

	<b>Oldfield Park Junior School</b>		Version 2
	Mathematics Teaching and Learning Policy		
	Date	Author(s)	Notes
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Sub-Committee: Curriculum		Governor: Katie Payne	
This policy to be reviewed annually in September.			

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### ***PARENTS GUIDANCE DOCUMENT***

#### *Teachers GUIDANCE DOCUMENTS*

- *Progression in mental calculation with a focus on interpretation, reasoning and mathematical language*
- *Progression in mathematics – Counting and understanding number*

- *Models, images and resources*
- *Progression in mathematics for each year group from year 3 to year 6*

## **School Aims**

“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.” (DfE Mathematics Programme of Study, July 2014)

## **Intent, Implementation and Impact Statement**

### **Intent:**

The intention of the maths curriculum at Oldfield Park Junior School is that children are taught to become competent and independent mathematicians. The ‘mastery approach’ to teaching maths is the underlying principle of Mathematics Mastery. Instead of learning mathematical procedures by rote, we want pupils to build a deep conceptual understanding of concepts which will enable them to apply their learning in different situations. We will provide the children with the necessary resources to allow all children to access the curriculum and encourage them to use this where appropriate to explain their logic and reasoning. Following the recent changes in light of COVID-19, we have ensured that pupils are diagnostically assessed to identify potential gaps in their understanding. This information is used to inform planning and interventions that are required.

### **Implementation:**

At Oldfield Park Junior School, we recognise that in order for pupils to progress to deeper and more complex problems, children need to be confident and fluent across each yearly objective. We follow the White Rose schemes of learning as they have adapted their schemes of work to consolidate and revisit any maths objectives from the 2019/20 academic year that were taught remotely during the lockdown months. Our planning is complemented with other resources (Abacus, Keen Kite and I See Maths etc.) to ensure fluency and mastery.

We use three key principles to deepen pupils’ understanding:

1. Conceptual understanding
2. Language and communication
3. Mathematical thinking

Through mathematical talk, children will develop the ability to articulate, discuss and explain their thinking. We endeavour to make each lesson incorporate the outdoors and link this to real life contexts or their current topic. In this way lessons will be active and engaging. At Oldfield Park Junior School we call this approach TOTEM (Talk, Outdoors, Topic, Engagement,

Movement). This strategy is continued through the provision our newly developed homework programme; it promotes factual fluency and oral competency in key mathematical concepts across the Key Stage.

### **Impact:**

As part of a multi-academy trust we are fortunate to be able to call on the support of colleagues, other Maths leads and specialist teachers. Formative assessment takes place on a daily basis and teachers adjust planning accordingly to meet the needs of their class. Through moderation of planning, lessons, interventions and books, we can be sure that progress is made across all year groups. If progress is not being made, support is immediate and steps provided to ensure all pupils are set to achieve and make progress; this is particularly relevant at this point in time. Summative assessment takes place after each block of learning is taught however this will not be immediate; a delay of two weeks ensures levels of subject knowledge are retained. Children's progress and attainment is discussed with senior leaders in pupil progress meetings. The teaching of mathematics is monitored by leaders through lesson observations and scrutiny of books.

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### **Planning**

At OPJS our maths curriculum follows the overviews provided by Abacus with the support of materials from a variety of sources. These include, but are not limited to: Abacus; White Rose Maths; Classroom Secrets; twinkl; Convince Me Cards; Keen Kite Everyday Problem Solving and Reasoning; Keen Kite Maths Mastery with Greater Depth.

There is a termly plan for each year group from Year 3 to Year 6; each term is split into twelve weeks. A significant amount of time is devoted to developing key number concepts each year. This is to build the children's fluency as number sense will affect their success in other areas of mathematics. Children who are successful with number are much more confident mathematicians.

OPJS maths planning includes:

- Clear overviews, showing the timings and order of topics.
- Detailed small steps progression. Each block is broken down into smaller steps.
- Small steps guidance. For each small step there is guidance to help teachers understand the key discussion and teaching points.
- A more integrated approach to fluency, reasoning and problem solving.

At OPJS we endeavour to reduce teachers' workload as much as possible. Because of this we have adopted the approach that in addition to the White Rose materials the flipchart and / or PowerPoint presentation that are produced for each year group take the place of a separate weekly plan.

