

# PORTFIELD SCHOOL & SATELLITE CENTRES



## POLICY DOCUMENT FOR MATHEMATICS



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**Reviewing the Policy**

This policy will be reviewed annually in consultation with staff, parents and governors.

This policy was adopted by:

Headteacher .....

Date .....

Chair of Governors .....

Date .....

# **POLICY STATEMENT FOR MATHEMATICS**

## **MISSION STATEMENT**

Working together      Learning together      Achieving together

At Portfield School we strive to

- Create a happy, safe, supportive and stimulating learning environment
- Value everyone
- Develop everyone's personal, social, emotional health and wellbeing
- Promote relevant academic and vocational skills
- Meet individual needs through an imaginative and flexible approach
- Enable all learners to achieve their full potential

### **UNCRC United Nations Convention on the Rights of the Child**

- Portfield School places the values and principles of the UNCRC at the heart all policies and practices
- Portfield School is a Rights Respecting School

## **INTRODUCTION**

Mathematics is a core area of the National Curriculum and plays a vital role in the everyday life of both children and adults. Many pupils with severe learning difficulties have difficulty acquiring the knowledge, skills and understanding necessary to appreciate the properties of objects and the relationships between events.

The ability to count, match, sort, compare and understand one to one correspondence, is based on the pupil's experience in manipulating their environment.

We should aim to build a stimulating mathematical environment which will encourage pupils to develop their skills, concepts and knowledge which will enable pupils to experience and take part in practical applications and real life situations. This will help pupils to see Mathematics as an enjoyable activity.

## **RATIONALE**

Cognitive structures are important for learning as they underpin the processes which are a common dimension of the early development of learning.

Cognition quantifies the world around us so that processes can be repeated and developed. Cognitive abilities enable us to know, be aware, think, conceptualise, use abstraction, reason, criticise and be creative.

## **AIMS**

- To make teaching and learning fun and interactive
- To make links and use guidance from the Literacy and Numeracy Framework (LNF) wherever possible to relate maths to real life situations making learning more meaningful for the pupils.
- To provide a basis for an understanding of the world around us
- Develop thought processes, object concepts and awareness of object permanence through sensory motor skills and experiences
- Develop an early understanding of Numeracy and number operations
- Develop mathematical skills and knowledge to assist independence

All pupils including those with profound and multiple learning difficulties will follow the relevant P.O.S. based on the Foundation Phase/ Desirable Outcomes / National Curriculum and Equals Scheme of Work. At KS3 where appropriate pupils will be included in Maths lessons at Tasker Milward School. At KS4 students and 6<sup>th</sup> Form students will follow Learning Pathways 14-19 by working on OCR National Skills Profile Numeracy at Entry Level 1, 2 or 3 and Pre Entry students will follow ALL

### **TEACHING STRATEGIES AND PLANNING**

Through the Programmes of Study and Schemes of Work pupils will be given opportunities to develop their understanding of the environment and know they can take an active role influencing adults, events and objects.

The class teacher will identify the most appropriate teaching strategy to suit the particular learning situation. Teachers will teach from the Mathematics National Curriculum and also use The Literacy and Numeracy Framework to identify targets for students. Mathematics skills will be taught as part of a discrete lesson or session. Skills that are highlighted for students will also be focused on during thematic work. This approach will enable children to transfer skills more readily throughout a range of tasks.

The use of a Numeracy hour format during main session mathematics lessons, Numicon Maths, Abacus Maths, Mousematics and the use of Maths trails support the National Curriculum and Equals programmes of study. There are also reference copies of several commercially produced Maths schemes e.g. Heinemann, available for staff to use, if they are appropriate to meet the needs of a particular pupil.

The concepts, skills and knowledge gained by the pupil will be evident through their ability to use and apply their understanding to solve problems.

Mathematical skills and experiences should be developed through cross-curricular work and planning.

Individual priority targets should be taken from the relevant areas of the curriculum.

