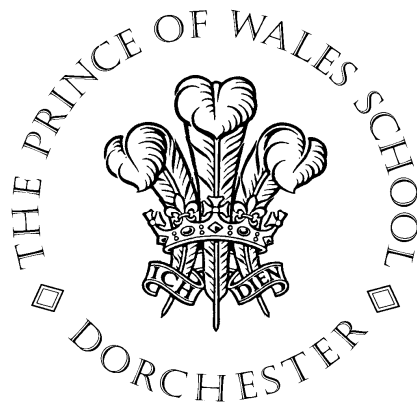


# **The Prince of Wales School**



# **MATHEMATICS POLICY**

**Reviewed 2014 in the light of  
The New National Curriculum**

# INTRODUCTION

This policy outlines the teaching, organisation and management of mathematics taught and learnt at the Prince of Wales first school. The policy is based on the 2014 expectations and aims of the "New National Curriculum" for mathematics and the early years "Development Matters" EYFS document.

## THE NATURE OF MATHEMATICS

Mathematics is a creative and highly interconnected 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 all forms of employment. A high quality education in maths 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.

## AIMS:

The new national curriculum for mathematics aims to ensure that all pupils:

- 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, and developing an argument, justification or proof using mathematical language;
- Can 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.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

## **OUR PRINCIPLES**

- maths is enjoyable and interesting.
- children should achieve success at every stage.
- for children to enjoy and understand maths as an abstract activity it is vital for them to experience it as a concrete, practical activity throughout the school.
- the formation of concepts and the development of understanding are as important as the learning of skills and techniques.
- the so-called "basic skills" are vital: children who fail to learn these skills experience a sense of failure which must be avoided. Children cannot enjoy many activities if they have not mastered the "basic skills."

- “basic skills” are best taught through concrete experience, use of equipment (in all year groups), real life examples and lots of revision, practice and consolidation to deepen understanding.
- much of maths is hierarchical and teaching and learning should build upon knowledge of what has come before and what will follow.
- children learn at different rates and from different starting points upon admission to school.
- the use of number should permeate all areas of the maths curriculum. Therefore, a good grounding in the basic skills of numeracy is essential.
- the development of mental strategies is vital. Formal recording follows this.

## OUR OBJECTIVES

We aim to work towards the following:

FACTS: correct mathematical vocabulary

conventional mathematical notation

SKILLS: able to perform the 4 rules of number

able to measure with appropriate accuracy

able to communicate mathematical ideas

able to use a calculator sensibly and where appropriate

able to work confidently with numbers mentally

CONCEPTS: able to understand conservation of number, area, time, etc.

able to understand links between 4 rules of number

able to make links between concepts

able to select and interpret appropriate information

GENERAL: able to estimate and approximate

able to use trial and error methods to solve problems

able to use more systematic methods of solving problems

able to simplify tasks

able to look for pattern

### **POSITIVE ATTITUDES:**

**we aim to develop confidence, pleasure, persistence, flexibility, systematic ways of working and a willingness to make and learn from mistakes**

## **Planning for teaching Mathematics**

Teachers' day to day planning is informed by:

- 1) The National Curriculum 2014
- 2) The Progression Charts for each programme of study. (NCETM)
- 3) Termly plans in which the teacher sets out what is to be covered each week
- 4) Daily/weekly plans in which the teacher plans the oral/mental starter, differentiated activities (usually no more than three levels) and plenaries.
- 5) **Continued formative assessment of children's work through guided maths group, independent work and informal testing.**

## **THE COMPONENTS OF MATHS TEACHING AND LEARNING**

The teaching and learning of maths at this school consists of a balance of the following:

- mental strategies
- use of visual, aural and kinaesthetic stimulus
- explanation and exposition by the teacher to a class, group and individual

- discussion between the teacher and the children as a class, a group or an individual
- discussion between children in groups or in pairs
- appropriate practical work, use of concrete material and equipment
- consolidation, practice and revision of fundamental skills and routines
- application of these skills to real life situations and other curriculum areas
- solving problems
- investigating mathematics
- playing games using maths
- using computers to do all of the above
- cross curricular activities, using maths skills in subjects such as DT and science

Each class has a dedicated daily maths lesson.

Children are grouped by previous attainment and teaching and support staff are deployed to extend the able and to support the less able. Children of all abilities will cover the same mathematical topics at different levels in each lesson in the term's work. **Each week the children will be involved in guided group activities where children will be given direct feedback about their work by an adult and given the opportunity to improve it (using our green for growth, tickled pink and purple pens).** Groups are constantly reviewed to ensure children are appropriately challenged.

## **THE APPROPRIATE USE OF CALCULATORS**

"The use of a calculator does not diminish the need for an understanding of how numbers behave, but it can be used to enhance children's understanding of number." *Williams and Shuard.*

"Used sensibly, calculators will make children better at maths not worse".  
*Curriculum Matters: Maths HMI Report.*

**"A policy of allowing pupils to use a calculator is not sufficient." HMI**

**NB The calculator makes numbers abstract. It does not make them concrete for young children. Therefore, we believe that calculators need to be used according to clear and precise criteria.**

Appropriate use:

- to increase motivation
- to generate patterns
- for play use in the shop
- to check work done by mental or pencil and paper methods
- to provide immediate feedback
- to develop estimation/approximation skills
- to enhance understanding of place value
- to introduce and develop understanding of large numbers
- to apply maths to a real life problem where lots of number crunching is involved.

Most of these usages only apply to older children in the first school.

**Inappropriate use:**

- to avoid the need to learn basic number facts
- to replace children's mental agility with numbers
- to do a page of number crunching rather than mental or pencil and paper methods

It should be apparent from the above that calculator activities need to be very carefully planned with these positive purposes in mind.

## **INFORMATION, COMMUNICATION TECHNOLOGY**

Children use ICT in a variety of ways to develop their mathematical skills:

- use of programmable robots such as Roamer, Pixie, Pip
- ipad apps to practise skills such as "tell the time" or to set individual challenges - "athletics"
- data handling programmes

- Mathematics for years 2-4
- graphics programmes using shapes, position or symmetry
- use of interactive whiteboard and the vast array of online resources available at websites such as: [www.topmarks.co.uk](http://www.topmarks.co.uk)

## **ASSESSMENT, RECORD KEEPING, TRANSFER OF INFORMATION**

The issue of progression and continuity is at the heart of a whole school maths policy.

Great importance is therefore attached to the transfer of information to the next teacher or school:

- Use of Pupil Tracker at assessment points throughout the year.
- Moderation exercises with other first and middle schools.
- Continued APP assessment in line with the new national curriculum.
- Discussions between class teachers about progress and attainment.
- basic information about the grouping of children for maths
- results of tests in Years 2, 3 and 4
- outcomes of Baseline Assessment and Baseline Review
- Teacher Assessment in Year 1

See Assessment Policy.