Included in the flipchart and / or PowerPoint presentation MUST be:

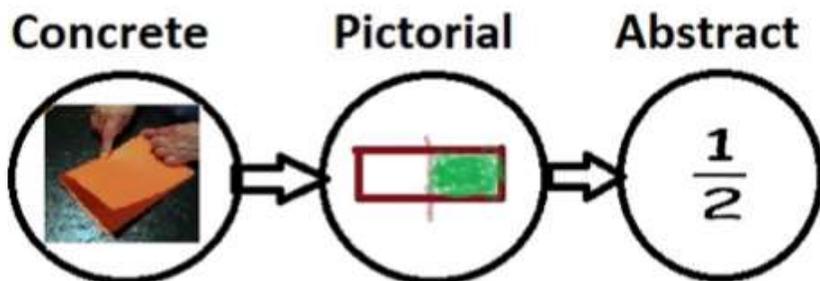
- Date
- Daily learning question
- Success criteria
- Vocabulary
- Resources to be used
- Differentiated / scaffolded activities
- Plenary / Review
- Assessment Circles

## Teaching Styles and strategies

At OPJS we support a mastery approach to teaching and learning and in line with the aims and objectives of the new National Curriculum. Our schemes of learning have number at their heart. We intend that:

- teachers stay in the required key stage and support the ideal of depth before breadth
- children have the opportunity to stay together as they work through the objectives as a whole group
- plenty of time is provided to build reasoning and problem solving elements into the curriculum

We understand that children learn in different ways but believe that the best approach to enable all children to access mathematical learning and understanding is that of progression through concrete, pictorial and abstract representations of mathematics.



**Concrete** – children should have the opportunity to use concrete objects and manipulatives to help them understand the mathematics they are doing.

**Pictorial** – children should then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.

**Abstract** – with the foundations firmly laid, children should be able to move to an abstract approach using numbers and key concepts with confidence.

## Marking guidance

- Verbal or written feedback is given regularly.
- Work is marked according to the Learning Question and Success Criteria.
- The children are active participants in the marking and feedback process; for example through self-assessment, peer reflection and responding to improvement prompts.
- Children are given the next step / target in their learning as and when appropriate.

- Children will be given time to respond to improvement prompts either at the start of the next lesson, during Guided Learning or in a planned session.

Children are often expected to be able to self-assess and peer-assess their work during a lesson against the learning objectives and success criteria and to make improvements.

When work has been distance marked against the learning objectives and success criteria, the pupils will be given opportunity to respond. The aim of all feedback and marking is that it becomes a two way communication between the pupil and the class teacher.

### **Peer Marking**

This is guided by the teacher who models how to mark effectively, in a way that is helpful to the children (both the child marking, and the child whose work is marked). It can be modelled on the two stars and a target format for Mathematics (for open activities), or the past paper / test base format (for closed activities).

Teachers will initial to acknowledge they have monitored peer marking and made note of any resulting changes to future planning.

### **Checking Stations**

A development from the Better Maths Project, which a member of staff from each year group has participated in, is the use of a checking station within the maths lesson. This enables children who are working independently to complete an appropriate number of questions/tasks, usually between three and five, and then go with their green marking pen to the checking station for their task to self-mark the questions / tasks they have completed. This can help reduce the number of interruptions of the class teacher who is usually working with a focus group.

This approach serves several purposes. It prevents children completing pages of incorrect calculations and not realising it until their work has been distance marked; it supports the class teacher's work-life balance in that they don't need to check every question/task completed but they have an overview of whom to target with an appropriate intervention and how; finally, if children have made an error or have a misconception, if they realise it themselves it has more power and impact on their future learning than merely viewing work that has been distance marked.

A drawback of this approach is if the children 'cheat' and merely change their incorrect answers. Class teachers need to spend time discussing the importance of honesty within our learning behaviours as well as making sure that children only take a green pen to the checking station. It is important that corrections completed following their checking station visit are done so in purple pen to highlight that a misconception or error has been addressed.

### **Other Adults**

Support staff can mark work with groups of pupils with which whom they have been working. When this is the case they will follow the guidelines given in the marking policy.

