

# NUMERACY POLICY



**Definition of numeracy:**

Numeracy is an essential life skill and learners need to be able to apply this skill across the curriculum in different subject areas, and in real life contexts.

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.

To help distinguish between numeracy and mathematics, we have defined numeracy in the following way for the purposes of this programme:

‘Identifying and applying numerical reasoning skills in order to solve a problem, and carrying out the numerical procedures which enable people to work out and show their solutions.’

*(National Numeracy Programme, September 2012)*

**Rationale:**

Numeracy contributes to and draws from many subjects and aspects of the curriculum. Pupils can be helped to appreciate the importance of numeracy in their lives by making these links explicit. For example, if it is known how numeracy is applied in other subjects and colleagues are asked to exemplify applications for use in mathematics lessons, it will be possible to provide examples and contexts which pupils know and understand. As such, numeracy becomes an essential-skill in the curriculum and also a life skill.

**Aims:**

- To ensure that numeracy is a priority within the school.
- To foster a positive attitude towards numeracy.
- To help learners to become confident in numeracy and able to apply and communicate their results across the curriculum and in real life.
- To make sure that learners master basic number skills thoroughly and have effective strategies to recall essential number facts quickly and accurately.
- To give learners a firm basis of knowledge and skills so that they are numerate, able to participate in numerical discussions and able to work flexibly and logically.
- To encourage learners to work as members of a group and to find appropriate strategies.
- To develop a consistent approach across all key stages and subject areas to teaching basic calculation strategies, developing learners’ mental calculation skills, efficient written methods for routine calculations and appropriate use of calculators.
- To provide more opportunities for learners to use numeracy skills, particularly number skills and numerical reasoning in subjects across the curriculum.
- To ensure activities offered across the curriculum support consistency and progression in learners’ numeracy skills.
- To make sure that numeracy activities across the curriculum are suitably challenging for all learners.
- To effectively assess and track a learners’ progress in numeracy skills.

## Numeracy across the curriculum

The numeracy component of the LNF offers a set of objectives that are relevant across the curriculum and are to be embedded in all subjects. Consistency in teaching numeracy will enable learners to develop strategies and be able to adapt them to different contexts. There are four numeracy strands and these are further divided into elements:

### *Developing numerical reasoning*

- Identify processes and connections
- Represent and communicate
- Review.

### *Using number skills*

- Use number facts and relationships
- Fractions, decimals, percentages and ratio
- Calculate using mental and written methods
- Estimate and check
- Manage money.

### *Using measuring skills*

- Length, weight/mass, capacity
- Time
- Temperature
- Area and volume; angle and position.

### *Using data skills*

- Collect and record data
- Present and analyse data
- Interpret results.

Learners develop their number skills across the curriculum by **using mathematical information, calculating, and interpreting and presenting findings**. The following statements are taken from the **current ks3 subject orders**:

In **art and design**, learners apply number skills such as measurement, estimates, scale, proportion, pattern and shapes to develop, inform and resource their creative activities.

In **design and technology**, learners ask questions and seek out information to develop and support their design ideas. They communicate and record their ideas and intentions by explaining, writing, sketching, using detailed technical drawings and three-dimensional models.

In **english**, learners develop skills in the application of number through activities which include number rhymes, ordering events in time, gathering information in a variety of ways, including questionnaires; accessing, selecting, recording and presenting data in a variety of formats.

In **geography**, learners apply number skills in the classroom and in field work to measure, gather and analyse data. They use mathematical information to understand direction, distances and scale and to determine locations when using plans, maps and globes.

In **history**, learners develop their number skills through developing chronological awareness, using conventions relating to time, and making use of data, e.g. *census returns and statistics*.

In **ICT**, learners use mathematical information and data presented numerically and graphically in data-handling software. They use number to collect and enter data for interpretation in spreadsheets and simulations and present their findings as graphs and charts, checking accuracy before processing.

In **modern foreign languages**, learners develop number skills through a range of activities in the target language. These can include number rhymes; ordering numbers; ordering events in time; using number in relevant contexts such as currency exchange; gathering information in a variety of ways, including questionnaires and recording and presenting results in a variety of formats.

In **science**, learners work quantitatively to estimate and measure using non-standard and then standard measures, recording the latter with appropriate S.I. units. They use tables, charts and graphs to record and present information. With increasing maturity they draw lines of best fit on line graphs, use quantitative definitions and perform scientific calculations

In **welsh**, learners develop their number skills through activities which include number rhymes, using ordinal and cardinal numbers, placing events in chronological order, using measures, gathering information in a variety of ways, including questionnaires: accessing, selecting, recording and presenting data in a variety of formats.