Activities should include:

- Practical work in whole class, group and individual activities
- Songs, rhymes and creative activity
- Physical activity e.g. outdoor adventurous activity, PE, physiotherapy, swimming etc.
- ICT – use of interactive whiteboard and computer

In the Sixth Form all pupils will have the opportunity to gain a qualification through OCR or National Skills Profile (N.S.P.) as appropriate to meet their needs. For pupils with PMLD Accreditation for Life and Living OCR studies Numeracy through Key Skills. Topics throughout these modules include time, money, calculations, measurement and data handling.

### **RECORDING AND ASSESSMENT**

Individual pupil achievement will be recorded through the use of the assessment tool 'Solar online' this will give us baseline data and also be updated termly, with evidence of pupil progress, this will be completed in line with P-Level data and Outcomes. Teachers will track individual's progress in relation to The National Literacy and Numeracy Framework. This progress will be reviewed on an LNF Tracker.

IEPS will be completed and monitored on a termly basis. School take part in the Annual data collection at Yr2, Yr6 and Yr9 for the Welsh Assembly along with annual reviews, individual pupil assessment files, Numicon records and staff observation. These should be based on the mathematical understanding and experiences of pupils and ongoing assessment in the norm.

Assessment will take place in line with the whole school Assessment, Planning, Recording and Reporting policy. Assessment, Reporting and Recording should be as simple and clear as possible and be based on appropriate testing activities and staff professional judgements.

Where appropriate Teachers will make reference to The Numeracy Framework when reporting to parents in final year reports.

APRR should provide information on attainment, achievement and the acquisition of knowledge and skills. It should serve as a basis for future planning and inform parents and other staff or external agencies about individual pupil progress.

Assessment should be a continuous process, which should help to highlight pupils' strengths, weakness and needs. All activities should provide opportunities for assessment.

Video and photographic evidence may also be used to record achievement and progress.

OCR National Skills Profile and ALL will provide opportunities for recording and assessment through annual accreditation.

The Asdan Preparatory programme including Transition Challenge, Towards Independence and Workright will provide accreditation for our 14+ pupils. It will also access progress and record achievement in Mathematics through cross curricular work.

Reporting of pupil achievement should be included in annual review reports.

### **EQUAL OPPORTUNITIES**

All pupils will have access to a broad, balanced and relevant curriculum regardless of their race, culture, background, gender or disability. All areas for equal opportunity will be taken into consideration when planning lessons, activities and access to the Maths Curriculum. Provision should be made to enable the use of switches, IT, Communication aids etc. and the deployment and support given by staff.

### **INFORMATION TECHNOLOGY**

All classes have Maths programmes available on their whiteboards / computers. These programmes allow for differentiation and progressions. See Appendix. Enabling all pupils access to equipment should be in line with ICT and Key Skills policy document.

### **KEY SKILLS**

The Literacy and Numeracy Framework (LNF) enables skills to be identified and taught across the curriculum whatever the subject matter. The skills are set out on a continuum and students will be encouraged to use a range of key skills in all situations.

### **DEVELOPING COMMUNICATION**

Pupils will be given opportunities where appropriate, in their study of mathematics to develop and apply their skills of speaking, listening, reading, writing and expressing ideas through a variety of media.

Learners develop their communication skills across the curriculum through the skills of oracy, reading, writing and wider communication.

In mathematics, learners listen and respond to others. They discuss their work with others using appropriate mathematical language. They read and extract information from mathematical texts. When solving problems, they present their findings and reasoning orally and in writing, using symbols, diagrams, tables and graphs as appropriate.

### **DEVELOPING NUMBER**

Pupils will have opportunities where appropriate, in their study of mathematics to develop and apply their knowledge and skills of number, shape, space, measures and handling data.

Learners develop their number skills across the curriculum by using mathematical information, calculating, and interpreting and presenting findings.

In mathematics, learners use their number skills throughout the programme of study when solving problems in a variety of practical and relevant contexts and when investigating within mathematics itself.