Trainee/Supply teachers are expected to mark all work in accordance with the policy. A summary is included in the trainee/supply teacher's handbook.

## **Resources**

Practical resources are used in all classes to help develop children's conceptual understanding of mathematics. This helps children to move smoothly to abstract representations and recorded methods.

Resources are stored in individual classrooms and are clearly labelled and accessible. Additional resources are stored in the maths cupboards in The Memorial Hall and can be accessed by all classes. Shared resources must be returned after use to ensure that they are available for all children to use.

Teachers use resources to demonstrate or model an idea, operation, or method of calculation. Resources enable children to use a strategy or method; provide a context for application and practise of strategies and skills.

Manipulatives are used across the school to support learning in mathematics for all children. These resources allows children to manipulate, observe and notice, and explore pattern. It is used to help them to see connections between numbers and understand the complexity of the number system.

Any breakage or wear and tear should be reported to the subject leaders.

See the Appendix for a list of OPJS resources.

## **Assessments (formative, summative)**

### **Day to day (Assessment for Learning/ AfL)**

Assessment for learning focuses on how children learn and is central to classroom practice and planning. Learning outcomes are shared with pupils and teachers discuss with pupils how learning outcomes can be achieved. AfL takes place on a daily basis and is integral to teaching and learning. Peer and self-assessment is encouraged throughout the school.

It may be appropriate for teachers to assess children's prior understanding at the start of a new maths topic using White Rose / TestBase or similar assessment questions. This can then feed into planning to ensure activities are pitched at an appropriate level to stretch the children and ensure progress is made in each lesson.

### **Insight Tracking**

At OPJS we use Insight to record and track pupil progress throughout all year groups. Teacher Assessments are recorded on the system as are test results. PUMA tests are available to be used three times a year in Maths. It is expected that assessments will be administered in Autumn and Summer term. Throughout the year Teacher Assessment is used to assess pupils and benchmark progress.

### **Target Setting**

Insight highlights targets for children in order to consolidate their learning from previous years. This can inform interventions to focus upon to ensure all pupils make progress.

### **Curriculum Targets**

Curriculum targets are set on Insight for Maths. These aspirational targets are shared with pupils and parents and take into consideration child's previous attainment and expected progress.

#### **Assessment Procedures**

#### **Year 3-5**

Ongoing assessment of pupils against year group expectations which are inputted onto Insight.

**Term 1** –Pupil Progress Meetings held to discuss progress. Interim reports sent to parents.

**Terms 2 and 4** – PUMA test implemented and results subsequently inputted into Insight and recorded and analysed.

**Term 6** – Children will be assessed using PUMA tests. Results will be inputted onto Insight. Pupil Progress Meetings held to discuss progress. End of year report sent to parents. Class teachers discuss pupil progress with next teacher using set proforma.

#### **Year 6**

Ongoing assessment of pupils against year group expectations and results will be inputted onto Insight. Pupil Progress Meetings held to discuss progress. Interim reports sent to parents.

**Term 1** – Baseline SAT assessment undertaken

**Terms 2–** 2017 SAT Paper (PAT) implemented and results subsequently inputted into Insight and recorded and analysed.

**Term 3** - 2018 SAT Paper (PAT) implemented and results subsequently inputted into Insight and recorded and analysed.

**Term 4** - 2019 SAT Paper (PAT) implemented and results subsequently inputted into Insight and recorded and analysed.

**Term 5** – National KS2 SATs administered.

**Term 6** – SATs Results and teacher assessments will be inputted Insight. Pupil Progress Meetings held to discuss progress. End of year report sent to parents.

### **Monitoring and evaluation**

Maths is monitored throughout the school by the subject leader in collaboration with the Senior Leadership Team and head teacher. A work scrutiny, planning scrutiny and lesson observations are carried out at least annually. The maths subject leaders provide support and guidance for teachers where and when necessary. Time is allocated at each PDM to allow best practice to be shared and updates disseminated to all staff with a focus on TOTEM.

### **Teaching Assistants**

Where teaching assistants are available they are used to support individual or small groups of children to achieve specific objectives. They can also be used to support maths learning by providing interventions as agreed with the class teacher. These may involve White Rose materials, the use of more concrete resources to scaffold understanding or delivery of the Numicon or Rapid Maths materials.

