



**Chellaston Infant School**  
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## **MATHEMATICS POLICY**

Reviewed by Numeracy team Spring 2012

### **MISSION STATEMENT**

At Chellaston Infant School we believe that everyone will reach their full potential in a safe, fun and happy environment which promotes independence, self worth and excellence. Everyone is a learner whose values are respected.

**Come In Succeed**

### **RATIONALE**

#### **THE IMPORTANCE OF MATHEMATICS**

'Mathematics equips pupils with uniquely powerful ways to describe, analyse and change the world. Pupils who are functional in mathematics and financially capable are able to think independently in applied and abstract ways and can reason, solve problems and assess risk.' (Primary National Strategy website, 2006).

#### **AIMS**

The aim of this policy is to:

1. To ensure Mathematical skills and knowledge are taught and learnt within a context of purposeful and meaningful activities.
2. To provide opportunities for children to explore the structure and connecting relationships of mathematics itself.
3. To provide children with the reasoning skills and strategies that will enable them to use number confidently in their personal lives and work in society.

#### **PLANNING**

The school policy is matched to the requirements of the Primary National Strategy (PNS) for Mathematics, which provides the long term content of what should be taught at Key Stage 1. The PNS states the key objectives to be covered each year. Objectives are aligned to the seven strands (these are not equally weighted):

- Using and applying mathematics
- Counting and understanding number
- Knowing and using number facts
- Calculating
- Understanding shape
- Measuring
- Handling data

There are 5 blocks of work, with each block drawing on 3 mathematics strands, including the using and applying strand. Each block is organised into 3 units of work that can be covered across the year. Each unit of work is intended to provide 2-3 weeks of learning. This provides the basis for our long and medium term planning.

In the Foundation Stage teachers use the Early Years Foundation Stage (EYFS) guidance to plan and ensure Early Learning Goals in Numbers and Shape, Space and Measures are achieved. The EYFS guidance recommends that mathematical understanding should include the use of stories, songs, games and imaginative play. The children's learning experiences provide sufficient opportunity for exploration and a good balance between adult-led and child-initiated activity including mathematical opportunities



outdoors. By the time the children reach the end of the EYFS most will also have acquired the necessary skills to fulfil the Early Learning Goals (ELGs) in Mathematics.

Teachers in each year group meet weekly to plan together during PPA time to create their medium term planning for each half term and weekly planning.

It is expected that using and applying maths and problem solving are integrated into everyday activities for all children at a level appropriate to their stage of development. Progress made within this area is monitored through EYFS assessment and APP in Key Stage 1. The children are encouraged to develop their Numeracy skills further outside school. Parents are given weekly activities to carry out with their child at home to support their learning.

## **ICT**

During the Numeracy teaching ICT should be used primarily as a teaching tool to help explain mathematical concepts more effectively. The PNS electronic framework provides ICT resources to support teaching and learning. ICT can also be used to support or extend learning during group activities, providing there is appropriate software for the concept being taught. A range of software and interactive teaching programs are available to support and enhance the children's learning.

## **SPECIAL NEEDS**

All children have access to mathematical activities appropriate to their needs, and work is differentiated to enable them to reach their full potential in mathematics. Teachers plan work for individual children with SEN referring to their IEPs where these are in place. The Numeracy Strategy gives the learning outcomes expected at the end of year, in each area of mathematics and the children's attainment is measured against these. If a child is consistently not achieving these outcomes then steps are taken to ensure they receive additional support to help them develop their skills. Where children are found to be exceeding the outcomes, work is provided that will further extend their learning. For some children who are experiencing learning difficulties it is necessary to measure their attainment against the eight P-Level targets for children with Special Needs, in order to set suitable targets for mathematics in their MEPs. This is done by the class teacher in collaboration with the SENCO.

Through careful monitoring by the class teacher and other adults who work with both SEN and Gifted and Talented children quality first teaching can address many of the associated needs of these children.

## **HEALTH, SAFETY AND RISK ASSESSMENT**

Activities are planned with due regard to our Health & Safety policy. Risk assessments are undertaken as appropriate, and kept in the Health & Safety file. A copy of any risk assessment is also kept with this policy.

