Broughton Hall Catholic High School

NUMERACY POLICY

AIMS AND OBJECTIVES

Our aim at Broughton Hall High School is to improve the standards of numeracy and mathematics, across the whole school, for all students. We have already established and maintained consistent practice where mathematical notation, vocabulary and rehearsal is inclusive to all. Every member of our school community has a responsibility to change the stigma towards numeracy, increase confidence levels and help support students. We have collaborated between departments because we recognise that each subject teacher has a role in delivering the teaching of numeracy, so that pupils can access the entire curriculum in a more meaningful and successful way. By delivering these objectives, we believe we can close the gap between lower/higher attaining students, whilst also ensuring students' essential life skills are dramatically benefitted.

Aims of the policy:

- To raise the profile of numeracy across the school
- To raise individual confidence, competence, and proficiency in numeracy
- To recognise that all teachers are facilitators of numeracy through their own individual subject area and are responsible in developing transferrable knowledge.
- Improve students' numerical automaticity both in school and in daily life.

Teachers of Mathematics should:

- Work together collaboratively when producing high quality, inclusive maths lessons, which follow correct sequencing and are in line with departmental SOW and the National Curriculum.
- Use of agreed departmental retrieval starter framework to recall prior knowledge and make key links between mathematical topics. For instance, re-arranging equations, function machines and order of operations all link together.
- Use of routine assessments to promote learning and highlight any gaps.
- As well as building fundamental knowledge on many mathematical areas, promote mathematical literacy at every opportunity, especially when introducing new learning. This can be aided with use of definition mats.
- Ensure within lessons students can rehearse prior and new knowledge in a beneficial way.
- Always ensure that you use correct mathematical notation and language and promote students to use this too.
- Explore the relevance of mathematics to everyday life and potential career paths whenever fitting in lessons.

Reviewed: Dec 2021
Next Review: Dec 2022

- Use mathematical comprehensions twice per term to encourage students' mathematical curiosity and support their mathematical literacy.
- Set classes a minimum of one weekly homework using Hegarty Maths that is relevant to their current learning and which helps build their numerical skills.

Teachers of other Subjects should:
Each individual teacher plays a pivotal role in promoting numeracy within their subject in every way possible. Subject teachers must ensure that they are familiar with correct mathematical language, notation, conventions, and techniques, especially relating to their own subject and encourage students to use these correctly. Departments of other subjects should encourage pupils to think about appropriate methods, strategies, and approaches to solving numerical problems. This should be done in accordance with our agreed standardised common method format. This is accessed in our shared area. Departments must communicate with the mathematics department on their SOW, highlighting key areas when numeracy skills are essential. Together departments can work alongside Maths's building students transferable numerical skills.

Form Tutors should:
Have a positive attitude towards mathematics and numeracy and promote a growth mind-set.

KS3 tutors
- For KS3 tutors, actively engage in 'Maths4Life' challenges
- Help students access mathematical language
- Support students when gaining fluency in the fundamentals of mathematics

KS4 tutors
- For KS4 tutors, ensure that students are participating in Tuesday morning numeracy.
- Remind students of the significance and how it will support their learning further.
- Relate problems to real life scenario's whenever possible
- Encourage students to apply their prior knowledge to solve problems by application to a variety of routine and non-routine problems with increasing sophistication.

Numeracy Subject coordinator should:
- Be passionate towards the subject and our school objectives
- Raise the profile of numeracy across the whole school
- Improve, develop, and embed cross-curricular links for Numeracy
- Work closely with the Head of Mathematics to ensure a co-ordinated approach to whole-school numeracy is in place and critical issues are addressed promptly. Whilst doing this it is vital that wider school numeracy approaches are consistent and fitting with the Maths Departments own strategies/SOW.
- Implement and develop whole school approaches in the primary aim to strengthen students' numerical fluency.
- Ensure numeracy policy complements other school wide policies
- To annually monitor, evaluate and review the delivery of Numeracy across the Curriculum and to maintain a development plan for implementation.

