

# Cowbridge School



## Numeracy Policy

**Formulated by:** Mrs S Morgan, Leader of Mathematics

**Adopted by:** MGB 06.07.17

**Last Reviewed:** Autumn 2022 by Mrs C Clode

**Review:** Annually or subject to changes in statutory guidelines or legislation

**Next Review:** Autumn 2023

**Date of any amendments made to policy & brief points:**

Date	Details	Approved by
Spring 2019	Name updated from Head of Department to Curriculum Leader Update 'More able and Talented' to 'higher attainers' Intervention programme updated Addition to action plan table Summer 2018	
Autumn 2022	Updated with reference to the Curriculum for Wales 2022, Additional Learning Needs and Blended Learning Replaced reference to 'Students' and 'Pupils' with 'Learners'	Main governing body 19.01.2023

## 1. Defining Numeracy

- 1.1 Cowbridge School is committed to raising standards of numeracy of all its learners. They need to develop the ability to use numeracy skills effectively in all areas of the curriculum and the skills necessary to cope confidently with the demands of further education, employment and adult life. All teachers and support staff have a role to play in supporting learners' progress in numeracy.
- 1.2 Numeracy is a proficiency which involves confidence and competence with numbers and measures. It is more than an ability to do basic arithmetic and requires an understanding of the number system, repertoire of mathematical techniques and an inclination and ability to solve quantitative or spatial problems in a range of contexts. Numeracy also demands understanding of the ways data is gathered and presented.
- 1.3 Mathematics is a part of numeracy, but to be numerate means you are able to apply some of these mathematical skills in many more contexts than in mathematics lessons and across several subject areas. It is therefore our expectation that **all** teachers will be teachers of numeracy.
- 1.4 *Numerate pupils are able to handle numbers fluently in mental, oral and written work exploit patterns within number when calculating and approximating; measure and calculate accurately and estimate reasonably, using appropriate units of time, length, area, volume, mass, capacity, angle and related compound measures; use calculators accurately and appropriately; use an increasing range of skills to identify, analyse and describe practical problems or tasks involving numerical data; read, extract, interpret and analyse numerical and statistical data from a range of sources and presented in a variety of forms; and select appropriate techniques to represent data.'*

*(Improving numeracy in KS2 and KS3, Estyn, April 2010)*

### 1.5 **A numerate learner is one who:**

- (i) is confident and competent at performing calculations involving number;
- (ii) can use a range of techniques to carry out computations mentally and on paper;
- (iii) knows and understands the properties of number;
- (iv) can explain methods and justify reasoning & conclusions, using correct mathematical terms;
- (v) can use calculators and other ICT resources appropriately and effectively to solve mathematical problems, and select from the display the number of figures appropriate to the context of the calculation; and
- (vi) can recognise and use mathematical skills and techniques in a variety of contexts.

## 2. Policy Aims

- (i) To adopt a whole-school approach to numeracy across the curriculum in keeping with the principles and practices established by Welsh Government, the National Curriculum and the Curriculum for Wales Numeracy Framework.
- (ii) To enable all learners to reach their potential in the key numeracy skills.
- (iii) To support the progressive development of numeracy skills throughout the curriculum.
- (iv) To raise staff awareness of key numeracy strategies.

- (v) To encourage staff to take responsibility for the development of numeracy in their subject areas through the inclusion of appropriate schemes of work and lesson planning.
- (vi) To support the development of numeracy through the deployment of a range of resources in the School including blended learning.
- (vii) To identify specific roles and responsibilities within the School with regard to the development of numeracy work.
- (viii) To establish procedures for monitoring numeracy across the curriculum.

### **3. The Numeracy Strategy**

#### **Cowbridge School will:**

- (i) ensure that learners master basic number skills thoroughly and have effective strategies to recall essential number facts quickly and accurately;
- (ii) provide worthwhile opportunities for pupils to use numeracy skills, particularly number skills and numerical reasoning, in subjects across the curriculum;
- (iii) help learners to become confident in numeracy and able to apply and communicate their results across the curriculum and in real life;
- (iv) monitor the National Numeracy test data for learners to ensure pupil progress;
- (v) share National Numeracy test data with all teachers to ensure there is appropriate challenge and support in lesson planning;
- (vi) make sure that numeracy activities stretch learners appropriately; and
- (vii) monitor and evaluate the impact of strategies for improving numeracy.

### **4. Implementation of the Strategy**

#### **4.1 The role of the Senior Leadership Team is to:**

- (i) participate in the planning, implementation and evaluation of the whole-school numeracy strategy;
- (ii) specify expectations of all teachers;
- (iii) support the development and implementation of a whole-school numeracy policy;
- (iv) provide INSET, resources and opportunities for staff within the School, to accommodate the National Numeracy Framework within schemes of work.

