

## **Mathematics Policy 2021**

This policy outlines the teaching and learning of mathematics at Wybunbury Delves Primary School

The policy is based upon the aims of the curriculum for mathematics and the Early Years, “Development Matters” document.

Our teaching approach is based upon the mastery model, using the rich and high-quality textbook Power Maths from EYFS, so children gain a solid and deep understanding of mathematical concepts - recognising the power of thinking not just doing, which in turn will allow all to see patterns and make connections.

We are committed to delivering mathematics in innovative ways that link to real-life experiences, where possible, to prepare our children for their next phase.

### **Aims of the National Curriculum**

All pupils shall:

- 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.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations which will support them to develop an argument, justification or proof using mathematical language.
- 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 an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into distinct domains, 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.

### **Mastery Teaching**

Wybunbury Delves Primary School is based upon a fundamental belief that all children can achieve confidence and competence in mathematics, building fluency, a deep conceptual and procedural understanding through prolonged and varied practice.

Small, sequenced steps that are supported by a range of concrete and pictorial representations build and deepen conceptual and procedural knowledge.

Children working at mastery can: recall rapidly and accurately mathematical facts; make connections between concepts; use a variety of representations to demonstrate understanding and articulate fully in discussion “how” they have calculated rich and sophisticated problems.

We believe that knowledge is not fixed and explicitly embed a growth-mindset approach into all that our children do – through hard work, practice and a willingness to see mistakes as part of their journey - they can succeed. Mathematics is taught in mixed-ability groupings which we believe necessitates vital discussion: the use of accurate and specific mathematical language to explain what is known; validate an idea or reason, develops in our children a deep understanding that underpins all future learning.

Within lessons, reflection time is built in; this allows opportunities for children to make links and focus. Where possible, working in mixed-ability pairs or small-groups, children are encouraged to explain what they know using complete sentences and key mathematical language to discuss and express concepts precisely - this is empowering when clarifying understanding and can highlight any possible misconceptions. Maths talk is integral to the structure of teaching at Wybunbury Delves

### **Maths in the curriculum**

In addition to discrete mathematics lessons, our children recognise that “Maths is all around us.”

Targeted pre-teach sessions are used throughout the school to introduce or consolidate key mathematical vocabulary and enable revision of key concepts to take place with identified children. We believe these sessions allow all children to access the following day or week’s learning.

### **SEND**

Wybunbury Delves is committed to the mastery approach to mathematics and scaffolds are used to allow all children to access the learning at their level. Targeted interventions and precision teaching of key facts, support children developing fluency and recall. All children work on the curriculum that best fits their stage of development (P scales, standards or National Curriculum). Mathematics specific vocabulary is pre-taught to ensure all children are able to access the mathematics curriculum

### **Lesson Types**

Lessons are typically an hour long and begin with a fluency activity that aids mental recall. Children are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time. This ensures that all can master concepts and deepen their understanding as far as they can, before moving to the next part of the curriculum sequence - allowing no pupil to be left behind. Textbooks are an excellent resource used to support high-quality teaching and allow children to see the concept

in multiple representations. In addition to this, maths resources such as: Numicon, Diennes, multi-link cubes and bead strings are available on every table in every lesson to support and develop understanding.

If a pupil fails to grasp a concept or procedure, this is identified quickly through live marking and interventions take place using manipulatives to support, ensuring sustained progress - children are then ready to move forward with the whole class in the next lesson.

Times Tables are taught in an extra explicit session designed to develop automaticity which avoids cognitive overload in the working memory and enables pupils to focus on new concept.

## **ICT**

Children are not required to demonstrate use of calculators in formal tests, where the emphasis is upon effective written and mental methods of calculation, but calculators can and are used to support conceptual understanding and enable the exploration of more complex number problems.

## **Speaking and Listening**

The National Curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum. At Wybunbury Delves we recognise the quality and variety of vocabulary that pupils hear and speak are key factors in developing mathematical understanding and enabling children to have confidence presenting justifications, argument or proof. Speaking frames are used to introduce and consolidate key mathematical vocabulary in complete sentences which links to reading and comprehension skills; it is an expectation that all children use specific mathematical language at all times and support is given to those who find this challenging.

We assist children in making their thinking clear to themselves as well as others, using discussion to probe and remedy any misconceptions.

## **Early Years (EYFS) experiences of Mathematics**

EYFS Statutory Educational Programme: Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding – such as using manipulatives, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

We follow the Development Matters Framework and combine these points carefully with Power Maths in Reception. EYFS teachers and practitioners incorporate children's interests

into both their learning environment and planned activities and the 'Characteristics of Effective Learning' are observed and linked to what the children are observed doing independently and alongside enabling adults. 'Thinking Critically' is a characteristic most often linked to Mathematics, where children are seen to be making links, finding new ways to do things, solving problems, changing strategies as needed, making predictions and developing ideas of grouping sequencing, cause and effect.

Within the EYFS we use the Concrete – Pictorial –Abstract process of learning when introducing new concepts. This approach develops children's understanding at a deeper level and can be used both at home and within the EYFS setting. Young children are happy engaging with construction toys and making marks on paper, but cannot always solve the problem of  $5 + 2 = 7$  without a play-based introduction to this as a concept using concrete and pictorial resources. Children begin learning about number by playing with real objects and resources, e.g. shells, pebbles, toy figurines or cut out pictures. They build confidence with the basic idea of adding together or taking away alongside adults engaged in play before moving to the second stage of drawing pictures that represent their objects and fascinations and then including numbers in their drawings.

