

Middlewich High School



Numeracy Policy

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Excellence in Learning -Achievement for All

Numeracy is a proficiency, which involves confidence and competence with numbers and measures. It requires an understanding of the number system, a repertoire of computational skills and an inclination and ability to solve number problems in a variety of contexts. Numeracy also demands practical understanding of the ways in which information is gathered by counting and measuring, and is presented in graphs, diagrams, charts and tables. (*National Framework for teaching Mathematics, 1999*).

Numeracy is an essential life skill that allows students to access positive social, educational and economic outcomes. At Middlewich High School we are committed to ensuring students are able to use numeracy skills effectively in all areas of the curriculum and cope confidently with the mathematical demands of further education, employment and adult life.

Intent

In adopting a new whole school Numeracy Policy the leadership and staff of Middlewich High School are committed to embedding numeracy skills appropriately within all subjects and the very fabric of the school, in the belief that it will raise the achievement of all.

- To recognise that **all teachers** are teachers of **numeracy**. Teachers must demonstrate an understanding of and take responsibility for promoting high standards of numeracy.
- To develop and improve standards of numeracy across the school by providing all staff with strategies to encourage numeracy development in the context of their curriculum area.
- To identify and support opportunities for collaboration between subject areas.
- To establish consistency in the teaching of numeracy including methods, vocabulary, notation and calculation.
- To raise the profile of numeracy across the school and promote positive attitudes amongst students and staff reducing maths anxiety.
- To foster a school ethos and climate for learning that gives high status to Numeracy-related activities.
- To raise attainment for every student, from providing intervention for students who are struggling to access the curriculum to challenging higher attainment students.

Implementation

Year 1

- Raise the profile of numeracy through new displays around school including maths fails, world time, 'Middlewich to..' and financial numeracy.
- Form time numeracy tasks produced to reinforce and give opportunity for 'purposeful practice' of core numeracy skills and create an unconscious competence with number.
- Engaging students in celebration events such as NSPCC number day.
- Engage students in national numeracy competitions.
- Celebrate student success with local and national challenges and homework tasks in school and the community.
- Adopt a new online homework platform to promote engagement and support home learning.
- Creating a fluency with core number skills using retention and retrieval starters.
- Establish primary links to support numeracy continuity during transition (meeting 11/06/19).
- Conduct a curriculum numeracy audit to identify subjects with the greatest proportion of numeracy content.
- Give all teachers with numerical content in their curriculum access to numeracy support videos via Hegarty maths platform.
- Create open forum where staff are able to access support from maths specialists.
- Allocate numeracy leaders (staff) for subject areas to support delivery of content
 - HWA/CGR –Science
 - AMO – Humanities/creativity support
 - ROW – Creativity
 - KCO - Business
 - LTA – IT and computer science
- Ensuring students are 'secondary ready' and able to access the KS3 curriculum using calculator transition activities and Hegarty transition tasks for summer.
- Baseline test all year 7 students on entry and triangulate this data against prior attainment to identify key develop areas and assess progress at the end of year 7.
- Make scientific calculators part of the schools' core equipment list.
- Launch numeracy toolkit guide for teachers.

Year 2

- Establish a consistency in methodologies across the curriculum where appropriate.
- Deliver whole school and subject specific CPD.
- Proactively support subject areas through the numeracy leads structure.

- Establish common language, notation, conventions and techniques and encourage students to use these effectively across subjects.
- Highlight within lessons how different specifications/subjects have the same content but different terminology and vice versa.
- Create whole school calculation policy and ensure other subjects are using the same calculators outside of maths lessons when appropriate.
- Develop a numeracy curriculum with explicit transferable skills as part of the maths offer.
- Develop primary transition and secondary curriculum in line with 'No Wasted Years' advice.
- Use item level data from KS2 to identify weak performance and ensure action is taken by class teachers or through an intervention programme to address.
- Establish a maths mentoring programme for KS3 students.
- Ensure the catch up programme is effective and closes learning gaps particularly for disadvantaged students.

Year 3 (outcomes aimed for)

- Empower staff so they are confident delivering cross curricular numeracy skills in their subject area.
- Improved numeracy outcomes for all across school, particularly disadvantaged students.
- Numeracy is evidently embedded in the Teaching & Learning practices across the curriculum.
- Establish common language, notation, conventions and techniques and encourage students to use these effectively across subjects.
- Students are numerate and an effective programme of support is in place for those that require intervention.
- Raise attainment and progress of students.
- Improve attitudes towards numeracy and reduce maths anxiety.