#### **4.2 The role of the Senior Leader in charge of Numeracy is to:**

- (i) Work with the Senior Leadership Team to determine a strategy for developing numeracy across the curriculum and ensure the effective development and implementation of the numeracy policy;
- (ii) review the Curriculum for Wales Numeracy Framework provision and identify opportunities to develop and apply numeracy skills;
- (iii) audit existing examples of good practice in numeracy across the Curriculum;
- (iv) encourage teachers of mathematics to provide assistance and advice to other departments so that a consistent approach is used across the whole school;
- (v) advise on how good standards of numeracy help to improve standards across the curriculum, as well as how to introduce and consolidate the teaching of numeracy skills;
- (vi) ensure consistency of approach across the School;
- (vii) identify areas of numeracy that teachers are least confident of teaching within the context of a particular subject and discuss with senior managers the measures needed to address the identified issues; and
- (viii) evaluate the whole-school impact of applying the numeracy policy.

### **4.3 The role of a Curriculum Leader is to:**

- (i) identify opportunities for developing numeracy skills in schemes of work;
- (ii) map progression in numeracy skills across key stages
- (iii) ensure coherence and consistency in the application of numeracy skills linked to the Curriculum for Wales Numeracy Framework across the subject area and all teaching staff;
- (iv) work with teachers to plan progressive, differentiated and challenging tasks that will allow learners to demonstrate understanding and develop and consolidate the full range of numeracy skills; and
- (v) monitor and evaluate the impact of these approaches on standards of learning for subject areas.

### **4.4 The role of a teacher is to:**

- (i) be familiar with the Curriculum for Wales Numeracy Framework and progression through it;
- (ii) ensure they are familiar with correct mathematical language, notation, convention and techniques and encourage learners to use these correctly in their subject;
- (iii) understand the importance of numeracy skills in relation to raising standards of work in their own subjects;
- (iv) fully integrate these skills into their planning to provide exciting new learning experiences for learners;
- (v) identify opportunities to develop and apply numeracy skills within subjects and across the curriculum;
- (vi) plan tasks that will allow learners to demonstrate understanding and develop and consolidate the range of numeracy skills;
- (vii) provide information for mathematics teachers on the stage at which specific numeracy skills will be required; and
- (viii) monitor and evaluate the impact of these approaches.

## **5. Whole school policy on the use of calculators**

In deciding when learners use a calculator in lessons we should ensure that:

- (i) learners' first resort should be mental methods;
- (ii) learners have sufficient understanding of the calculation to decide the most appropriate method; mental, written or calculator;
- (iii) learners have the technical skills required to use the basic facilities of a calculator constructively and efficiently, the order in which to use keys, how to enter numbers as money, measures, fractions, etc.;
- (iv) learners understand the four arithmetical operations and recognise which to use to solve a particular problem;
- (v) when using a calculator, learners are able to say whether their answer is reasonable; and
- (vi) learners can interpret the calculator display in context (e.g. 5.3 is £5.30 in money calculations).

## **6. Monitoring and Evaluation**

Monitoring and evaluation will take place through the following mechanisms:

- (i) analysis of prior, predictive and attainment data to track progress made by individual learners with reference to National Numeracy test data and assessment data;
- (ii) line management discussions with curriculum leaders;
- (iii) whole school self-review procedures;
- (iv) discussion with and reports to governors.

## **7. Including All Learners**

### **7.1 Differentiation**

Learners at Cowbridge School are entitled to our highest expectations and support. Some will need additional support and others will need to be challenged and extended. Strategies that we use include:

- (i) adjusting the demands of the task;
- (ii) the use of additional support;
- (iii) resources that support and challenge;
- (iv) intervention programmes;
- (v) creating an atmosphere where learners evaluate their own and others' work.

### **7.2 Numeracy Progress**

Numeracy intervention provision varies each academic year depending on timetabling and staffing constraints. Targeted intervention will be used to help learners to catch up with their peers as quickly and effectively as possible in order to maximise access to the secondary curriculum. Teachers across the curriculum will be kept informed about which schemes learners are participating in. Teachers will be familiarised with the content of these various schemes in order that they can 'link the learning' into their subject area and provide learners with opportunities to practise their skills.

### **7.3 Higher Attainers**

We will seek to:

- (i) identify higher attaining learners;
- (ii) promote ways of structuring learning for able learners by using Curriculum for Wales National Numeracy Framework objectives and appropriately differentiated tasks;
- (iii) develop a teaching repertoire which supports and challenges higher attaining learners.

### **7.4 Additional Learning Needs**

We will teach our learners with additional learning needs appropriately with due regard to their individual development plans (IDPs), supporting their learning and providing them with challenges matched to their needs, through using a range of teaching strategies such as guided group-work, small group intervention and bespoke numeracy packages. Classroom teachers will use differentiated classroom strategies and liaise with the Additional Learning Needs Department to support in the delivery of additional learning provision (ALP).

## **8. The National Numeracy Framework**

8.1 The key aims of the National Numeracy Framework are to:

- (i) help teachers of all subjects to identify and provide opportunities for learners to apply numeracy across the curriculum;
- (ii) describe the expectations for numeracy for learners; and

(iii) help determine learner progress in numeracy.