This support / interventions may take place either within lessons or during assembly times.

## **Transition from OPIS to OPJS**

During the Summer Term to support Primary Alignment, OPJS will send a mathematics book for children in Year 2 to complete work in. OPIS will provide OPJS with Maths Folders and Rainbow Recall Data. An opportunity for Year 3 teachers to observe Y2 children in Maths will be provided.

## **Home learning**

Children are expected to complete weekly homework that supports children in their mathematical understanding. The content is decided at the teacher's discretion.

The school has provided access for all children to use Doodle Maths. Children are encouraged to use it regularly and certificates are presented in the weekly celebration assembly.

## **Use of technology**

Each class has an interactive whiteboard or iBoard to use in lessons. Also available for use in maths lessons are the Computing suite, a set of laptops and LearnPads / ipads. Teachers are familiar with a variety of maths software, both online and on the school system.

## **Inclusion and Equal Opportunities**

All children are entitled to a maths curriculum which caters for their individual needs, offers equal access and opportunity, and enables them to participate fully in all areas of the maths curriculum. Further reference should be made to the school's Equal Opportunity Policy.

Where children have English as an Additional Language, teaching methods that accommodate their particular needs will be adopted.

The mastery approach to the teaching and learning of mathematics is an inclusive approach as it encourages children to stay together as they work through the objectives as a whole group rather than some children accelerating to meet future objectives.

Support for SEND, PP and LA pupils can be provided through adult intervention, targeted questioning, peer support, use of equipment etc. All children are provided with opportunities to build reasoning and problem solving elements into their learning.

## **Governor involvement**

Regular meetings between the Maths Lead and the Maths Governor ensure that the Governing Body is kept up to date with mathematics. The Maths Lead also attends three Curriculum Sub-Committee Governor meetings per year to inform all Governors about changes, progress and developments in mathematics.

## **Health & Safety**

Teachers should be aware of the health and safety implications of the maths curriculum. Children should be made fully aware of the potential hazards of any tools and equipment they use, and be taught to use equipment safely.

Further reference should be made to the schools Health & Safety Policy.

Appendices:

### **OPJS Maths Resource list (1)**

#### **Essential items**

Numicon

Dienes / base ten apparatus

Display of vocabulary cards for current unit of work

Bead strings, with 100 beads (one between two children)

1-100 number square/grid

1-100 number line/track (age appropriate)

Counting stick, marked off into 10 sections

Rulers

Place value cards (age appropriate )

Dice - 10-sided, 6-sided, and blank. 6-sided to be both numbered and spotted

Large blank number line

Coins

Bundling straws

Individual number lines (blank and numbered)

Squared paper

Digit cards

Playing cards

Calculators

1 maths dictionary per group (more in KS2 if possible)

#### **Desirable items**

Flip flaps

Symbol cards  
Addition/subtraction cards  
Dominoes  
Other dice (20-sided, 12-sided, etc.)  
Individual wipeable number squares  
2 sets of digit cards per child (0-9) or number fans  
Communal items that could be shared between whole school  
Cuisenaire  
Measuring equipment - scales, jugs, containers, tape measures etc  
Sets of 2-D and 3-D shapes (include some irregular 2-D shapes. NB these can be made from laminated coloured paper)  
Construction kits  
Clocks  
Sorting rings  
Maths games

## **OPJS Maths Resource list (2)**

### **YEAR 3-4**

Place Value Cards for TTh/Th/HTU  
Decimal Place Value Cards  
Negative/Positive Number Lines  
Number Lines 0-1, 0-100, 0-1000, 0-10,000, 0-minus 10  
Table Top Number Lines to 100  
Blank Table Top Number Lines  
100 square  
Multiplication grid  
Set squares

### **YEAR 5-6**

Place Value Cards up to million  
100 square  
Multiplication grid  
Decimal Place Value Cards  
FDP Dominoes  
Show Me Cards - angles, measurements, FDP  
Protractors  
Set squares  
Negative/Positive Number Lines  
Calculators  
Number Lines 0-100, 0-1000, 0-10,000, 0-1, 0-minus 10, 0-100,000, 0-minus 1,000,000

