

WINGROVE PRIMARY SCHOOL



Policy and Guidance for Mathematics

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Date formulated: May 2002

Dates for review: Yearly

Review Date: July 2017

Rationale

"Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject." National Curriculum 2014

Aims

We aim for children:

- to become fluent in applying logical, creative, experimental and critical strategies in solving mathematical problems;
- to apply reasoning and to work systematically, critically and creatively;
- to communicate effectively in a range of situations

To prepare children for continuation of their learning in mathematics

To develop independence, perseverance, cooperation and patience

To engender a love of mathematics

Curriculum and content

The Wingrove curriculum is based on Early Years Foundation Stage goals and the National Curriculum 2014. These provide the content and general framework for teaching throughout Wingrove.

Additionally, we have adopted a more detailed framework (from Liz Bailey – consultant) which sets out the specific objectives and timings of our teaching and learning programme in each year group. This maintains continuity and progress. To support detailed assessment and precise teaching targets, we use Assertive Mentoring, a scheme which coordinates objectives, attainment and subsequent targets for all children.

How should mathematics engage with the wider curriculum?

Mathematical knowledge and skills support development in many broader curricular objectives. Mathematical thinking embodies perception, classification, order, comparison, repetition, visualisation, extrapolation. It is right and natural to apply, for example, number, shape, pattern, order, measuring skills to most topics. Art and music rely heavily in different ways on pattern, balance, counting, area, symmetry and measures. History applies chronology, measures, numbers to reveal and explain historical events and lifestyles. In Geography, an awareness of place becomes accessible through measures of distance, scale, directions, populations, topography, relationships etc.

The engagement of mathematical thought in science, computing and sport is clear. We will plan for opportunities within the Creative Curriculum to teach mathematical skills and to reveal its use within different disciplines..

*Assertive Mentoring is a published scheme of objectives and assessments in English, Mathematics, attendance and behaviour to which Wingrove has subscribed (2014-15). Our aim is to accelerate progress for all children to meet national and school attainment targets.

Teaching and Learning

We recognise the range and variety of children's learning needs and the challenges these present. Wingrove's population is socially and culturally rich, and we are committed to provide for all children.

Children receive five Mathematics lessons of one hour per week, with additional group sessions as required. Additionally, we will provide one 'Big Maths' session of half an hour to accommodate the Assertive Mentoring system.

Our learning objectives derive from an established hierarchy and the National Curriculum themes. Children will experience a range of progressive challenges in all of the key mathematical areas: number; geometry; statistics; measurement. Teachers will plan lessons and programmes of study tailored to the class, based on key objectives and individual need. Planning comprises yearly, termly and daily content to ensure coverage and progression in the curriculum.

Children are mainly taught in whole class situations according to lesson objectives. They will then work independently and collaboratively in small and large groups according to task and level of progress. In some cases, children will be taught in small groups separately to the class for particular types of support. All children are expected to progress at a strong pace.

Teaching styles and class management are at the professional discretion of each teacher, though we promote a collaborative approach. Teachers plan together to maintain parity and continuity within and across year groups.

We will employ a variety of presentation styles and methods. Wingrove provides electronic screens linked to laptops in every class allowing access to a wide range of contemporary resources for lesson presentations. We have a range of 'traditional' equipment to support individual and group learning.

Practical work, such as ordering, sorting, classifying, measuring, drawing, matching, arranging will provide a strong experience of handling mathematical materials. An exploratory, play approach is encouraged in order to engender a positive emotional response, and to lead effectively into conceptual development and knowledge.

Recording of work, in different contexts and for different purposes, is an essential feature of a child's progress. We will teach correct notation of digits and symbols, effective formats for recording calculations, orderly and clear presentation techniques on paper and computer.

Work will be marked regularly according to the marking policy. Marking allows teachers and children to communicate expectations and achievements, and, from this, children should know their successes and how to improve their work and make progress.

Daily lesson structure – a guide

Content will vary according to age group, learning levels, language etc
Lessons will follow the main, three part format: introduction; activity; review. This may be adjusted on occasion for particular circumstances at the teacher's discretion.

Teachers begin with a mental and oral starter, a short period of questioning or discussion to engage thinking, focus attention, set the scene. Teachers can use this for practice, recall, vocabulary, visualising, problem solving etc. We would expect all children to be paying attention, answering questions, looking at the teacher, expectant. This will be for a few minutes..

Then, a clear introduction to the lesson objectives will be given, to which all subsequent activities should be directed. The children need to be fully focused and attentive. Here, objectives will be displayed in clear language and new vocabulary displayed and explained. Teaching will include a range of direct instruction, modelling, demonstration, visual prompts and illustrations, vocabulary both written and spoken, questioning, experimentation, play, activity and handling of materials. An engaging approach is the key, so children maintain attention and assimilate ideas. Teachers' talk should be assertive, correct and concise: children should be prepared for and promptly moved on to independent or group work. There should be no delay in capitalising on the children's readiness for activity, and their attention span must be taken into account at this point. The introduction should be about one third of the total lesson.

An activity, appropriate to the children and the task follows the introduction, and will prompt the children to attain the objectives set out in the introduction. 'Play' may well form the basis of some activities, but it is essential that the thinking, knowledge, strategies, vocabulary, recording, materials are directed towards the objective. Teachers will judge carefully the quantity and content of their tasks.

A review or plenary will be a clear finale to the lesson. This is an opportunity for the objectives to be restated and assessed. Questions can be answered, misunderstandings can be clarified, attitudes can be checked. Reiteration and firm adherence to the objectives are essential.

