

# Parkgate Primary School



## Mathematics Policy September 2022

**Reviewed:** September 2022

**Next review:** September 2025

## Introduction

A high-quality mathematics education 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)

At Parkgate Primary School we aspire for all partners – children, parents, teachers and Governors to have a love and understanding of maths. For them to recognise that they are surrounded by and use mathematical ideas, not just throughout the school day, but constantly in everyday life. We nurture a ‘can do’ attitude, where mistakes are seen as learning opportunities, difficulties are met with resilience and challenges are met with perseverance.

### The aims of the 2014 National Curriculum are for our pupils to:

- become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time
- develop conceptual understanding and ability to recall and apply their knowledge rapidly and accurately
- reason mathematically – follow a line of enquiry, conjecture about relationships and generalisations
- develop an argument, justification or proof using mathematical language
- solve problems by applying their mathematics to a variety of routine and non-routine problems, breaking down problems into a series of simpler steps and persevering in seeking solutions.

Continuity and progression for the teaching of mathematics is set out in the year-by-year programmes of study for KS1 and KS2.

**The EYFS Statutory Framework 2021** sets standards for the learning, development and care of children from birth to five years old and supports an integrated approach to early learning. This is supported by ‘Development Matters’ non-statutory curriculum guidance for the early years foundation stage – revised July 2021.

### The EYFS Framework in relation to mathematics aims for our pupils to:

- develop a strong grounding in number, including the ability to subitise
- count confidently – verbally counting beyond 20, recognising the pattern of the number system
- develop a deep understanding of the numbers to 10 including the composition of each number
- represent numbers using manipulatives, including small pebbles and tens frames for organising counting
- automatically recall bonds and subtraction facts up to 5 and some bonds to 10, including doubles
- develop a secure base of knowledge and vocabulary from which mastery of mathematics is built
- develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk about what they notice and not be afraid to make mistakes

### The purpose of mathematics in our school is to develop:

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real world
- an ability to solve problems, to reason, to think logically and to work systematically and accurately
- competence and confidence in using and applying mathematical knowledge, concepts and skills
- initiative and motivation to work both independently and in cooperation with others
- confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes
- an ability to use and apply mathematics across the curriculum and in real life

### Breadth of study

Collaborative planning and preparation ensure that children engage in:

- practical activities and games using a variety of resources
- individual, paired, group and whole class learning and discussions
- purposeful practise to embed and apply concepts
- open and closed tasks
- problem solving and reasoning to challenge thinking
- overlearning activities to practise and embed skills over time
- making appropriate choices from a range of calculation methods – mental and written
- working with iPads as a mathematical tool
- opportunities to extend and apply knowledge built into curriculum themes

## Planning and organisation of learning

Planning has returned to its pre-pandemic form. Learning is mapped out for the academic year. However, where the impact of the pandemic continues, some year groups have adapted plans - based on assessment outcomes - to ensure the embedding of key skills.

**Long term planning:** Development Matters and the Early Learning Goals (2021) provide the long-term planning priorities, facilitated by the EYFS Power Maths Programme.

The National Curriculum for Mathematics 2014, with reference to the document Curriculum Prioritisation in Primary Maths 2020/21, forms the basis of our ABBC maths programme. Long term plans are written and evaluated on a termly cycle, coinciding with assessments, ensuring they reflect next-steps in learning.

**Medium term planning:** based on ABBC maths – a sequential and progressive exemplification of the curriculum objectives detailing skill development, problem solving and reasoning opportunities. The planning cycle provides longer units on number, calculation, fractions, decimals and percentages to ensure depth of learning, whilst cyclical revisits further enhance and deepen learning. Plans have been adapted to detail prior learning and opportunities for reinforcement.

**Short term planning:** Exemplification in ABBC maths and ongoing assessment supports daily lesson planning. A common planning format is used in KS1 and KS2, and are monitored at intervals by the mathematics subject leader. We do not follow a set scheme of work, rather we have adopted a 'chocolate box' approach, with Power Maths, White Rose and Collins being popular resource choices. EYFS planning is based on the medium-term plans derived from the Power Maths Programme.

### Teaching and Learning

All mixed ability classes and target groups in years 2 – 6 have 65 - 70 minutes allocated to deliver a daily PAL – **Practice and Learn** maths skills session and a taught maths lesson. Year 1 have two taught sessions of maths a week and a daily PAL session of 10 -15 minutes.

Teachers of EYFS ensure the children learn through a mixture of adult led activities and child-initiated activities both inside and outside of the classroom. Mathematics is taught through short whole class interactive sessions and continuous provision.