## **CONTINUITY AND PROGRESSION**

The programme of study enables the children to work at a pace to match their ability, building upon the skills and knowledge that they acquire as they progress from one level to the next of each Attainment Target.

## **ASSESSMENT, RECORDING & REPORTING (See Assessment, Recording & Reporting Policy)**

"APP is a process of structured periodic assessment for mathematics...It supports teachers by promoting a broad curriculum and by developing teachers' skills in assessing standards of attainment and the progress children have made. It involves 'stepping back' periodically to review pupils' ongoing work and relate their progress to National Curriculum levels, and provides information to help teachers plan for the next steps in children's learning." (PNS)

In APP National Curriculum level judgements are made for each Attainment Target (AT) in mathematics. The assessment guidelines for each AT are organised into a number of Assessment Focuses (AFs) based on the National Curriculum programme of study for each mathematics AT. Combinations of learning objectives work together to provide evidence for certain AFs. These are level-related assessment criteria which identify what to look for as you observe pupils' classroom work.

The process of making a periodic teacher assessment judgment using APP involves matching the criteria for a given AF to qualities practitioners have noted in their pupil's work, the judgement is then refined by checking the assessment criteria above and below.

At Chellaston Infant School we have been using APP for numeracy for approximately 3 years. Teachers in KS1 choose 5/6 children who represent the range of ability of the children in their class. Evidence is collected for these 5/6 children and judgements made by highlighting the assessment grid. The teacher then considers which level offers the best fit and makes an overall level judgement by ticking the appropriate level-related box for each AF. The children will be deemed to be 'low', 'secure' or 'high' for the relevant level.

To help inform the judgements teachers:

- Collect children's work and annotate it
- Take photographs of children doing practical activities
- Observe children working
- Ask children to discuss their work with others
- Ask children to explain their thinking

At the end of each year the assessment grids go into the child's individual records to be passed onto the next teacher.

In Year 2 Standard Assessment Tasks and Tests (SATs) are administered to give the National Curriculum Level each child has achieved in Mathematics at the end of Key Stage 1. These are carried out informally and the results should support the teacher's assessment of the children. The Assessment tasks are used for those children deemed by the teacher to be at Level 1. For those already deemed by the teacher to be at Level 2 or above, the Assessment Test is given. Within Level 2 the children will then be graded A - C. For those already deemed by the teacher to have exceeded Level 2 then they will be given a Level 3 test. It is the teacher assessment level that is reported to parents.

Teachers in FS2 continually assess the children's progress using the new guidelines. After recent changes to the EYFS curriculum (new framework was implemented from September 2012) there are now two areas – Numbers and Shape, Space and Measures. Children are no longer measured on a points scale but are assessed as being at one of three new levels – emerging, expected or exceeding. EYFS staff continually monitor children and termly make an assessment of progress based on these three descriptors.

## **MONITORING & EVALUATION**

Each child in school is given a numeracy target to work on every half term. The teacher monitors the children's progress towards achieving these. This target is sent home to parents to support their child.

Once per term teachers decide the level each child is working at which is entered into the school's tracking system: e1. Teachers monitor and track the children's progress and discuss their children's needs during termly Pupil Performance Meetings (PPMs).

The numeracy team analyses the end of KS1, e1 and EYFS data to monitor the children's attainment and progress to decide if children at Chellaston Infant School have achieved the internal targets set and to decide if they are achieving well compared with children nationally and in the city.

Annual observations of Numeracy teaching are made by the Numeracy team and Headteacher, and issues raised fed back to staff individually and through staff meetings.

## **EQUAL OPPORTUNITIES AND INCLUSION**

We ensure that all pupils have equal access to a broad and balanced curriculum regardless of age, gender, race and ability. Learning opportunities will be differentiated according to individual need. Activities will be planned to appeal to the interests of boys and girls. The children will be encouraged to look at counting systems from a range of different cultures, through wall displays and oral activities.

