily dedicated mathematics lesson. Within the lesson there will be a good balance between whole-class work, group teaching and individual practice. All children will have the opportunity to reason and problem solve throughout the lesson, through a combination of partner talk and individual practice.

Teachers follow the long term 'block' planning from White Rose Maths and adapt the small steps of progression planning provided to ensure development of children's learning takes place over time and that the curriculum is covered systematically. Teachers' planning is supported by high quality resources such as 'Maths No Problem', 'Third Space Learning', 'NCETM' as well as those resources provided by White Rose.

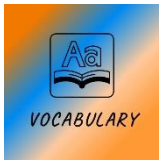
Teachers use their professional judgement to determine the activities, timing and organisation of each part of the lesson to suit its objectives. There is therefore considerable variety and creativity on different days.

Structure and elements of lessons

Children at Roskear have a maths lesson each day which has five elements: **In focus, Let's Learn, Guided Practice and Independent Practice**.

In Focus (I.F)

This initial section of the lesson is a 'hook' which relates to prior learning and the main learning intention. It can be an image, a conjecture or question which pupils discuss together. This is an opportunity for pupils to 'grapple' and use their reasoning, problem solving and applying skills.



Vocabulary:

A vocabulary slide is introduced at the start of each lesson. Any new vocabulary is highlighted in red. While the children are completing their worksheets, the key vocabulary is left on display to support the children in their reasoning.

Let's Learn (L.L)

This is where the teacher unpicks the pupils' thinking and teaches the main skills required for the lesson. CPA (concrete, pictorial, abstract) approaches will be used during this time to scaffold their understanding of mathematical ideas. This may be recorded in books, whiteboards, or through partner talk. Further use of resources, modelling and scaffolding may be used to support those children with SEND or lowest 20%.

Guided Practice (G.P)

This is where the children attempt a series of questions (which challenge the children through carefully planned variation) to apply their learning and consolidate the teaching part of the lesson. There is also the opportunity to reason and/or problem solve during this section (either through whole class discussion, partner talk or written questions). Children are encouraged to use the aforementioned stem sentences and RUCSAC so that they can articulate and solve their answers appropriately.

Independent Practice (I.P)

During the Guided Practice, the adults will use Assessment for Learning to decide how ready the children are for the next part of the lesson. It is at this point children will be encouraged to reflect on their readiness for applying their learning and choose between **Ready to Rock** and **Flying High**.

'**Ready to Rock**'- provides further consolidation of the 'Let's learn' example and 'Guided practice' questions with reasoning and applying opportunities.

'**Flying High**' – provides pupils with questions to further apply their skills from the Guided Practice section with reasoning and applying opportunities.

Should a child finish their activity before the end of the lesson, they will be further extended with a **Challenge** (either a separate activity if they have completed Flying High, or a section of the Flying High activity if they have completed Ready to Rock).

Throughout the lesson, teachers will model the new learning with appropriate **resources** (concrete or pictorial) to help the children understand the learning. These will then be available for the children to use throughout their independent learning time.

Both Ready to Rock and Flying High will challenge the children through carefully planned variation so that the children are constantly thinking about how to apply their learning.

Teaching Assistants work alongside the teacher to support individual children and small groups within the class. In upper KS2 there are booster groups to support those pupils with identified needs.

Plenary:

This is an opportunity to revisit the grapple question from the I.F so that all children can succeed in answering it.

Supporting children with SEND

This policy works in conjunction with our policy for Equal Opportunities and our policy for Special Education Needs. At Roskear, we are committed to supporting every child within a lesson. We have a variety of different strategies for supporting children with SEND, starting with extra resources, modelling and scaffolds. For a detailed breakdown of how we support differing individual needs, please refer to the document 'Supporting Every Pupil in Maths'.

Number Fluency

Rapid Recall (R.R)

This is a recap of the children's previous learning. It will generally include a question from the previous day, the previous week, the previous term and the previous year (using White Rose's Flashback4 resource). This takes place at the start of the maths lesson or straight after lunch depending on the timetable that day.

Number Sense Fluency Sessions

In addition to the daily maths lesson, pupils receive 15 mins of 'essential skills' practice every day. This aims to specifically develop number fluency by a variety of methods and fun activities. Number fluency is essential to problem solving and reasoning and in particular the need to be efficient, accurate and flexible with numbers and related number facts. Years 1, 2 and 3 use the 'Number Sense Facts Fluency' program during this time, following their carefully constructed program to ensure that children "develop confidence and flexibility with number and fluency in addition and subtraction facts".

Number Sense Times Tables Sessions

After the Autumn term, Year 3 will start the 'Number Sense Times Tables Fluency' program for 15 mins, which will continue throughout the rest of Year 3 and throughout Year 4. Years 5 and 6 will continue to consolidate the times tables facts using the same approach, whilst also recapping a range of essential skills using 'Fluent in Five' (a Third Space Learning resource).