A simple reminder: children should know what they are going to do, know what they are doing, and know what they have done.

What should a good mathematics lesson look like?

Children will be: solving problems; investigating; establishing patterns; relating knowledge to new situations; imagining new relationships; testing accuracy; assimilating key facts and connections; emulating and developing effective strategies of their own; engaged through a variety of visual, aural, kinaesthetic stimuli. Pattern is an essential feature of mathematics, and children should see patterns and be helped to recognise them in numbers, shape, size, sound and action.

Teachers will be: giving instructions; asking questions; prompting investigation; modelling strategies; revealing relationships; exposing effective thinking and strategies.

Presentations will be: clear; accurate; immediate; attractive; simple.
Mathematical vocabulary will be: spoken; written; displayed accurately; repeated frequently; used by children correctly. We appreciate that children will be hearing many words for the first time and we must be careful to ensure that initial experience is clearly understood. Teachers will teach meanings, relationships, usage and derivation.

A lively pace will be established by teachers and assistants, encouraging the children to participate fully, with support as necessary: children should expect to make progress within the lesson and be able to discuss their work.
The lesson objectives will be: clearly displayed; discussed; provide a firm focus for learning and activities.

Activities will: be balanced between practice and challenge, novelty and repetition; engaging; encourage independence. Children will be actively thinking through problems or tasks, using their previous knowledge, asking questions, discussing etc. They will experience success and positive emotions, and we should see some 'Eureka!' moments. They should be reassured that mistakes are acceptable, that challenge is expected and that enjoyment comes from success.

Teachers need to ensure that a supportive, highly expectant and caring environment is established. It is essential that teaching is concise and focused, and allows children to participate fully in acquiring the knowledge and skills being taught.

Measuring progress

Knowing the current level of attainment and rate of progress for each child is a necessary feature of effective teaching. We employ assessment techniques informally and formally. Daily assessment is a normal part of lessons, and may include incidental observations by teaching staff – children's oral answers,

suggestions, questions, written answers. More formal 'scored' work can take place at prudent intervals and may include mental or written tests. These usually include questions similar to SATs so that children become familiar with the format and content. We give formal tests at the end of each half term, using the results to inform subsequent teaching targets and groupings. We also use Assertive Mentoring.

The description of children's progress is expressed in Stages and sub-stages, previously National Curriculum levels. These Stages correlate generally to each year group: Stage 2 matches Year 2 attainment, for example. Within the stage, sub-stages are defined as: emerging; developing; secure; next-stage ready. Expectations of attainment and progress are high. Taking into account the various learning rates, we still expect that children will, over a school year, make at least three sub-stages of progress.

(Please note: as this is a new approach to our mathematics curriculum, we will be addressing these features in a gradually.)

Special needs

We support children of many differing learning capabilities. Children deemed to have Special Needs are supported according to the Special Needs policy. Within lessons, it is normal for children to be supported by differentiated tasks, of lesser or greater challenge, to have additional support from a Teaching Assistant or other adult, or to work closely with their peers. We expect that progress will continue according to their particular circumstances.

Resources

Our most valuable resource are the teachers leading the lessons, and their intervention and leadership set the parameters and expectation for the lesson. Our material resources are stored in classes and centrally, providing a range of daily and specific items for use during lessons. Digital resources are widely available via the school network and internet access. It is important that resources are pertinent, engaging, challenging and accessible for learning to be rich and progressive.

Equal opportunities

See also the Equal Opportunities Policy.

We respect and value the rights of all children to receive an education regardless of ethnicity, gender or social heritage. We endeavour to provide high quality learning opportunities for all our children, employing differentiation of resources, personnel, grouping, task and expectation as necessary.

Homework

Homework should be an extension or practice of lesson content or basic skills, and teachers will use discretion to set appropriate tasks. Children will usually receive one piece of mathematics homework per week, linked to classroom objectives. It should take no longer than half an hour in upper KS2, younger year groups receiving less as appropriate. Homework offers parents and carers an

opportunity to share in their child's learning and we value this. However, the homework is for the child, and parents may be most effective in being supportive and interested rather than in completing tasks. If a child experiences difficulty, they, or parents/carers, should discuss it with their teacher in advance of the hand-in date.

More able children

Children whose usual work indicates high levels of knowledge, speed, insight, interest or general capability in mathematics will be supported differently to their peers. This may include differentiated tasks, of higher challenge, of independence, of more complexity, in order to maintain their progress. We will judge if they are appropriate candidates for higher level tests and communicate this to parents as necessary.

Reporting

We will communicate children's general progress formally during parent interviews three times a year. We see this as an opportunity to both celebrate successes and inform of areas for improvement. Additionally, we provide brief written cards showing most recent assessment results. Parents are welcome to contact school to arrange appointments if further information is required.

Summary

Mathematics is a beautiful, cohesive, expansive subject, full of intrigue, pattern, reliability and surprise. It has practical applications and abstract theories in equal amounts. It can appear ordinary and specialised. It can, unfortunately, be vague and confusing if experienced superficially, yet, with insight, can reveal relationships and features of life otherwise invisible and provide understanding of the world.

Wingrove will provide children with opportunities to play, explore and assimilate mathematical ideas and concepts. They will be challenged and supported to apply strategies for solving problems systematically and creatively, to memorise and recall facts and to express their thinking effectively.

We are teaching children to become successful members of a wide and developing society. They require day to day knowledge that will increase their knowledge, improve their thinking skills, develop their personalities, and prepare them for independence in a wider context.

They also have the opportunity to discover a fascinating world of natural patterns, human invention and conceptual complexity which continues to explain, enrich and develop our knowledge of the world.