

Whole School Numeracy

Ratified by the Governing Body – December 2017

Policy document

Our Mission Statement:

To enable students to have a clear understanding of how numeracy is used in everyday life and how it has an impact on subjects across the curriculum.

A current definition of Numeracy:

“Mathematical literacy is an individual’s capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements and to use and engage with mathematics in ways that meet the needs of that individual’s life as a constructive, concerned and reflective citizen”. (PISA)

The purposes of our whole school numeracy policy are:

1. To develop students’ ability to use numerical reasoning.
2. To be able to use number skills in a variety of different situations.
3. To have an understanding of how to measure effectively.
4. To understand the importance of estimating
5. To be able to use and interpret data.
6. To be able to use all of the above outside the school environment.
7. To use numeracy across the school curriculum.

Practice at the Wey Valley School

Raising standards across the curriculum

To raise the standard of whole school numeracy it is important to understand that numeracy cannot be solely measured by tests and percentages. It is also about the understanding of numeracy for the students and how it will have an impact on their daily lives.

There will be opportunities where students / parents will be able to access numeracy material through the school website and through personal development sessions.

Consistency of Practice

All subject leaders should make their department aware of how numeracy is used within their subject and how to develop it further.

It is important that subject teachers other than mathematics should:

1. Ensure that they are familiar with the correct mathematical language and techniques relating to their subject and encourage students to use them correctly.
2. Be aware of the appropriate expectations and difficulties that might be experienced within numeracy.
3. Ensure that each department has a numeracy policy for their own subject.

Vocabulary

Students should become confident that they understand different numeracy words through key word boards and learning mats.

Transfer of skills

The transfer of skills is something that many students find difficult. It is essential for students to realise, it is the same skill that is being used; sometimes approaches in subjects differ so much that those basic connections are not made. Therefore it is important that subject areas need to be more aware of the underlying numeracy skills and approaches that are present within their curriculum (Some numeracy opportunities across the curriculum).

Subject	Ideas
Art	<ul style="list-style-type: none"> • Use standard measures to find length • Form repeating patterns (tessellations), making use of reflection, rotation and translation. • Use paint mixing as a ratio context. • Many patterns and constructions in our own and other cultures are based on spatial ideas and properties of shapes, including symmetry. • Calculating the golden ratio in pictures/drawings (Mona Lisa) • Perspective and scale • Drawing in 3 dimensions
Design Technology	<ul style="list-style-type: none"> • Use standard measures (metric and imperial) to find length, mass, time, force, temperature area or capacity. • Use mathematical symbols and notation, construct and interpret graphs and charts. • Use scale and ratio to produce drawings. • Using ruler, compass, protractor correctly • Using recipes as a ratio/proportion context • Estimation of quantities or of results of calculations • Sampling and surveying • Reading scales on equipment • Converting between units • Drawing in 2 dimension or 3 dimensions, including plans and elevations • Time planning including Gantt charts, timelines etc. • Pricing the cost of a meal/product
English	<ul style="list-style-type: none"> • Comparison of 2 data sets on word and sentence length. • Graph sketching e.g. tension throughout an act of a play • Use of fractions and percentages in persuasive writing including misleading graphs • Reading and writing numbers, identifying centuries • Coding, secret codes • Grouping/categorising ideas/words

Geography	<ul style="list-style-type: none"> • Use mathematical symbols and notation, construct and interpret graphs and charts. • Use grids to identify position (links to co-ordinates and grid references). • Use negative numbers to interpret below sea level. • Use standard measures (metric and imperial) to find length, mass, time, force, temperature area or capacity, especially distance and area. • Discussing evidence in history or geography may involve measurement, estimation and approximation skills, and making inferences. • Pupils will make statistical enquiries, for example, in analysing population data to explore and compare lifestyles; they will also use a wide range of measurements and rates of change. • The study of maps includes the use of coordinates and ideas of angle, direction, position, scale and ratio.
PSHE/RE	<ul style="list-style-type: none"> • Use Mathematical symbols and notation, construct and interpret graphs and charts. • Use standard measures (metric and imperial) to find length, mass, time, force, temperature area or capacity. • Use timelines and interpret negative numbers. • Consider infinity and the meaning of this conceptually • Reflect on logic and the process of constructing a sound argument • Belief and likelihood in Religious Education, or risk assessment in PSHE, relate well to work in Mathematics. The discussion of moral and social issues is likely to lead to the use of primary and secondary data and the interpretation of graphs, charts and tables, helping pupils to make reasoned and informed decisions and to recognise biased data and misleading representations. By applying mathematics to problems set in financial and other real-life contexts, pupils will develop their financial capability and awareness of the applications of mathematics in the workplace.
History	<ul style="list-style-type: none"> • Use timelines and interpret negative numbers. (AD and BC) • Use fractions and percentages to express and compare proportions • Use scale to interpret maps and diagrams • Use mathematical symbols and notation, construct and interpret graphs and charts.

ICT	<ul style="list-style-type: none"> • Use mathematical symbols and notation, construct and interpret graphs and charts. • Use formulae to calculate and to interpret data in spread sheets. • In ICT lessons, pupils will collect and classify data, enter them into data-handling software, produce graphs and tables, and interpret and explain their results. Their work in control will include the measurement of distance and angle. • Spread sheet skills, used in modelling and simulations; rely on the numeric, algebraic and graphical skills involved in constructing formulae and generating sequences, functions and graphs.
MFL	<ul style="list-style-type: none"> • Use dates, sequences and counting in other languages; • Use basic graphs and surveys to practise foreign language vocabulary and reinforce interpretation of data. • Use of and calculation with money • Conversion/exchange rates • Directions
Music	<ul style="list-style-type: none"> • Use addition of fractions in bar music • Use counting for beats • Use sound waves, frequency and oscillations • Use graph sketching to demonstrate change over time e.g. in dynamics over a piece
PE	<ul style="list-style-type: none"> • Use time, height and distance in measurements. • Telling the time, timekeeping • Reading from scales using measuring equipment • Calculation of speed, acceleration, deceleration and graphing of these over time during an action/event • Use fractions to identify time. • Design data collection sheets. • Collect and record real data, find the averages, compare and draw conclusions. • Sequencing results (decimals, lengths etc) • Scoring • Athletic activities use measurement of height, distance and time, and data-logging devices to quantify, explore, and improve performance. • Ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics, athletics and competitive games. E.g. angles, rotation, planes, axes

Science	<ul style="list-style-type: none">• Use formulae to calculate work, power, mass, density• Rearrange formulae• Use graphs to represent data, interpretation of graphs• Estimating quantities or results of calculations• Use standard measures to find length, mass, time, force, temperature, area or capacity;• Hypothesise before an experiment, consider limitations to findings afterwards• Manipulate numerical data from their experiments and do calculations including averages;• Record results in tables – choose appropriate form and design data collection sheets• Use mathematical symbols and notation, construct and interpret graphs and charts.• Constructing graphs, extrapolating, recognising patterns• Take readings from scales.
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