### **Financial Literacy**

Throughout the school pupils will be given the opportunities to practice their financial maths capabilities. Through differentiated activities pupils can explore a range of activities. These activities will all fit in with the current LNF guidance and will be taught in a range of different subjects in order to secure that students are able to transfer a skill that they have learnt during a Mathematics lesson.

### **DEVELOPING ICT SKILLS AND DIGITAL COMPETENCY**

Pupils develop their ICT and digital competence skills across the curriculum by finding, developing, creating and presenting information and ideas and by using a wide range of equipment and software. They also will develop a growing awareness of how to use digital technology to create, produce and share information and ideas. They will develop skills to stay safe and identify the risks and benefits of using technology. In mathematics, learners use a variety of ICT resources to find, select, organise and interpret information, including real-life data, to explore relationships and patterns in mathematics, to make and test hypotheses and predictions, to create and transform shapes, and to present their findings using text, tables and graphs.

### **DEVELOPING THINKING**

Pupils will be given opportunities where appropriate, in their study of mathematics to develop and apply their skills of asking appropriate questions, making predictions and coming to informed decisions.

Learners develop their thinking across the curriculum through the process of planning, developing and reflecting.

In mathematics, learners ask questions, explore alternative ideas and make links with previous learning in order to develop strategies to solve problems. They gather, select, organise and use information, and identify patterns and relationships. They predict outcomes, make and test hypotheses, reason mathematically when investigating, and analyse and interpret mathematical information. They describe what they have learned, reflect on their work by evaluating their results in line with the original problem, and justify their conclusions and generalisations.

### **CURRICULUM CYMREIG**

Pupils should be given opportunities, where appropriate, in their study of mathematics to develop and apply knowledge and understanding of the cultural, economic, environmental, historical and linguistic characteristics of Wales.

### **LEARNING ACROSS THE CURRICULUM**

At Key Stages 2 and 3, learners should be given opportunities to build on the experiences gained during the Foundation Phase, and to promote their knowledge and understanding of Wales, their personal and social development and well-being, and their awareness of the world of work.

At Key Stage 4, learners' knowledge and understanding should be developed and applied within the contexts of their individual 14-19 pathways including the Learning core.

### **CURRICULUM CYMREIG (7-14) AND WALES, EUROPE AND THE WORLD (14-19)**

Learners aged 7-14 should be given opportunities to develop and apply knowledge and understanding of the cultural, economic, environmental, historical and linguistic characteristics of Wales. Learners aged 14-19 should have opportunities for active engagement in understanding the political, social, economic and cultural aspects of Wales as part of the world as a whole. For 14-19 learners, this is a part of their Learning core entitlement and is a requirement at Key Stage 4.

Mathematics contributes to the Curriculum Cymreig by offering learners the opportunity to learn and apply mathematics in the context of data from their own local community, from the local and national environment, and from current issues related to Wales. The traditional Welsh vocabulary for some numbers as well as Welsh quilt and Celtic patterns provide investigative opportunities to contribute to learners' development of a sense of Welsh identity.

### **PERSONAL AND SOCIAL EDUCATION**

Pupils will be given opportunities where appropriate, in their study of mathematics to develop and apply the attitudes, values, skills, knowledge and understanding relating to Personal and Social Education.

Learners should be given opportunities to promote their health and emotional well-being and moral and spiritual development; to become active citizens and promote sustainable development and global citizenship; and to prepare for lifelong learning. For 14-19 learners this is a part of their Learning core entitlement and is a requirement at Key Stage 4.

Mathematics contributes to learners' personal and social education by providing opportunities to apply mathematics to real-life problems. It helps them to analyse and

interpret information presented to them on environmental and other twenty-first century issues, and to develop an informed and challenging attitude to real-life information, questioning its validity and recognising its implications for their world.

## **CAREERS AND THE WORLD OF WORK**

Learners aged 11-19 should be given opportunities to develop their awareness of careers and the world of work and how their studies contribute to their readiness for a working life. For 14-19 learners this is a part of their Learning Core entitlement and is a requirement at Key Stage 4.