Numeracy Roles and Responsibilities

Teachers:

- Explicitly model mathematical methods to enhance students' access to knowledge within their subject area.
- Should ensure that they are familiar with and use the correct mathematical language, notation, conventions and techniques, relating to their own subject, and encourage students to use these correctly.
- Collaborate with maths to establish consistency in the delivery methods.
- Should be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills.
- Ensure mathematical resources used within lessons are age and ability appropriate.
- Should be aware of students' prior attainment in mathematics and plan accordingly to meet the needs of students of all students.
- Actively engage with and seek support from the maths team in the delivery of numeracy within their subject area.
 - Share resources with mathematics teachers to enable them to use other subject examples of numeracy.
 - Promote numeracy through positive attitudes, support and engagement with whole school numeracy activities.
 - Monitor and correct students' numeracy to add to the collective impact across the school.
 - Use standardised calculator for the delivery of numeracy within lessons where appropriate.

Support Staff:

- Support students to use numeracy strategies across the curriculum.
- Should ensure that they are familiar with and use the correct mathematical language, notation, conventions and techniques, relating to their own subject, and encourage students to use these correctly.
- Actively explore numeracy with students, making connections across subjects for them.
- Reinforce positive attitudes and support the delivery of weekly tutorial numeracy activities.
- Promote numeracy through positive attitudes, support and engagement with whole school numeracy activities
- Monitor and correct students' numeracy to add to the collective impact across the school.
- Plan deliver and monitor the progress of students receiving catch up intervention.

Head of Department:

- Ensure schemes of work have opportunities for numeracy identified and included where appropriate.
- Distribute the responsibility for supporting subject specific numeracy.
- Create Knowledge Organisers that incorporate the desired numeracy for students to employ.
- Ensure staff use data on prior attainment to plan effectively.
- Observe and monitor the delivery of effective subject specific numeracy during learning walks.
- Monitor the assessment and improvement of numeracy in work sampling.
- Facilitate collaborative planning opportunities for numeracy.

Tutors:

- Deliver weekly numeracy activities during tutorial periods.
- Promote numeracy through daily equipment checks to ensure students have their own scientific calculator for use across subject areas.

SENCO and DSENCO:

- Provide timetabled support and capacity for the delivery of the catch up programme.
- Provide CPD to support staff working with students who display difficulty with numeracy.
- Liaise with departments to deliver subject specific strategies where there are low levels of numeracy.
- Support in the academic transition of students with weak numeracy skills.
- Liaise with HoM regarding schemes of work assessment and reporting.

Assistant Head and Numeracy Lead:

- Lead CPD on numeracy strategies within the department and across the school.
- Delegate responsibility for numeracy across the maths team.
- Delegate numeracy tasks across the maths team.
- Quality assure numeracy work.
- Provide cross-curricular support for subjects.
- Lead Y7 Numeracy RAP (Catch up)
- Monitor and review the effectiveness of Numeracy strategies each term including the catch up programme.

Maths staff

- Support subjects through the 'Numeracy Lead' programme.
- Ensure all staff have access to Hegarty maths resources to support them in the delivery of numeracy.
- Regularly deliver numeracy lesson starter activities focused on retrieval and retention of core numeracy topics.
- Collaborate with subject areas to establish consistency in the delivery methods.
- Use KS2 prior attainment data to identify areas of weak prior attainment.
- Support the HoM in the creation of 'Knowledge Organisers' that incorporate the desired methodologies, notation and vocabulary for students to employ.
- Actively seek opportunities to positively promote numeracy across the school and within the local community.
- Engage in national competitions and challenges.
- Develop learning resources for form time activities.
- UP3 colleagues work with HoM to ensure an effective catch up programme is in place that supports students learning of mathematics.
- Plan deliver and monitor impact of catch up intervention.