Every subject makes a contribution to numeracy because they all use some aspects of numeracy or mathematics. However, certain subjects use numeracy and mathematics, on a day-to-day basis, more than others. These subjects are design and technology, geography and science. We will refer to them as 'major users'; the other subjects being known as 'minor users'.

For the major users specific pathways from the LNF have been identified and these are introduced, developed, progressed and assessed within the subject. At present the minor users focus on the data handling strand of the LNF and use number skills incidentally.

Some of the aspects in the LNF have specific terminology, vocabulary and conventions attached to them. These have been agreed by the major users and the mathematics department:

- use of units
- mathematical notation and terminology to be used
- algebraic and other mathematical techniques. For example, how to simplify algebraic expressions or solve equations
- how graphs are to be presented and used
- how and when ICT resources, such as graph plotters or graphical calculators, will be used to support mathematics.

For further details, please consult the glossary and common strategies. These can be accessed on the shared drive.

#### **Role of departments:**

All departments will ensure that the aspects of numeracy identified for their subject are clearly signposted in their schemes of work. In addition, the role of the mathematics department is important:

- in using subject-specific examples for teaching and learning activities
- in liaison with other departments
- in training other staff in the use of flexible methods of calculation
- by agreeing terminology and conventions
- giving information as to when numeracy aspects are covered in mathematics.

Good liaison should help to ensure that all staff use common approaches that mirror those used in mathematics lessons. Approaches to calculations should be the same in all subjects. All teachers will need to know about:

- the use of mental and informal written methods, especially with lower attaining pupils
- the expectation that pupils should add and subtract pairs of two-digit numbers mentally
- how and when calculators should be used.

### **Intervention**

Intervention has a fundamental importance upon pupil development in KS3. Pupils are selected from previous years numerical reasoning scores, along with partial teacher judgement. There are two key selection criterion used:

- pupils with reasoning scores between 80 and 100
- pupils eligible for *free school meals*.

Target groups are withdrawn on a weekly basis to work with a numeracy specialist. Pupils undertake initial assessments on MaLT, BKSb and SuccessMaker to gauge initial levels and highlight areas for particular improvement. Pupils are regularly re-tested throughout to monitor progress.

Pupils continue to be monitored carefully after the conclusion of the programme.

### **Form Support Program**

A 24-week program operates on a weekly basis during KS3 form sessions. The program comprises of key skills included; multiplication, division, fractions, decimals and percentages. It is updated regularly so that it places a strong focus on those areas that have been highlighted as key stage weaknesses.

Each week includes:

- teaching materials
- questions
- answers.

Pupils are to self-assess answers and record their scores in a tracking document provided. The document relates directly to vital skills in the Numeracy Framework.

Numeracy Wizards are to be allocated to specific form groups in year 9 as a means of further support. This group will comprise of set 1 mathematicians who have previously satisfied the skills examined.

### **Quality Assurance**

The school uses a number of systems to assure quality and share good practice in terms of the teaching, learning and assessment of literacy and numeracy:

- Lesson observations – the school’s lesson planning, observation and feedback forms all have specific sections which focus on literacy
- Pupil trials/learning walks – some trails focus specifically on aspects of literacy
- Work Scrutiny – specific sections on literacy
- Report Scrutiny – specific sections and guidance on literacy
- SOW Scrutiny
- The School and departmental improvement plans – have sections on literacy
- SERs – section focusing on standards and provision for literacy
- Departmental Meetings – sharing of good practice
- INSET workshops – sharing good practice
- Bryntirion voice sessions

- Analysing assessment data including bench marking with Family of Schools, the local authority and Wales

### **Evaluation**

The Policy will be monitored and reviewed through the quality assurance process and be support by SLT and link governors.

### **Training**

The quality of teaching has been identified as a key to success for learners. All teachers across the curriculum should aim to become accomplished teachers of numeracy.

To achieve this they need to ensure:

- their own knowledge of numeracy enables them to teach their learners effectively;
- a greater understanding of different approaches to teaching numeracy;
- consistency in the use of mathematical language, methods and strategies across the school.

Regular numeracy workshops are offered as part of the school's teaching and learning CPD programme. Members of staff are invited to attend the workshops with questions as to how to teach elements of numeracy, incorporate them successfully within schemes of work and discuss ideas for potential rich tasks.

Parents are offered the opportunity to attend weekly numeracy support classes held within the school.