Mathematics contribute to learners' awareness of careers and the world of work by providing opportunities to apply mathematics in the context of financial awareness of employment, budgeting, saving and spending.

These are highlighted by the class teacher in their planning, and monitored throughout the topics and schemes of work by the co-ordinator.

### **Literacy Framework (LNF)**

There are three strands Oracy, Reading, Writing. Pupils should be given opportunities, where appropriate, in their study of Maths to develop and apply the three strands.

### **Numeracy Framework (LNF)**

There are four strands of numeracy – developing numerical reasoning, using number skills, using measuring skills and using data skills. Pupils should be given opportunities, where appropriate, in their study of Maths to develop and apply skills in the four strands.

## **ROLES AND RESPONSIBILITIES**

All members of the teaching staff have a responsibility for the teaching of Mathematics and they need to ensure that their knowledge is continually updated. The school has a Mathematics coordinator. The role is to:

- take the lead in policy development and production of the schemes of work, ensuring continuity and progression across the school;
- support colleagues in teaching the subject content, development of planning, implementation of the scheme of work and in assessment and record keeping activities;
- monitor teaching and learning to continue to support improvement in pupil progress and report back to the headteacher, staff and governors;
- have responsibility for the purchase and organisation of central resources for Mathematics and relevant ICT resources;
- keep up to date with current initiatives and curriculum development;
- disseminate this information to the staff and keep them informed of possible visits, exhibitions and courses;
- collaborate with colleagues in other schools.

## **STAFF DEVELOPMENT**

- Funding for training from GEST budget
- In house training delivered by staff as appropriate
- Staff attend courses run by County INSET training providers
- Working with advisory teachers
- The co-ordinator will regularly review resources and update and develop them in line with current developments

## **RESOURCES**

- Classes will build up their own resources from commercially available materials and from collecting together everyday items
- A resource bank of material, CD Roms and books is available for class use and will continue to be developed
- There should be access to equipment by pupils in the classroom to encourage selection and choice

See appendix for list of resources.

## **HEALTH AND SAFETY**

It is the responsibility of all staff and where possible, pupils, to be aware of health and safety issues in relation to this curriculum area. Positive attitudes should be developed towards the safety of self and others when using equipment. Any issues arising should be brought to the attention of the Headteacher / Health and Safety Officer and a risk assessment carried out in relation to the subject area.

## **DISPLAY AND PRESENTATION**

Work from this subject area should be displayed both in class and around school to help stimulate and create a mathematical environment. This would also promote the pupils self-esteem.

## **COMMUNITY LINKS**

For some pupils most of their work within this area will take place within the school environment. However, it is important that the pupils are able to transfer the skills and attitudes that they have learnt into other meaningful situations. Where it is practically possible and relevant to the age of the pupil, some learning will take place in 'job creation' situations and placements.

Mathematics should be viewed in relation to all the School's Policy documents including that for Equal Opportunities. There should be natural links with other areas of learning in a cross-curricular way. The policy will be evaluated by:

- Monitoring by subject co-ordinator
- Evidence of pupil progress e.g. IEPs etc.
- Discussion with staff.
- Teacher Assessment
- Regular reviews of policy
- Pupil self-assessment

### **IMPLEMENTING, MONITORING AND EVALUATING THE POLICY**

All staff will take responsibility to ensure the policy is implemented within their classroom/lessons.

The effectiveness of the policy will be reviewed annually by the co-ordinator.

- Is current practice still reflected?
- Are the aims being achieved?
- Is there evidence to show breadth and balance in the curriculum?
- Is monitoring and planning effective?
- Is there evidence around school that demonstrates pupil achievement and enjoyment?
- Are resources effectively allocated?
- Is there evidence that teaching and learning is effective?