**Lessons:** In all maths lessons the learning intention and where appropriate context for learning is clearly displayed and discussed. The emphasis in lessons is to make teaching interactive and enjoyable, engaging and responsive to evolving learning needs.

### Features of lessons include:

- Instruction – giving information and structuring it well;
- Demonstrating – showing, describing and modelling mathematics using appropriate resources and visual displays;
- CPA – providing a balance of concrete, pictorial and abstract experiences appropriate to the learning;
- Explaining and illustrating – giving accurate and well-paced explanations;
- 'Toolkits' – developed with the children to clarify understanding and facilitate independent and successful learning
- Questioning and discussion – using lolly sticks to encourage active participation
- Consolidation – providing purposeful practice, overlearning and application opportunities
- Reasoning – green paper challenges including Captain TRIO - Parkgate's Reasoning mascot endorses the language of explanation
- Reflecting and evaluating responses – identifying mistakes and using them as positive teaching points;
- Summarising – reviewing mathematics that has been taught enabling children to self-assess and focus on next steps



**PAL maths sessions:** written by the maths team, PAL maths – Practice and Learn, provides bespoke overlearning of key skills through fun, engaging and interactive activities including ICT.

### Principals of PAL maths sessions include:

- Daily practice and over-learn sessions
- Repetition, Revisiting, Reinforcement
- Targeting of basic skills
- Three-part session: counting, number facts, overlearning – including calculations
- Consistent images and terminology
- Weekly Friday assessments – PAL facts and PAL Challenge
- Linked to home learning maths target system
- Common planning format
- Common assessment tracking system



### **Organisation of PAL sessions:**

- Teachers class teach all children working at 'expected', at 'depth' or working 'one term behind'
- Supplementary teaching groups focusing on target, underachieving or SEN children are led by additional teachers, HLTAs or TAs across KS1 and KS2

### **Overlearning**

Additional over-learning opportunities to embed knowledge and skills have been put in place. These include:

Y2 -Y6 swift, daily, overlearn of calculation / key number ideas – 'Four-a-Day'.

'Flashback' – the opportunity to rehearse previously taught and current material.

The use of Times Table Rock Stars, Numberbots and the White Rose and Maths Shed APPs – in conjunction with PAL

### **Special educational needs & disabilities (SEND)**

Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's personal plans incorporate suitable objectives from the National Curriculum for Mathematics or development Matters and teachers keep these in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the mathematics lesson. Maths focused intervention in school helps children with gaps in their learning and mathematical understanding.

Phases-4-Maths is a new, bespoke Parkgate programme, written to support the mathematical learning of our most vulnerable children. The programme is linked to the Dynamo Assessment and Intervention programme, in conjunction with tailor-made resources to encourage overlearning and independence. At the very minimum all SEND children should participate in:

- **Daily:** counting (counting partner) ≈2 mins...
- **Daily:** fact cards (adult and / or buddy) ≈ 3 - 5 mins...

Within the daily mathematics lesson teachers have a responsibility to not only provide differentiated activities to support children with SEND but also activities that provide sufficient challenge for children who are high achievers. It is the teachers' responsibility to ensure that all children are challenged at a level appropriate to their ability.

### **Equal Opportunities**

Positive attitudes towards mathematics are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for whom English is a second language, develop an enjoyment and confidence with mathematics. The aim is to ensure that everyone makes progress and gains positively from lessons as a result of inclusive lesson planning. Lessons involving lots of visual, aural and kinaesthetic elements will benefit all children including those for whom English is an additional language (EAL).

This policy is in line with the school's policies on Special Educational Needs, Disability Discrimination, Gifted and Talented Children, English as an Additional Language (EAL).)

### **Assessment** (see Teaching and learning, Curriculum planning and Assessment policy)

Assessment is an integral part of teaching and learning and is a continuous process.

Teachers make assessments of children through:

- regular marking of work (see Marking Policy)
- analysing errors and picking up on misconceptions
- asking questions and listening to answers
- facilitating and listening to discussions
- making observations
- the use of diagnostic questions and 'quizzes'
- AFL strategies – including starter/plenary questions and exit tickets
- PAL maths – PAL facts and PAL Challenge weekly assessments
- cumulative curriculum records

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short-term planning evaluated in light of these assessments.

### **Medium term**

Teacher assessments are supported by bespoke in-house maths assessments – based on Test Base and Headstart materials. Outcomes are used in conjunction with class work and number fact assessments to support teachers in making a judgement for each child, which, in line with the assessment policy, are recorded on SIMMs.

