ASHLEY COLLEGE

Numeracy Across the Curriculum

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NUMERACY ACROSS THE CURRICULUM POLICY

Purpose

Ashley College is committed to raising the standards of numeracy in all of its students, so that they develop the ability to use numeracy skills in all areas of the curriculum and develop the skills necessary to cope confidently with the demands of further education, employment and adult life.

~~It is important that all students develop the ability to apply numerical understanding and skills confidently to solve problems in a variety of curriculum contexts and to cope with practical mathematical demands of everyday life.~~

~~Developing numeracy skills in learners is not just the responsibility of the Maths department. All subjects where we expect pupils to apply numerical skills should be taking positive steps to develop students' maths skills and concepts, and should provide opportunities for them to acquire the mathematical language crucial to understanding mathematical knowledge.~~

Our aims are to ensure that all students:

- **Develop fluency** in fundamental mathematical skills, including the ability to recall and apply number facts rapidly and accurately
- **Reason mathematically** by following lines of enquiry, making conjectures and generalisations, and developing logical arguments using mathematical language
- **Solve problems** by applying their mathematical knowledge to a variety of routine and non-routine problems, including breaking down problems into simpler steps
- Build confidence and competence with numbers, measures, data, and spatial awareness
- Recognise and apply numeracy skills across different subjects and real-world contexts
- Develop the mathematical literacy required for further education, employment, and adult life

Contextual Information:

The development of the concept of "numeracy":

1959 – (Crowther report) - Numeracy is defined as a word to represent the mirror image of literacy.
1982 – (Cockcroft report) - A numerate pupil is one who has the ability to cope confidently with the mathematical needs of adult life. There was an emphasis on the wider aspects of numeracy and not purely the skills of computation
1995 (OED) – numerate means acquainted with the basic principles of Mathematics

A current definition of numeracy:

Numeracy is a proficiency, which develops mainly in mathematics but also in other subjects. It is more than an ability to do basic arithmetic. It involves developing confidence and competence with numbers and measures. It requires understanding of the number system, a 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 in which data is gathered; by counting and measuring, and presented in graphs, diagrams, charts and tables.
(Framework for Teaching Mathematics – yr 7 to 9 – DfES)

~~Numeracy Skills~~

~~Numeracy is the ability to cope confidently with the mathematical demands of further education, employment and adult life. This includes:~~

- ~~the ability to carry out basic calculations efficiently and accurately, either mentally or with pencil and paper as appropriate~~
- ~~the ability to apply knowledge of number to both familiar and new circumstances and to use it in the solution of problems~~
- ~~the ability to understand and use units of measurement of length, mass, capacity, time and temperature~~
- ~~the ability to understand and use information presented in mathematical forms, including graphs, tables and charts~~

In practical terms, numeracy at Ashley College means students can:

- **Apply mathematical skills confidently** in real-life situations, such as managing money, understanding timetables, interpreting data in the news, and making informed decisions based on numerical information
- **Use estimation and approximation** to check the reasonableness of answers
- **Interpret and communicate** mathematical information effectively using appropriate vocabulary, symbols, and representations
- **Work with digital tools** where appropriate, while maintaining strong mental calculation skills

4. Context and Current Frameworks

Our approach to numeracy is informed by current educational research and national frameworks:

Education Endowment Foundation (EEF)

The EEF's guidance on improving mathematics in key stages 2 and 3 emphasises the importance of:

- Using assessment to build on pupils' existing knowledge and understanding
- Using manipulatives and representations to develop understanding
- Teaching pupils strategies for solving problems
- Enabling pupils to develop a rich network of mathematical knowledge

Ofsted Education Inspection Framework (EIF) 2025

Under the 2025 framework, inspectors evaluate how well schools develop pupils' knowledge and skills across the curriculum. For numeracy, this includes:

- How the curriculum is sequenced to build mathematical fluency, reasoning, and problem-solving over time
- How teaching adapts to meet the needs of all pupils, including those with SEND and disadvantaged pupils
- The impact of numeracy provision on pupils' achievement and readiness for the next stage of education

OECD PISA Framework

The PISA framework defines mathematical literacy as the capacity to formulate, employ, and interpret mathematics in a variety of contexts, emphasising:

- Mathematical reasoning and problem-solving in real-world situations
- The ability to use mathematical tools and representations effectively

Extended Numeracy Skills

In the modern world, numeracy extends beyond traditional arithmetic to include:

- **Data literacy:** interpreting statistics, understanding probability, critically evaluating data presented in media
- **Financial literacy:** budgeting, understanding interest rates, making informed financial decisions
- **Digital literacy:** using spreadsheets, understanding algorithms, working with digital data tools

Ofsted Alignment: Intent, Implementation, Impact

Intent

Our curriculum is designed to ensure that all students develop strong numeracy skills that enable them to:

- Access learning across all subjects
- Progress successfully to further education and employment
- Function confidently as numerate adults

We intend for numeracy to be embedded across the curriculum, with all staff taking responsibility for developing students' mathematical confidence and competence within their subject areas.

Implementation

We implement our numeracy vision through:

Curriculum Design:

- Maths lessons that develop fluency, reasoning, and problem-solving systematically
- Cross-curricular planning that identifies and reinforces numeracy opportunities in all subjects
- Regular "stop everything and problem solve" sessions to promote positive numeracy awareness

Teaching Approaches:

- Use of concrete resources, visual models, and representations to support understanding (see Section 6)
- Explicit teaching of mathematical vocabulary and notation
- Opportunities for students to explain their reasoning and justify their methods
- Differentiation to meet the needs of all learners, including those with SEND

Staff Development:

- Training for all staff on numeracy strategies and common misconceptions
- Collaboration between the Maths department and other subject areas
- Sharing of effective practice through learning walks and departmental liaison

Impact

We evaluate the impact of our numeracy provision through:

- Students' attainment and progress in mathematics
- Students' confidence and competence in applying numeracy skills across subjects
- Students' readiness for the next stage of their education and for adult life
- Evidence from learning walks, book looks, and student voice activities

5. Core Numeracy Skills

Numeracy is the ability to cope confidently with the mathematical demands of further education, employment and adult life. This includes:

- the ability to carry out basic calculations efficiently and accurately, either mentally or with pencil and paper as appropriate
- the ability to apply knowledge of number to both familiar and new circumstances and to use it in the solution of problems
- the ability to understand and use units of measurement of length, mass, capacity, time and temperature
- the ability to understand and use information presented in mathematical forms, including graphs, tables and charts Numeracy Across the Curriculum - 2025

Students should also develop:

- **Proportional reasoning:** understanding ratios, fractions, percentages, and scale

- **Algebraic thinking:** recognising patterns, using formulae, and understanding relationships between variables
- **Spatial awareness:** working with shapes, angles, coordinates, and transformations
- **Statistical literacy:** collecting, presenting, and interpreting data, understanding averages and spread
- **Problem-solving strategies:** breaking down complex problems, working systematically, checking solutions

Implementation at Whole-School Level Roles and Responsibilities

. Roles and Responsibilities

Senior Leadership Team

The Senior Leadership Team will:

- Give a high profile to numeracy across the school
- Ensure numeracy is embedded in the school improvement plan
- Monitor the impact of numeracy provision through lesson observations and data analysis
- Allocate resources to support numeracy development

Teacher of Maths

The Teacher of Maths will:

- be aware of the mathematical techniques used in other subjects and provide assistance and advice to other departments so that a correct and consistent approach is used in all subjects
- provide information to other subject teachers on appropriate expectations of students and difficulties likely to be experienced in various age and ability groups
- through liaison with other teachers, attempt to ensure that students have appropriate numeracy skills by the time they are needed for work in other subject areas
- seek opportunities to use topics and examination questions from other subjects in maths lessons
- deliver regular "stop everything and problem solve" sessions to increase positive numeracy awareness and application among staff and students

Additionally, the Maths teacher will:

- **Use concrete resources and visual models** (such as manipulatives, diagrams, bar models, and number lines) to support conceptual understanding, particularly for students who find abstract concepts challenging
- Model problem-solving strategies explicitly and provide opportunities for guided and independent practice
- Provide CPD for staff on numeracy teaching strategies and common misconceptions