99 club (whole school)

Roskear's own 99 club has been specifically designed by us to target each year groups' key areas of fluency. Children receive weekly tests and have their own badges to record which club they are currently undertaking. Children are given five minutes to complete the appropriate number of questions and are encouraged to practice at home. Homework versions of each club for each year can be found on the school website.

Once marked, these quizzes will be kept in their purple 99 club folders over the year. Results are recorded weekly and progress in achievement is celebrated. Once a child has achieved 100% in the allotted time scale they receive a sticker to put on their 99 club badge. There are nine stickers to collect each year. Every year, every child will start again on the 11 club with the 'essential skills' specific to that year group.

Enhanced Learning

Enhanced Learning sessions are available for both Key Stages every afternoon to address any misconceptions from the morning maths lessons. This is not only be for children who may have struggled with a particular part of the learning, but also for those children who the teacher wishes to challenge even further through deepening their learning.

Maths Whizz

Once a week, all children from Year 1-6 take part in a 'Maths Whizz lesson'. Children are assessed at the beginning of the year and then learn along their personalised learning track, gaining new knowledge whilst also consolidating previous learning. Teachers and Teaching Assistants work with the children through the session, providing instant instruction where appropriate. Through this, children are constantly exposed to the different areas of maths, not only the White Rose block they are currently learning at that point in the year. This serves as an excellent pre/post teach, gap-filler and consolidation of learning. We run a weekly competition in each phase, with winners announced during Friday's celebration assembly and winners receive the Maths Whizz trophy in their classroom for the following week. The data provided by the program helps teachers to inform planning.

EYFS

Mathematics teaching for the pre-school, nursery and reception children is taught through the 'Mathematical Development' (including number and shape, space and measures) area of learning, using 'Development Matters' curriculum guidance to ensure

mathematical opportunities match the developmental needs of the children and continuity of practice to KS1. Children have access to maths resources and equipment daily during continuous provision with enhancements planned to meet individual needs.

In YR, pupils will also participate in a daily maths meeting session, to provide additional support to the development of mathematical skills and knowledge. Resources from both White Rose and Number Sense are used to help support the planning of the 'daily maths meetings' and maths focus planning. The aim is that by the end of Foundation Stage all children are prepared to participate in the daily dedicated mathematics lesson, ensuring appropriate readiness for the next stage of their education.

Planning, Assessment and Record Keeping

The National Curriculum 2014 provides the programmes of study to be covered with ideas on how to deliver them and what the children need to achieve. Teachers use the long term plans alongside the small steps of progression from the White Rose scheme to ensure appropriate coverage throughout the year. This is in conjunction with a variety of other references and resources such as Maths No Problem, NCETM, Third Space Learning and other appropriate sources. Planning between parallel classes shows parity of learning intentions. Teachers use a range of activities and resources to deliver the objectives.

Teaching and learning activities include the use of ICT to support the teaching of the identified learning objectives. Our teachers use their judgement about when ICT tools should be used to enhance teaching and learning.

Assessment

Assessment for Learning is used throughout learning to enable the adults to respond to children's learning, addressing misconceptions where needed and securing learning.

Marking pupils' work against the learning intentions and success criteria is an integral part of every lesson and findings will be reflected in subsequent planning (see Marking Policy).

Feedback to pupils is timely and within the lessons, ensuring every opportunity is utilised to move learning forwards and deepen understanding, ensuring pupils make progress.

At the end of each White Rose unit, children will complete the corresponding end of unit assessment. This is tracked throughout the school and assessments are recorded in pupils maths books. Teachers use these assessments to target any misconceptions through enhanced learning and cover the topics in future rapid recall.

At the end of each half term, children take a 'Star Maths' test (online).

End of key stage SATs are completed in years 2 and 6. These are analysed for strengths and areas of developments. These areas of development are in turn used to inform the Maths Evidence Form and Self Evaluation form (SEF) as well as the action plan for the following year.

Mathematical development in the Foundation Stage is currently assessed using the Phases of Development and the EYFS profile. Data is sent annually to the Core Stats team to support analysis and benchmarking; additional analysis is carried out by the EYFS team. We use Target Tracker to collate our data. Results are entered using this system on a termly basis, following on-entry data results in September. Data analysis provides the teacher with cohort next steps and areas for development to ensure the needs of all children are met.

Continuity and progression is ensured by:

- transfer of baseline data
- transfer of any SATs data
- regular and programmed dialogue between successive teachers

Progression is informed by staff knowledge and understanding of the expectations contained in the programmes of study within the National Curriculum. 'Moderation' is an integral part of our assessment process and a programme for moderation is highlighted within the school's monitoring and evaluation programme.

This rigorous approach to assessment assists teachers in setting accurate and challenging individual targets.

Approach to Calculation

Mental mathematics

Mental methods are emphasised from an early age. Children are directly taught and provided with regular opportunities to develop the different skills involved. Children are encouraged to improve their performance and achievement is recognised through the '99 club'. Children are taught using modelling by the class teacher and practical and visual materials. These skills include:

- remembering number facts
- using known facts to work out new facts
- developing a repertoire of mental strategies
- solving problems

The aim will be to develop an approach in which mental methods are always considered first.