## **APPENDIX 1**

### **MATHS RESOURCES (Central Store) LOWER SCHOOL**

### **MATHS RESOURCES (Central Store) UPPER SCHOOL**

Numicon Video  
Tape measures  
Number squares  
Coin/money resources  
Numicon  
Basic Skills Numeracy Box, Number Workout  
Dynamo resources  
Balances  
Volume Set

**Class L1**

Numicon  
Numicon for nursery  
Maxi coloredo  
Counting bears  
Jumbo timer  
Large carpet dominoes  
Set of sensory maths boxes

**Class L2**

Numicon  
Sorting bears & transport  
Inflatable numbers  
Number bean bags  
2D shape box  
Number rhyme puppets & A3 counting book  
Hop-scotch mat

**Class L3**

Numicon foundation book and set  
Other Numicon resources – shapes , base plates and spinners  
Small sorting dinosaurs  
Small sorting vehicles  
Threading equipment – cotton reels, buttons  
Number rhymes felt shapes  
Various puzzles/jigsaws  
Coloured sorting dishes  
Shapes on pegs games

**Class L4**

Numicon  
Bingo bears  
Puzzles  
2D shapes  
Clocks  
Plastic money

**Class L5**

Lets sew numbers  
Number bingo x 2  
Number flash card  
Dice  
Colour frogs  
Colour bears  
Counting people  
Matching & counting activity cards x 2  
Ladybird match game  
Camels  
Number puzzles  
Big box numicon  
Measure lotto  
Number lotto  
Compare sizes kit  
Coloured clown  
Snakes & ladders  
Pattern black activity set  
Spotty dog  
Ladybird matching cards game  
Frogs activity book x 9  
3D shapes x 10  
County blocks

**Class L6**

Pre Counting Numicon  
Various insert puzzles  
Lego  
Threading  
Pyramid stacking shapes

**Class L7**

## **CLASS BASED RESOURCES**

### **Class U1**

Abacus  
4 x calculators  
6 x tape measures  
1 x weighing scales  
Small amount of numicon  
What Time is it? (Game)  
2d Shapes  
Unifix cubes  
Plastic money

### **Class U2**

Pop to the Shops game  
Cambridge math cards  
Heineman maths (Assessment & Resources)  
Shapes 2d and 3d  
Shapes Bingo game  
Money:- coins, bingo board  
Numicon  
Number line  
Maths challenge activity book  
Numbers slide & learn flash cards  
1-100 flash cards

### **Class U3**

### **Class U4**

4 x wooden puzzles  
1 x number puzzle boats  
1 x parachute (big)  
2 x shape sorter  
2 x abacuses  
10 x wooden jigsaws  
1 box foundation numicon  
1 x sorting tray  
1 x stacking trays and stacking pegs

## **CLASS BASED RESOURCES**

### **Class U5**

Shape puzzles  
Shape sorters  
Unifix cubes & trays for sorting  
Bingo bears game

### **Class U6**

Auntie's pasta fraction game  
15 x calculators

### **Sixth Form**

Pop to the shops game  
Monopoly game  
Bingo game  
Dominoes game  
Numbers (interactive flash cards) game  
  
12 x Number line rulers  
6 x calculators  
Plastic money  
Numicon blocks  
Shapes  
Unifix cubes

### **Preseli Satellite**

1 x big dice  
Small dice  
1 x set of 3D shapes  
1 x set of 2D shapes  
1 x scales and set of weights  
Coloured counters  
1 x clock  
1 x set of numicon  
5 x calculators  
1 x set of fraction boards  
1 x set of cube counters  
1 x set of money  
5 x stop watch  
1 x 1m ruler  
10 x 1m tape measures  
ABACUS 1 Activity book & photocopy master  
ABACUS 1 Teachers cards  
ABACUS 1 Number workbook 1, 2 and 3  
ABACUS 1 shape, space and measures  
ABACUS 2 Activity book and photocopy master  
ABACUS 2 Teachers book  
ABACUS 2 Teachers cards  
ABACUS 2 Number textbook  
ABACUS 2 Number workbook 1, 2, and 3