## **OUTDOOR LEARNING**

Since September 2011 Key Stage 1 staff have been planning and delivering numeracy activities using the outdoor spaces and resources in school. The work has been linked to the objectives for that unit and to take advantage of the outdoor spaces and resources available.

## **DELIVERING THE CURRICULUM**

The National Curriculum subject of numeracy is delivered through a creative skills based curriculum, providing opportunities to learn transferable skills alongside subject specific knowledge. This would involve topic afternoons, integrated days and cross-curricular sessions. Please see curriculum skills document for more information.

### **Early Years Foundation Stage (EYFS)**

Mathematics in EYFS is delivered through a range of child-initiated, adult – initiated and adult directed activities in the indoor and outdoor learning environment. Please see the EYFS document for more information.

**Agreed by staff: Spring 1 2013**

**Agreed by Governors: Spring 2 2013**

**Policy Review Date: Spring 2016**

## **ICT OPPORTUNITIES IN MATHEMATICS FOR RECEPTION**

### ***CD ROM's:***

#### **All About Number Level 1**

Counting, ordering, number recognition, patterns, addition, mathematical language.

#### **All About Shape and Space**

3D shape recognition, 2D shape recognition, pattern, positional language, symmetry.

#### **Number Box**

Data handling, pictograms and block graphs.

### ***OTHER SOFTWARE***

#### **Numeracy Activity Builder**

Program to create games and activities for particular objectives.

#### **Dazzle**

Patterns and symmetry

#### **My World Screens**

##### **Basic**

Comparing length and sorting objects according to size,

#### **Chart**

Topic related graphs

#### **Ted**

Sorting size.

#### **Blocks**

Shape.

### ***PROGRAMMABLE TOY***

#### **Roamer**

Counting and position.

#### **Beebots**

Programmable 'bee' with simpler input for instructions than Roamer.

## **ICT OPPORTUNITIES IN MATHEMATICS FOR YEAR 1**

### ***CD ROM's:***

#### **All About Number Level 2**

Counting, ordering, number recognition, number patterns, addition, subtraction, mathematical language.

## **All About Shape and Space**

Recognition of 3D and 2D shapes, properties of 3D and 2D shapes, reflective symmetry, positional language.

## **Number Box**

Data Handling – making lists and tables, making block graphs, bar charts and pie charts, reading information from graphs.

## **Number Train**

Ordering numbers, odd and even numbers, counting in twos, addition as combining two or three sets, addition as counting on, subtraction, place value.

## **Connections**

Developing skills in the use of ordering, place value, addition, subtraction, multiplication and division.

## **OTHER SOFTWARE**

### **My World Screens**

#### **Basic Screen**

Sequencing numbers, making sums,

#### **Goldilocks**

Position.

#### **Chart**

Making pictograms and block graphs.

#### **Blocks**

Counting activities,

#### **Tiles**

Tessellation,

#### **100 Square**

Number patterns, counting in two's, five's, ten's and three's, finding one more/less and 10 more/less, place value of two digit numbers, odd and even numbers.

#### **Teaching Money**

#### **Teaching Time**

#### **Teaching Shape**

#### **Numeracy Activity Builder**

Resource for staff to create games and activities related to specific learning objective.

#### **Tizzy's First Tools**

Levelled activities for position and movement and data handling.

## **DFE Maths Programs**

**Money Box:** Coin recognition and making totals.

### **Textease**

Developing knowledge of mathematical vocabulary through creating matching games and activities using split screens.

### **Dazzle**

Reflective symmetry.

### **Teaching Money**

Games to give practise in coin recognition and making totals

### **Teaching Time**

Games to give practise in reading analogue clocks to the hour and half-hour

## ***PROGRAMMABLE TOY***

### **Roamer**

Position, estimating number and length, direction.

### **Beebots**

Programmable 'bee' with simpler input for instructions than Roamer.

## **ICT OPPORTUNITIES IN MATHEMATICS FOR YEAR 2**

### ***CD ROM's***

#### **All About Shape and Space**

Recognition of 3D and 2D shapes and their properties, pattern, positional language, reflective symmetry, recognising a line of symmetry, position and direction, angles.