Teachers of Subjects Other Than Maths

Teachers of subjects other than Maths will:

- be positive about maths and avoid negative references relating to maths (e.g. this is difficult/boring. I can't do maths etc.)
- encourage students to use maths confidently where it naturally occurs within their subject

- encourage students to use mental maths (rather than using calculators) where simple calculations are required
- be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills
- provide information for the maths teacher on the stage at which specific numeracy skills will be required for particular groups
- provide resources for the math teacher to enable them to use examples of applications of numeracy relating to other subjects in maths lessons
- be aware of strategies and interventions being employed in the maths department to raise numeracy standards
- liaise with the Maths teacher regarding the delivery of specific topics involving maths content Numeracy Across the Curriculum - 2025

Additionally, subject teachers will:

- **Use visual models and concrete examples** where appropriate to support mathematical understanding within their subject (e.g., timelines in History, diagrams in Science)
- Plan lessons that explicitly identify and develop numeracy skills
- Use consistent mathematical vocabulary and notation across the curriculum

~~The Senior Leadership Team leads and gives a high profile to Numeracy.~~

~~Teacher of Maths will:~~

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Students will:

- ❖ recognise the importance of numeracy in all aspects of their learning and will take responsibility for improving their numeracy skills, where these are applied in different subjects

Parents will be encouraged to:

- ❖ encourage their children to develop their numeracy skills, especially in mental arithmetic

Management Committee will:

- ❖ monitor the profile of numeracy work through their involvement with link departments
- ❖ ensure numeracy issues are assessed in relevant areas of school monitoring.

Monitoring and Evaluation

~~The Maths Lead will quality assure other departments' medium-term plans for numeracy opportunities and take part in learning walks and book looks to ensure that the planning is being implemented. The Senior Leadership Team will monitor the development of numeracy skills through lesson observation, evidence and curriculum reviews. The Management Committee's Curriculum Committee will receive updates and will monitor longer term strategy. All monitoring will seek to identify progression and impact in order to ensure that students' numeracy skills improve.~~

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Our monitoring and evaluation cycle includes:
Termly:

- Review of assessment data to identify trends and gaps in numeracy skills
- Learning walks focusing on numeracy across the curriculum
- Student voice activities to gather feedback on numeracy provision

Annually:

- Deep dive into numeracy provision, including scrutiny of planning, teaching, and outcomes
- Review of this policy and associated action plans
- Report to the Management Committee on numeracy outcomes and priorities

Success Criteria:

- Students make strong progress in mathematics from their starting points
- Students apply numeracy skills confidently across different subjects
- Staff demonstrate confidence in teaching numeracy within their subject areas
- The gap in attainment between disadvantaged students and their peers narrows

Some examples of numeracy in lessons other than Maths

Examples of possible concepts and topics to develop the focus on numeracy include the following:

ART and DESIGN Tessellation and symmetry - Escher Geometric shapes in art - Kandinsky, Mondrian 2D, 3D, ratios and transformations, enlargements, measurements and converting units, constructions, drawing and trigonometry.

ENGLISH Logical ordering for persuasive argument, Frequency of words (e.g. Shakespeare vs. Bacon) Algebraic aspects of poetry structure

FOOD Ratios in recipes, measurements and converting units, time calculations when working out timings for cooking food.

HISTORY Timelines and dates interpreting statistics, relevance of shape in iconography/propaganda History of maths, bar charts for looking at historical information as well as data presented in charts.

COMPUTING Spreadsheets, databases and flowcharts. Use of functions in spreadsheets for various topics in maths, Dimensions of graphics

MUSIC & DRAMA Time, rhythm and meter Pythagoras, numerical scales and ratios, golden ratio used by composers—Debussy Maths in set design, spatial awareness on stage

PE Distance, speed and time calculations, angles, ratios, power/weight, shape, use of some equipment, spatial awareness needed for team sports in particular

REP Use of shape in iconography, importance of numbers as factors and multiples in religions—e.g. 12 Dates and calendar

SCIENCE Algebraic change of subject, various arithmetical calculations, algebraic substitution into formulae golden ratio/Fibonacci sequence in nature, graphs and charts of all kinds