Written Work

Written recordings will be used to:

- informally support a mental calculation
- develop the skill of explaining the method used
- help someone else follow the method or assess the work
- practise writing and using the correct symbols and notation
- help remember or practise the recall of number facts
- carry out the working of a standard written method of calculation

The move from informal to standard written methods will occur in line with the expectations set within the National Curriculum.

Mathematics across the Curriculum

Throughout the whole curriculum, opportunities are planned to teach, extend and promote mathematics. Teachers seek to take advantage of all opportunities through cross curriculum mathematical challenges, especially in areas such as geometry, statistics and measure. These opportunities may occur in maths lessons, as well as in foundation subjects. For a full breakdown of how maths is applied across our curriculum, please see the 'Maths Curriculum Application' document, of which a sample year group can be found here (Appendix A).

Resources

Each class is separately resourced with basic materials and particular equipment for age specific year groups.

Teachers use resources to:

- Demonstrate or model an idea, an operation or method of calculation e.g. a number line, large arrow cards, counting stick.
- Enable children to use a calculation strategy or method that they couldn't do without help; e.g. individual number grids or lines, counters, fingers.
- Provide a context for the application and practise of mental calculation strategies and number skills e.g. dice, 0-10 number cards, number games, coins.

Where resources have been used by the adult when modelling these resources will also be accessible for the children during the Guided Practice and Independent Practice. The level of resourcing is reviewed annually. Please see our calculation policy for more information on how concrete materials are used within each block of maths.

Homework/Parental Involvement

Maths Whizz – Red Retention Gems (whole school)

For children in Years 1-6, 'Maths Whizz' is their set homework each week, where they gain their 'Ruby Red Retention Gems'. This area of Maths Whizz allows the children to consolidate their learning and practice previously learnt skills. Children receive their log in details to Maths Whizz and take an initial assessment in class. These log-ins are

then stuck into their reading records (if you need another copy, please contact your class teacher). As part of our teaching about online safety, we encourage children not to share their log-in information with other children. We ask that children gain a minimum of 3 'Red Gems' a week. Learning at home is celebrated in class.

99 Club (whole school)

If any children cannot access Maths Whizz at home, they can take home a 99 club test instead to practice and return to school.

Times Tables

Times Tables Rockstars is used across the school. Pupils have logins stuck in their reading records so that they can access this at home as well as in school.

Multiplication Tables Check (Year 4 only)

In the lead up to the Year 4 Multiplication Tables Check, the children in year 4 will receive extra home learning to complete to help practice their times tables knowledge. Whilst we encourage all children to participate in this, it is not a required piece of home learning.

Appendix A – Maths Curriculum Application example year group

Maths curriculum application

Year 3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Whole school themes	Looking after our planet	Exploration and Discovery	Counties, Countries and Continents	Marvellous Men and Women	Active Planet	Changing Britain
Unit of Learning	Surviving the Sahara	Ancient Egyptians	London Our Capital	Scavengers and Settlers	Fantastic Forests	Rampaging Romans
Maths	Number: Place Value Number: Addition & Subtraction Number: multiplication and division		Number: multiplication and division Measurement: money Statistics Measurement: Length and perimeter Number: fractions		Number: fractions Measurement: time Geometry: Properties of shape Measurement: mass and capacity	
Application of maths in the wider curriculum	Geography: fractions (Y1), temperature (Y2) Science: fractions (Y1, 2), weights/amounts (Y1,2), percentages (Y5) RE: days of the week (EYFS) D1: mathematical language (EYFS)	History: reference to nets (Y6) and 3D shapes (Y1,2,3) History: Chronology Spanish: numbers 1-20 Stunning start: measuring small quantities (EYFS) History: sequencing of events (EYFS)	Science: measuring shadows (Y1,2) D1: shape (EYFS, Y1, Y2) Computing: sequencing of events (EYFS), movements and turns (Y2) Geography: number comparison (populations), charts locational language (EYFS, Y1, Y2), grid references (Y4), measurement comparison (Y2)	Science: compare and group (EYFS) History: Chronology Spanish: days of the week/months of the year	Art: perspective positional language (EYFS, Y1) Music: fractions (Y1)	Science (Forces): measurements recording data History: Chronology Music: repeating patterns (EYFS) Art: 3D shapes (EYFS, Y1, Y2)
Application of the wider curriculum in maths	Number: Kings and Queens (Y2), key dates from History, Our Town distances (Y1)		Statistics: plant heights/growth (Y2) Length & perimeter: plant height/growth (Y2), Ancient Egypt (Y3) Fractions: Kings and Queens, Ancient Egypt		Geometry: 8 compass points with angles (Fantastic Forests) Mass and capacity: World of water (Y2), Time: time taken to complete events linked to previous areas of learning.	