#### **Number Plane**

Recognising / reading numerals and number names. Division as sharing equally and repeated subtraction. Addition and subtraction facts for all numbers to 10. Number pairs for 20. Multiplication as repeated addition. Place Value in two digit numbers. Fractions: halves and quarters.

#### **Connections**

Developing skills in the use of ordering, place value, addition, subtraction, multiplication and division.

#### **Information Workshop & Textease Studio**

Binary Trees

#### **Number Box**

Data handling – making lists, tables and spreadsheets and graphs.

## **OTHER SOFTWARE**

### **My World Screens**

#### **Basic**

Addition, subtraction, multiplication and division.

#### **100 Square**

Counting in two's, five's and ten's and related multiplication tables, counting on and back, odd and even numbers. Place Value and ordering of two digit numbers.

#### **Textease**

Developing mathematical vocabulary e.g. number names.

#### **Dazzle**

Symmetry

#### **Teaching Money**

Problem solving activities and games to practise making totals up to and beyond £1 and finding change.

#### **Teaching Time**

Games to give practise in reading time on digital and analogue clocks.

## ***PROGRAMMABLE TOY***

#### **Roamer**

Position, direction, angle.

The activities on the CD ROM's can be played at different levels to allow for differentiation to meet the needs of all the children. When they are playing without supervision there are record keeping screens that can be used to assess their progress on Number Plane and Number Train.

## **RESOURCES**

Resources are distributed appropriately to each classroom, with some available centrally.

### **Abacus Materials**

Teacher's Book	R	Yr1	Yr2
Teaching Activity Cards	R	Yr1	Yr2
Mental Warm Up Activities	R	Yr1	Yr2
Simmering Activities	R	Yr1	Yr2
Resource Box	R	Yr1	Yr2

### **Resource Books**

Lesson Plan Booklets	R	Yr1	Yr2
Platform One - A Maths Programme For Reception	R		

The following books are kept centrally in the Staffroom:

100 Maths Lessons for R, Yr1 and Yr2  
 Spectrum Maths - Starting Investigations Spectrum Maths - Starting Data Handling  
 Spectrum Maths - Starting Games  
 Miss Polly Investigates  
 Ginn Using And Applying Maths – Textbook 1 and 2  
 Ginn Maths Teaching Resource Books for Levels 1-3  
 Folens First Steps To:  
 'Telling The Time' books 1, 2, 3.  
 'Using Money' books 1, 2, 3.  
 'Measurement' books 1, 2, 3.  
 Folens Basic Rules of Number R, 1, 2.  
 Further Curriculum Bank Activities  
 Multilink For The Maths Curriculum 1, 2, 3.  
 Multilink First Photo-copy Masters 'Do and Sort Set 1 and 2'  
 Early Number Experiences With Multilink Number-rods  
 Heinemann Maths 1 - Reinforcement sheets for Addition and Subtraction  
 An Early Start To Mathematics  
 Using Stories As A Starting Point For Numeracy  
 Creative Maths  
 Collins Mental Maths 1 and 2  
 Key Stage 1 Maths 'Question' and 'Study' books  
 Calculated To Please  
 Ginn Calculator Book  
 Maths Through Play  
 Mathematics From Many Cultures x 3 plus posters  
 Scholastic books for each year group:  
 'Numbers and The Number System'  
 'Calculations'  
 'Problem Solving'  
 'Shape And Space'

### Basic Number Equipment

Selection of unifix apparatus including cubes and number tracks up to 100.	R	Yr1	Yr2
Selection of multilink apparatus including cubes, number trays and inset pattern boards.	R	Yr1	Yr2
Multilink work cards	R	Yr1	Yr2
Multilink playmats	R	Yr1	
Multilink panoramas		Yr1	Yr2
Base 10 apparatus		Yr1	Yr2
100 Square number boards	R	Yr1	Yr2
Classroom number lines	R	Yr1	Yr2
Table top number lines 0 – 20	R	Yr1	
Giant foam dice with numbers	R	Yr1	Yr2
Giant foam dice with numbers and symbols			Yr2
1-6 spot dice	R	Yr1	Yr2
1-6 number dice	R	Yr1	Yr2
7-12 number dice	R	Yr1	Yr2
Blank dice	R	Yr1	Yr2
Colour spot dice	R		
Spinners	R	Yr1	Yr2