Children need to be exposed to different representations of mathematical concepts in order to embed their understanding of them. Children are given opportunities to reason and develop their skills around number, recognising patterns and relationships.

Short Home learning tasks and Weekly Updates are designed to give every child a wealth of opportunities to help you understand the processes taking place at school throughout the week. Counting aloud as you walk up the stairs or peg the washing out, will help children master the skill of counting in the right order, so they can later use that knowledge to support their problem solving. At Wybunbury Delves, planning for mathematics involves providing children with 'real-life' opportunities to solve practical problems in different ways.

### **Teaching and learning - Planning**

In Year Reception – Year 6, teachers use Power Maths as a framework based upon the CPA approach (concrete, pictorial and abstract).

Within a lesson there are periods of independent practice using practice books and/or mathematics books, and it is identified on the plan who the teacher or TA may need to support and by what means e.g. number lines, small group work. Children are encouraged to "Discover" – show how they are able to solve a mathematical concept; "Share" listen to the range of representations that may be used and "Think Together" apply their developing understanding – scaffolded until they have grasped the concept.

### **Role of the TA**

Use of teaching assistant support is planned in every lesson to ensure they effectively support, develop and assess understanding in every part of the lesson. Our TAs mark throughout the lesson alongside the teacher to indicate where they have moved children on, developing skills further. TAs share observations made throughout the lesson to directly impact upon progression.

## **Calculation Policy**

We have Power Maths calculation policies to reflect progression in the range of strategies taught, whilst giving flexibility to model the four operations in a variety of ways - this ensures consistency throughout the school.

## **Differentiation and Support (Provision for G&T, SEND, EAL, PP)**

While the National Curriculum suggests children move through the programmes of study at a similar rate, we recognise that children sometimes need work that is, “other and different” to support and/or challenge – their mathematics “stage” not “age.” This is done in a variety of ways:

- The use of a greater variety of concrete items to support consolidation
- Real-life planned links to support abstract concepts
- The use of problem-solving activities to further develop reasoning
- Timely support and intervention, systematically checking understanding throughout every lesson to embed conceptual development
- Small differentiated tasks to suit learning needs of all
- Effective AFL throughout every lesson, picking up misconceptions and moving others to deepen understanding with a range of tasks
- Marking and verbal feedback throughout every lesson
- Pre-teach sessions delivered by class teachers to address misconceptions on a daily basis
- SEND Toolkit that ensures children are given work and challenged at the right level for them.

## **Marking**

The purpose of marking is to ensure that all children receive constructive verbal and non-verbal feedback, including next steps, to challenge and consolidate learning further. Our marking policy is shared with children, and as they progress up the school, they become increasingly able to respond independently.

We recognise the importance of marking and verbal feedback and use a range of strategies to ensure progression in every lesson:

- Teaching staff use pink pens to show where adult intervention has impacted upon learning; children’s work is marked throughout the lesson to address misconceptions and/or move children on in the lesson to further deepen understanding. “Pink to Think” allows children to see quickly where their errors lie and they can be discussed within the lesson.
- Yellow pen is used to indicate “Yellow to Shine,” individualised feedback that indicates a pupil has shown a depth of understanding, reasoning or persevered.
- Next step marking is used for children to respond to (in the morning when doors open) either to consolidate concepts, address misconceptions or give children opportunities to show reasoning. They respond in green pen and their responses are marked with a yellow tick when met.

- Peer marking is used for children to assess within a lesson and discuss alternate strategies and methods, “proving” their understanding to others.

### **Assessment for Learning (AFL)**

**Formative** - throughout the lesson AFL is a continuous process whereby teachers and teaching assistants review through mini-plenaries, targeted differentiated questioning, marking, verbal feedback and pupil’s self-assessment.

**Summative** – Wybunbury Delves use White Rose termly assessments to assess children’s understanding on particular concepts. Data from assessments is analysed and is fed into the next term’s learning. Particular concepts may be revised for “morning work” and/or key children identified that have specific gaps.

**At the end of each unit** - Power Maths uses "End of unit checks," mini-tests that enable children to reflect on their own understanding - "Power checks" of that concept and a game "Power play" to consolidate and demonstrate the depth of understanding.

**At the end of each year** – Wybunbury Delves uses White Rose End of Year tests. In years 2 and 6 SATs assessments are completed.

### **Parental Links**

- Weekly in our Class Newsletters the focus of their learning will be discussed.
- KS1 and KS2 - run parent workshops showcasing how mathematics is taught using Power Maths.
- TT Rock Stars is regularly used as a times tables support for home use. Regular inter house battles drive this learning further along with inter school battles.
- School Jam and Maths.co.uk are used to support home activities.

### **Homework**

Children are encouraged to use TT Rock Stars as often as possible and battles are set by teaching staff. Parents are encouraged to support their child in completing this as independently as possible.

School Jam and Maths.co.uk are regularly used within KS1 and KS2.

Reviewed on 21<sup>st</sup> September by Mrs Julia Burns, Maths Co-ordinator