8.2 The four strands of the numeracy component of the Numeracy Framework are:

- (i) developing numerical reasoning;
- (ii) using number skills;
- (iii) using measuring skills; and
- (iv) using data skills.

<https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/>

## **9. Curriculum for Wales**

9.1 Numeracy is one of the mandatory cross-curricular skills which underpin the four purposes of the Curriculum for Wales.

9.2 In developing learners' numeracy skills, the five mathematical proficiencies – Conceptual understanding, Communication using symbols, Fluency, Logical reasoning and Strategic competence – can be applied and connected, where appropriate across the Areas of Learning and Experience, by using a range of real-life contexts to introduce and explore mathematical concepts, as well as to consolidate them.

<https://hwb.gov.wales/curriculum-for-wales/>

## **10. Numeracy Across the Curriculum**

### **10.1 Art and Design**

Learners use numeracy in many areas in Art and Design. Many patterns and constructions are based on special properties of shapes, including symmetry. Designs may need to be enlarged or reduced introducing ideas of ratio and scale factor. In areas of sculpture proportion and measurement are used. When mixing paints and colours students use ratio and proportion to produce different shades and colours from the three primary colours.

### **10.2 Business**

Numeracy is an essential element of all Business courses. Students use numeracy in both the creation and interpretation of graphs, charts and tables. Percentages are widely used in data comparisons. Students need to be able to estimate using mental calculations but they also need to be confident in the use of a calculator. Skills of analysis are involved when looking at primary and secondary data and in the scrutiny of questionnaire results. Students also use Excel spreadsheets.

### **10.3 Design Technology**

Measuring is used extensively in all areas of technology, involving the use of both metric and imperial units. When making models or constructions learners work in millimetres and are required to measure accurately using this unit. The need for plans requires learners to be able to produce scale drawings and be able to draw 2D representations of 3D shapes. Identifying and drawing plans and elevations of 3D shapes are also used when planning project work. In Food & Nutrition learners require an understanding of proportion when working with and adapting recipes. Learners also use percentages when identifying the nutritional content of different foods. In Textiles shape and measurement are used when designing and making different items. 2D shapes and tessellations are used in some designs.

#### **10.4 Digital Technology (ICT)**

Learners will apply numeracy in a variety of ways in ICT lessons. These include collecting and classifying data and entering it into software, producing graphs and tables, interpreting and explaining their results. When learners use computer models they will use their ability to interpret numbers and identify patterns and relationships. When designing power point presentations or websites, Learners will use proportion and their knowledge of shape and space as well as an understanding of enlargement when changing the size of an object. Other numerical skills are used when using formula and formatting within Excel spreadsheets.

#### **10.5 English/Drama**

Numeracy is not actively used in English, but will come up in activities associated with texts e.g. contextual work on wages in past times. Timelines are used to set a piece of work within its historical background and graphs can be used to show changes in the emotions of characters.

#### **10.6 Geography**

Numeracy is used in many aspects of learning in Geography. Scale, direction, ratio and distance are used in map reading. Graphs and charts are used in the interpretation of patterns and trends. Learners generate, analyse and present data through fieldwork investigations.

#### **10.7 Health and Social Care & Child Care**

Learners use graphs, charts and measurement skills when learning about nutrition and read data when comparing actual and expected growth rates in young children.

#### **10.8 History**

Numeracy is used in the interpretation and construction of timelines and chronology and when analysing numerical sources, for example, the military strength of countries at the start of World War One. Learners use statistics when looking at economic changes. Graphs and tables are used in the presentation of evidence.

#### **10.9 Modern Foreign Languages (MFL)**

Learners use numeracy in MFL when learning to tell the time, calculating café bills, handling money, working on days and dates and doing simple arithmetic calculations involving addition, subtraction and multiplication. Work in MFL offers some learners the additional opportunity they need to grasp the fundamentals of number work.

#### **10.10 Music**

The counting of time, beats and half beats are used extensively in Music, as are rhythms and rhythm patterns.

#### **10.11 Physical Education**

Athletic activities require measurement of height, distance, time, speed and symmetry. Movement and direction are used in areas of dance, gymnastics and ball games. Learners also use their numeracy skills when evaluating their own performance over a period of time.

#### **10.12 Science**

Scientific investigations and experiments require learners to use their numeracy skills to classify objects, accurately measure distances and quantities, estimate

outcomes and quantities when required, recording results in tables and graphs. In Science, learners will order positive and negative numbers, including decimals, calculate means of a set of data and calculate percentages of a quantity. At a higher level learners will apply their algebra skills to substitute into formulae and rearrange scientific equations. Choosing an appropriate graph and being able to interpret data and make predictions will also take place in Science lessons.

### **10.13 Social Science and Ethics & Philosophy**

Belief and likelihood in religious education relates to numeracy. The discussion of moral and social issues can lead to the use of primary and secondary data and the interpretation of graphs, charts and tables helps learners to make informed decisions and judgements and to recognise biased data and misleading representations. By applying numeracy skills to problems set in financial and other real life contexts, learners will develop their financial capability and awareness of the applications of real life numeracy.