

Numeracy Policy

Start Date:	Spring 2018
Date of Next Review:	Spring 2021
Author:	Ms K Just
Responsible Committee:	Education Committee

Objectives

- Numeracy will be an enabler, not a block to accessing the wider curriculum
- Developing, maintaining and improving standards in numeracy and mathematical skills across the school
- Ensuring consistency of practice, including methods, vocabulary, notation etc
- Finding areas for collaboration between subjects
- Assisting the transfer of students' knowledge, skills and understanding between subjects
- Ensuring that all teachers are teachers of numeracy

Teachers will use every relevant subject to develop students' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum.

Roles and Responsibilities

The Senior Leadership Team will give numeracy a high profile within the school. All teaching staff will aim to develop students' numeracy. Parents and carers will receive information about strategies that are used across the school to promote numeracy, as well as information on how they can promote numeracy skills at home. The Mathematics Faculty will support other faculties in the development of practical strategies to promote and embed numeracy and the teaching of mathematical skills in their teaching.

Numeracy – key areas

Numeracy is the capacity to take mathematics and apply knowledge, skills and strategies to deal with everyday life in a variety of situations.

We want our students to develop a love of numeracy and to appreciate and understand the importance of developing mathematical skills.

Numerate students are able to:

- Understand the size of a number and where it fits into the number system
- Read numbers correctly from a range of equipment
- Know and recall basic number facts and use mental arithmetic
- Use calculators and other equipment to solve mathematical problems
- Work confidently with the four operations (+, -, x and /)
- Know when answers are reasonable and give accurate results
- Manipulate algebraic expressions and simple formulae
- Understand and use correct mathematical notation and terminology
- Explain methods, reasoning and conclusions
- Use units of measurement of length, angle, mass, capacity and time
- Suggest suitable units for measuring
- Make sensible estimates of measurements and measure accurately using a range of apparatus
- Understand and use compound measures and rates
- Use simple formulae and substitute numbers in them
- Measure and estimate measurements, choosing suitable units, and calculate simple perimeters, areas and volumes
- Understand the concept of scale in geometrical drawings and maps.

- Understand the difference between the mean, median and mode, and the purpose for which each is used
- Collect data, draw, interpret and predict from graphs, diagrams, charts and tables
- Understand probability and risk.

Numerate students are able to deal with numbers in real life situations, such as:

- Calculating change when shopping
- Creating a household budget
- Calculating compound interest on a loan
- Calculating interest on savings
- Deciding which gas / electricity supplier to use
- Understanding interest rates when opening a bank account
- Recovering from debt

Mental Arithmetic Techniques

There is an acceptance that pupils are able to tackle the same questions with a variety of methods. These approaches rely on mixing skills, ideas and facts; pupils drawing on their personal preferences and the particular question do this. All departments should give every encouragement to pupils using mental techniques but must also ensure that they are guided towards efficient methods and do not attempt convoluted mental techniques when a written or calculator method is required.

Whole school Policy on the use of calculators

The school expects all pupils to bring their own scientific calculator to lessons when required. In deciding when pupils use a calculator in lessons the teachers should ensure that:

- pupils' first resort should be mental methods
- pupils have sufficient understanding of the calculation to decide the most appropriate method: mental, pencil and paper or calculator
- pupils 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.
- pupils understand the four arithmetical operations and recognise which to use to solve a particular problem
- when using a calculator, pupils are aware of the processes required and are able to say whether their answer is reasonable
- pupils can interpret the calculator display in context (e.g. 5.3 is £5.30 in money calculations)
- we help pupils, where necessary, to use the correct order of operations –especially in multi-step calculations, such as $(3.2 - 1.65) \times (15.6 - 5.77)$

Vocabulary

The following are all important aspects of helping pupils with the technical vocabulary of Mathematics:

- Using a variety of words that have the same meaning e.g. add, plus, sum
- Encouraging pupils to be less dependent on simple words e.g. exposing them to the word multiply as a replacement for times

- Discussion about words that have different meanings in Mathematics from everyday life e.g. take away, volume, product etc
- Highlighting word sources e.g. quad means 4, lateral means side so that pupils can use them to help remember meanings. This applies to both prefixes and suffixes to words

Transfer of Skills:

“It is vital that as the skills are taught, the applications are mentioned and as the applications are taught the skills are revisited.”

The Mathematics team will deliver the knowledge, skills and understanding using direct interactive teaching. They will make references to the applications of Mathematics in other subject areas and give contexts to many topics. Other curriculum teams will build on this knowledge and help pupils to apply them in a variety of situations.

Liaison between curriculum areas is vital to pupils being confident with this transfer of skills and the Maths team willingly offers support to achieve this.

We will be working to make subject areas are more aware of the underlying maths skills and approaches that go with the applications that they use. In particular, links will be made more explicit in:

- ART – Symmetry; use of paint mixing as a ratio context
- FOOD TECHNOLOGY – recipes as a ratio context, reading scales
- GEOGRAPHY – representing data, use of Spreadsheets
- HISTORY – timelines, sequencing events
- ICT – representing data; considered use of graphs not just pretty ones
- MFL – Dates, sequences and counting in other languages; use of basic graphs and surveys to practise foreign language vocabulary and reinforce interpretation of data
- MUSIC – addition of fractions
- PHYSICAL EDUCATION – collection of real data for processing in Maths
- RELIGIOUS EDUCATION – interpretation and comparison of data gathered from secondary sources (internet) on e.g. developing and developed world
- RESISTANT MATERIALS – measuring skills, units of area and volume
- SCIENCE – calculating with formulae, 3 way relationships
- TEXTILES – scale, practical equipment, proportion

It is the responsibility of Faculty Leaders and the Senior Leadership Team to monitor and evaluate the numeracy work taking place within the school and to implement further developments.