Extra-curricular Numeracy learning experiences

- Weekly challenge questions
- Find the mathematician of the week
- Junior/Intermediate Mathematical Challenge (UKMT)
- Coding Club
- External Mathematics Competitions
- Visit to Bletchley Park/Workshops held in school delivered by Bletchley Park
- Opportunities to attend lectures/seminars and workshops at local universities

Numeracy Support

- Initial baseline assessments and all further assessments, in-line with assessment policy highlight pupils who would benefit from additional support in numeracy. Necessary support will be put in place depending on the individual and their needs, this is then monitored and communicated to parents/carers.
- Professional judgement of our staff, who may identify students who would benefit from additional support. Their judgements will be based on classwork, homework, and communication with students as well as parents/carers.

Nature of support

- Maths's tutoring. This is discretely one-to-one or small groups support sessions which run on a weekly basis. They are high quality enrichment sessions which focus on bridging any gaps students have within their learning. This is closely monitored and continually amended in accordance with individuals and their needs.
- Maths subject specific TA
- Interventions

SEN

Our numeracy co-ordinator works in conjunction with the SENDCO department to ensure that there is an early identification and assessment of pupils' difficulties. Early identification of individual Numeracy targets is essential so that individuals can access the National Curriculum. A staged provision will be put in place and communicated with class teacher(s).

GENERAL ADVICE:

Calculators

The school expects all pupils to bring their own scientific calculator to lessons when required. It is recommended but not essential to own a CASIO brand. In order to improve numeracy skills and independent thought, it is key that students should be encouraged to use non-calculator methods whenever possible. However, departments should ensure students are coherent with both non-calculator/calculator strategies. Numerical fluency is paramount, but alternative calculator methods must also be shown, so that students gain confidence in good calculator practice.

In deciding when pupils use a calculator in lessons, we should ensure that:

- Pupils' first resort should be mental arithmetic methods (greater rehearsal)

- Pupils have sufficient understanding of the calculation to decide the most appropriate method: mental, 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/expected. Thus, students are first able to make an estimation before using a calculator.
- 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) x (15.6 - 5.77).
- When using a calculator, pupils are aware that some money calculations may show as 13.3. Pupils must understand this means £13.30
- Pupils recognise what a recurring decimal is and understand how to round appropriately.
- Avoidance of calculator dependency

Methods and Presentation

When a student is learning a particular method (following the common format) it is important that she is not confused by being given another method. This is to ultimately avoid cognitive overload. This does not disallow the possibility of introducing alternatives to improve understanding, or as part of a lesson deliberately designed to investigate alternative methods, provided students can manage this without confusion.

Language

Wherever possible Mathematics teachers and non-specialists should incorporate the correct Mathematical terms. The following are all important aspects of helping pupils with the technical vocabulary of Mathematics:

- Use of Word walls
- 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.
- When referring to decimals say “three point one four” rather than “three point fourteen”.
- Read numbers out in full, so say three thousand four hundred rather than three, four, zero, zero.
- Whenever there is an opportunity to relate a number/quantity/unit to its base terms or original meaning, do so. e.g. Percent – ‘per’ – out of, ‘cent’ – one hundred. Relate it to other examples if/when possible.

Pupils should gain confidence in meanings of words so that they can follow the instructions in each question or interpret a mathematical problem. For example, a pupil reading a question including the word perimeter should immediately recall what that is and start to think about the concept rather than struggling with accessing the word and ultimately the question. The instant recall of vocabulary has been improved through various mathematical comprehensions, definition mats, key words which are highlighted in SOW's and are addressed in each lesson.

KS3 Numeracy

15-minute daily sessions which focus on the rehearsal of fundamental mathematical skills for all students to gain fluency. Close the gaps on any prior knowledge to ensure confidence boosts and positive outcomes for all students. Consistent use of mathematical key words which are established as a routine in new whole-school approach. Encouragement of mathematical curiosity with daily facts and a focus on cross curricular topics (weekly/seasonal themes).

KS4 Numeracy

Rehearsal on GCSE crossover questions has been highlighted as an approach which can raise the attainment of all pupils and bridge gaps. Engagement within these sessions ensures students will be less likely to fall away from their peers and boost confidence levels regardless of student's prior attainment. Teachers must consistently prompt mathematical language and notation during these sessions. A systematic structure of these sessions helps students make connections between topics. Modelled solutions are also key for students in spotting errors.