0 -100 floor numbers	R	Yr1	
Large foam jigsaws (numbers and symbols)	R	Yr1	
Number fans	R	Yr1	Yr2
Dominoes			Yr2
Floor dominoes	R	Yr1	
Compare Bear dominoes	R		
Ready Teddy Go number cards	R		
Playing cards	R	Yr1	Yr2
Blank playing cards	R	Yr1	Yr2
Counters	R	Yr1	Yr2
Magnetic numbers	R	Yr1	
Polydron numbers			Yr2
Calculators			Store Room

### Sorting and Sequencing

Super Duper sorting sets	R		
Compare Bears	R		
Sorting Trays, Logic people and shapes	R		
Beads, cotton reels, pegboards and pegs	R	Yr1	Yr2

### Non-Standard Measuring Equipment

A variety of materials including cubes, beads, shells, cotton reels, marbles, bottle tops, bowls, basins, cups, bottles, jugs, buckets,			
funnels, straws, canes, ribbons and ropes	R	Yr1	Yr2
Balance scales	R	Yr1	Yr2

### Metric Measuring Equipment

Weights up to 1kg		Yr1	Yr2
Centimetre rulers and tape measures		Yr1	Yr2
Measuring jugs up to 1 litre	R	Yr1	Yr2
Measuring jug 2 litres			Yr2
Trundle wheels			Yr2
Bathroom scales			Yr2
Large thermometers		Yr1	Yr2
Kitchen Scales			Yr2

### Money

Coins of all amounts up to £2	R	Yr1	Yr2
Mega Money Coins	R	Yr1	Yr2
Magnetic coins		Yr1	Yr2
Coin stamps			Store Room
Cash registers			Home corner
			Equipment

## Shape

Variety of regular 2D shapes	R	Yr1	Yr2
Irregular 2D polygons			Yr2
Solid 3D shapes assortment of wooden and plastic	R	Yr1	Yr2

## Time

Timers 1 min, 3 min, 5 min.	R	Yr1	Yr2
Basic analogue teaching clock	R	Yr1	Yr2
Analogue / Digital teaching clock			Yr2
Clock face tracer cards			Yr2
Pupil clock cards			Yr2
Pupil geared clocks		Yr1	Yr2

## Fractions

Fraction apparatus			Yr2
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## Photocopiable Resources (on shelves in staffroom)

Stanley Thornes – platform one  
BBC Numbertime – More or less  
Time  
Learning Targets – number  
Abacus – photocopy 1  
Telling the Time – Book 1  
Scholastic Cross curricular maths lessons  
Cambridge Mental Maths 5-7  
Ginn Maths – Topic

## Other books (staffroom)

Enriching Early Mathematical Learning

### *Problem Solving*

Developing Numeracy R, 1, 2  
Handling Data 3

### *Scholastic*

Developing mental maths  
Calculated to please 1 and 2

### *Shape, Space and Measure*

Developing Numeracy – Measures, shape and space - R

BBC Numbertime – Shapes side by side

Daphne Leech – Tessellate, Symmetry, Grids, Directions

Shape, Space and Measures - KS1

*Multilink and miscellaneous* – Little book of mathematics, little book of songs and games.

Fun with patterns

BBC television numbertime

### **Numicon**

Each Year 1 and 2 class – set of shapes and 6 base boards.

2 x Closing the gap kits

Kit 1 Teaching guide

Kit 2 Teaching guide

This chapter explores aspects of the relationship between mathematics education policy and mathematics. After an initial attempt at introducing and clarifying some key concepts used in the chapter, the analysis is supported and illustrated by a number of concrete examples from the writings of influential organisations, mathematicians and mathematics educators who have articulated their positions with regard to mathematics education policy.