

Numeracy Policy

Version and Date		Action/Notes
1.0	Sep 2022	Policy Drafted and finalised
2.0	June 2023	Policy updated

Policy Reviewed:	July 2023
Policy Review Frequency:	4 years
Policy Holder:	Mr Taylor
Next Review:	July 2027

Signature of Chairman of Local Governing Body:



Aims

- The purpose of this policy is to ensure that the delivery of numeracy is tailored to meet the needs and abilities of pupils within each curriculum area.
- A specific numeracy slot on a weekly basis can be delivered by a non-specialist during a specific form time slot.
- Staff are provided with scaffolded activities to support their planning and delivery.
- Staff development should build upon and develop from the evaluation of these scaffolded activities.
- Opportunities are available for staff to share how they have developed numeracy within their subject area.
- Numeracy work builds upon the mathematics and numeracy taught within the Dean Trust Co-constructed Maths Curriculum

Practice

To realise the school's vision, numeracy is expected to:

- Be relevant across all subject areas.
- Not necessarily be linked to the concept of being 'numerate' in every lesson.
- Promote the concept of 'mathematical thinking' across all subject areas
- Provide generic structured activities to develop mathematical thinking that are applicable to all curriculum areas.
- Be easily editable and adaptable with structured activities used to meet the objective of lessons and also to provide additional levels of differentiation.
- Move away from artificial and contrived scenarios.
- Maintain high levels of learner involvement and interest in tasks. Not necessarily make it explicit to pupils that they are thinking mathematically.
- Provide numeracy specific activities on a weekly basis to all form groups at Key Stage 3.
- Measure and assess the success of the strategy on a half termly basis, via assessments in the maths department and the work of intervention tutors

Roles and Responsibilities

The Senior Leadership Team will ensure that:

- The Numeracy Policy is readily available and actively promoted.

- All staff understand their role in promoting effective Numeracy and receive appropriate support, training and resources from the Mathematics Department.
- The policy and its procedures are followed.

The Deputy Headteacher will ensure that:

- Practice in school supports the vision and procedures outlined in the policy.
- Appropriate training is undertaken in order to support staff in carrying out their numeracy responsibilities.
- Continuous assistance with termly work scrutinies and drop-ins evidence the use of various numeracy strategies within lessons.
- The findings of these are used to inform and direct any areas of strength or development that may need addressing.
- Monitoring and assessment of the impact of this policy takes place.
- An annual report is prepared for governors outlining the action taken within the preceding year and evaluating the impact of that action.
- Small-group intervention is conducted for those students with the lowest levels of numeracy in years 7 and 8.

Form Tutors will:

- Lead numeracy support tasks, as part of the form time provision, to support with improved numeracy
- Feed back to the Maths team (and numeracy lead) any pupils showing a specific weakness in numeracy

All staff will ensure that:

- They have read the policy and understand their responsibilities.
- They promote the core values outlined by the policy.

Key Skills

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

Numerate pupils 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 pupils 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.

Key Stage 3 Numeracy

Pupils at key stage 3 will be taught the following numeracy skills across the curriculum:

- Place value, ordering and rounding.
- Calculations with whole numbers and decimals.

- Fractions, decimals, percentages, ratios and proportions.
- Calculator methods.
- Reasoning and generalising.
- Measures.
- Construction.
- Coordinates.
- Transformations.
- Handling data.
- Applying mathematics.
- Checking results.

In mathematics, pupils at key stage 3 will be taught to develop fluency in maths by:

- Learning to consolidate numerical and mathematical skills learned at primary school and developing further understanding of the number system and place value to include decimals, fractions, powers and roots.
- Developing an ability to use appropriate calculation methods to solve increasingly difficult problems.
- Using algebra to generalise the structure of arithmetic.
- Substituting values in expressions, rearranging and simplifying expressions, and solving equations.
- Moving freely between different numerical, algebraic, graphical and diagrammatic representations.
- Developing algebraic and graphical fluency, including understanding linear and simple quadratic functions.
- Using mathematical language.

Reason mathematically by:

- Increasing their understanding of the number system.
- Make connections between number relationships and their algebraic and graphical representations.
- Developing their knowledge of ratio and proportion, in working with measures and geometry, and in formulating proportional relations algebraically.
- Identifying variables and expressing relations between variables algebraically and graphically.
- Making and testing estimations about patterns and relationships and looking for proofs or counter-examples.
- Learning deductive reasoning.
- Interpreting when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.
- Exploring what can and cannot be inferred in statistical and probabilistic settings, and beginning to express their arguments formally.

Solve problems by:

- Developing their mathematical knowledge through problem solving and evaluating the outcomes.

- Developing their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics.
- Beginning to model situations mathematically and learning to express the results using a range of formal mathematical representations.
- Selecting appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.

Key Stage 4 Numeracy

Pupils will be taught to use correct mathematical representation by:

- Identifying the mathematical aspects of the situation or problem.
- Comparing and evaluating representations of a situation before making a choice.
- Simplifying the situation or problem in order to represent it mathematically using appropriate variables, symbols, diagrams and models.
- Selecting mathematical information, methods, tools and models to use.

Analyse mathematically by:

- Making connections within mathematics.
- Using knowledge of related problems.
- Visualising and working with dynamic images.
- Identifying and classifying patterns.
- Making and justifying conjectures and generalisations, considering special cases and counter-examples.
- Exploring the effects of varying values and looking for invariance and covariance.
- Taking account of feedback and learning from mistakes.
- Working logically towards results and solutions, recognising the impact of constraints and assumptions.
- Identifying a range of techniques that could be used to tackle a problem, appreciating that more than one approach may be necessary.
- Reasoning inductively, deducing and proving.

Use appropriate mathematical procedures by:

- Making accurate mathematical diagrams, graphs and constructions on paper and on screen.
- Calculating accurately, using mental methods or calculating devices, as appropriate.
- Manipulating numbers, algebraic expressions and equations and applying routine algorithms.
- Using accurate notation, including correct syntax when using ICT to record methods, solutions and conclusions.
- Estimating, approximating and checking working.

Interpreting and evaluating data by:

- Creating convincing arguments to justify findings and general statements.
- Considering the assumptions made and the appropriateness and accuracy of results and conclusions.

- Appreciating the strength of empirical evidence and distinguishing between evidence and proof.
- Finding patterns and exceptions in data.
- Relating their findings to the original question or conjecture, and indicating reliability.
- Making sense of someone else's findings and judging their value in the light of the evidence they present.
- Critically examining strategies adopted.

Communicating and reflecting on data by:

- Using a range of formats to communicate findings to different audiences.
- Engaging in mathematical discussion.
- Considering the elegance and efficiency of alternative solutions.
- Looking for equivalence in relation to both the different approaches to the problem and different problems with similar structures.
- Giving examples of similar contexts they have previously encountered and identifying how these contexts differed from, or were similar to, the current situation and how and why the same, or different, strategies were used.