Numeracy tool kit – staff support

We can use the Numeracy Toolkit to help us to develop and practise some of the key Numeracy skills that are found in all subjects and in everyday life. Little things you can do to support numeracy at MHS:

- **Be positive** don't say things like "I can't do maths" or "I hated maths at school" instead say 'I was successful with maths because I worked hard'
- Ask – there is an increase in numeracy demands across multiple new specifications. If you come across a numeracy topic ask your numeracy lead or a member of the maths team how we teach it and what the common misconceptions are. Liaison between curriculum areas is vital to students being confident with this transfer of skills and the Maths team willingly offers support to achieve this.
- Share- if you come across numeracy based resource for your subject share with maths team. It's great that students are exposed to the same resources across the curriculum so they can physically see the links between the subjects, tasks within the resources can be different for each area.
- Some of the terminology and notation differs across subjects, liaise with the numeracy lead if you are aware of any to ensure this is highlighted to students in lessons.
- It is surprising how many students cannot tell the time (especially on an analogue clock) if a student asks 'How much longer do we have left? Reply with a question, for example '20 minutes, so what time does the lesson end?'
- If you see numeracy nonsense take a picture and send it to the maths team to add to the collection.
- If you see numeracy in context for example, extortionate interest rates for pay day loans take a picture and send it to the maths team.
- Say numbers fully for example 2019 'two thousand and nineteen' rather than 'twenty nineteen'.
- Don't write cumulative test scores as fractions, there's rationale for this. For example, say a student completes two tests, on paper 1 they score $\frac{4}{10}$ and paper 2 they score $\frac{7}{10}$ their total score is $\frac{11}{20}$ **HOWEVER** in maths if we add the fractions $\frac{4}{10} + \frac{7}{10}$ we get $\frac{11}{10}$ adding the numerators only (top numbers) and the denominators (bottom numbers) staying the same, If the denominators are different we need to make them the same using equivalent fractions. When students add fractions a very common misconception we see is the denominators getting added together.
- Consistency- students have 2 GCSE calculator papers so they need to be confident using many scientific calculator functions. Use the Casio scientific calculators in lessons so students gain familiarity.
- Don't assume students will have been taught the content you are planning on delivering, maths GCSE is still tiered entry and some more challenging content only appears on the higher tier. Data handling and statistics is also no longer on the KS2 national curriculum so don't assume students have seen even the most basic topics before.
- Questioning – mathematical thinking is about pattern spotting and problem solving. Within lessons ask questions like 'Is there a pattern?' 'Can you predict what's next?' 'What is your hypothesis?' 'What's the same?' 'What's different?'
- We are all responsible for the teaching of numeracy, some subjects compliment this more than others. Numeracy must not be forced and should support the learning intention.

Cross-Curricular Numeracy Links

In...	Learners will...
Art and design	Apply number skills such as measurement, estimates, scale, proportion, ratio, pattern and shapes to develop, inform and resource their creative activities.
Design and technology	Use mathematical information and data, presented numerically and graphically, to research and develop their ideas. They use number to measure and calculate sizes, fits and materials. They use scale, plans and elevations from and for drawings.
English	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.
Geography	Apply number skills in the classroom and in fieldwork 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.
History	Develop their number skills through developing chronological awareness, using conventions relating to time, and making use of data, <i>e.g. census returns and statistics</i> .
ICT and computer science.	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. Within computer science students will understand the binary system and coding.
Modern foreign languages	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. A particular area which lends itself to excellent numeracy development is time.
Citizenship (iValue)	Select data from given information presented in a range of numerical and graphical ways. Gather information in a variety of ways, including simple questionnaires or databases to support understanding of PSE-related issues [and in KS3 access and select data from relevant information presented in a variety of ways and from different sources], [and in KS4 select from and interpret a variety of methods of presenting data, including pie charts, scatter graphs and line graphs] to support understanding of PSE-related issues.
Physical education	Develop their number skills by using mathematical information and data. They use the language of position (including co-ordinates and compass points) and movement, as well as data handling and measures in athletic and adventurous activities. They use scale in plans and maps. They measure and record performances, <i>e.g. time, distance and height</i> , and use the data to set targets and improve their performance.
Religious education	Develop skills in the application of number by using information such as ordering events in time, by measuring time through the calendars of various religions, by calculating percentages of tithing, and by considering the significance of number within religions. They interpret results/data and present findings from questionnaires, graphs and other forms of data in order to draw conclusions and ask further questions about issues relating to religion and the world.
Science	Work quantitatively to estimate and measure using non-standard and then standard measures, recording the latter with appropriate units. They use algebra to form and solve equations and substitution into formula. They use tables, charts and graphs to record and present information. With increasing maturity they draw lines of best fit on line graphs, use some quantitative definitions and perform scientific calculations including those with value in standard form.