Pupil Progress meetings are timetabled for all classes. The progress of pupils is discussed and appropriate intervention considered and put in place where appropriate.

## Long term

Y2 and Y6 complete the national tests (SATs). Test Base assessments inform teacher summative judgements in the summer term.

## Self-assessment

The opportunity for children to reflect on their achievements is given during and after a lesson or activity.

Strategies include:

- Reception – Oral communication/ physical thumbs up-level-down
- Year 1 – Oral communication/ physical thumbs up-level-down/ smiley-face traffic lighting by end of year
- Year 2 – Oral communication/ physical thumbs up-level-down/ smiley face traffic lighting
- Year 3-4 – Oral communication/physical thumbs up-level-down/ traffic light work /movement towards reflective comments
- Year 5-6 – Oral communication/ physical thumbs up-level-down/ traffic light work /reflective comments on their work

Traffic lights should be a coloured square or stamp next to the learning intention showing: -

- Red for feeling confused or unhappy about their understanding or success in their activity.
- Orange for feeling as if they understood some parts, but not confident in full understanding
- Green for confidence and understanding that they have achieved the learning intention

**Guidance on feedback marking** (see school Marking Policy)

**Feedback should enable children to:**

- reflect on their success
- understand the areas they need to work on
- develop their skills further

**It should:**

- be focussed towards the learning intention
- address misconceptions
- develop children's understanding and mathematical skills
- be at least once per week – see 'At a Glance' guidance paper: feedback marking
- praise success as a result of effort, perseverance and resilience - school stickers



Children should be given time to respond to comments and marking in the maths lesson or during the school day.

## Intervention programmes

The school allocates Pupil Premium funding for teacher led targeted intervention groups in years 6. Precision teaching based on assessment knowledge and statutory expectations is used to plan for the learning needs of identified children and ensure rapid gains towards working at the expected standards are made.

TAs and HLTAs provide targeted intervention pre and post teaching to identified children ensuring access to next steps in learning through quality first teaching. Short burst interventions are used for the learning of multiplication and number facts.

The Phases-4-Maths programme uses a school written assessment tool for number – counting, sequencing, fact and subitising knowledge alongside the on-line Dynamo Assessment tool. Individual plans are designed to support class teaching and additionality. Children with significant learning needs access the Dynamo Intervention Programme.

Year 6 tuition sessions and Easter school run in the autumn and spring terms.

## Home Learning

The Parkgate home learning and target system, recognises the importance of making links between home and school and encourages parental involvement with the learning of mathematics.

**Principles of the home learning target system:**

- Termly targets for each year group identified by 'jewels'
- Learning of key facts for fluency
- Aligned to PAL maths sessions
- Placed in home learning journal to support practise and communication
- Termly parent and children games sessions
- Website links to ICT programmes and support materials

## Environment

The mathematics environment supports the learning and teaching of mathematics and contains three key elements

- **core and consistent** images and models appropriate to age and stage of child
- **current** learning – dynamic, interchangeable and interactive working walls, including the display of children's work - celebrating achievement
- **challenge** – tasks and prompts for problem solving and reasoning, promoting mathematical thinking and discussion

The Parkgate Environment Checklist details the core models and images to be used in each year group, including the use of Numicon, bead bar and number lines appropriate to age and stage.

## Presentation

High standards of presentation through the modelling of consistent expectations combined with positive and persistent reinforcement ensure children take pride in their work.

### Expectations in KS1 and KS2 include:

- squared exercise books – numbers and symbols in separate squares
  - year 3 onwards – page folded in half
  - short date – top left-hand corner of the page and underlined, e.g. 03.05.12 → then leave a line
  - learning Intention underlined with a ruler eg. LI: To multiply TO x O
  - context underlined with a ruler eg. C: Real-life problems
- Note: For younger children in KS1 or less able children in KS2 these can be printed and stuck in books*
- number formation based on Pen Pals writing scheme and Edward 3 font
  - rulers **used at all times**

## Role of the maths subject leader

### To help raise standards pupil outcomes and mathematics teaching by:

- being a strategic lead for the development of maths throughout the school
- co-ordinating the maths faculty and maths key stage leaders
- writing, implementing and reviewing yearly action plans to improve the provision of maths across the school
- providing support in the planning and teaching of mathematics
- providing staff CPD
- monitoring the planning, teaching and learning of mathematics throughout the school
- ensuring colleagues are kept abreast of new developments in the area of mathematics
- monitoring and maintaining high quality resources
- meeting with maths Governor to review practice and progress
- reporting to the headteacher on assessment outcomes, identifying strengths, weaknesses and areas of improvement