



Bramhall High School

Whole School Numeracy Policy

Reviewed: 26 March 2018
Review Date: Summer 2019
by Standards Committee
Non-statutory policy.

Numeracy Policy - Raising Standards

Whole school numeracy cannot simply be measured on the rising levels of test grades within mathematics, but should in fact be a rising level of competency in applying maths across the curriculum.

Every student, every subject and every teacher makes the difference.

Numeracy is the responsibility of all staff, not just of the Mathematics department. Although the Mathematics department's work will explicitly teach numeracy skills which are embedded in all aspects of its work, all staff are required to support the development of numeracy skills across the curriculum in their own subject areas and day to day teaching.

If all staff take a common approach to numeracy, students will receive a consistent and strong message about the high value we place on numeracy.

All subject areas should clearly identify areas where they support the delivery of numeracy skills via their Long-term, Medium-term plans and their schemes of learning. Quality assurance within the department should ensure that these elements are consistently delivered by all teaching staff and to a good standard.

The numeracy co-ordinator will collate this information and suggest further opportunities for numeracy delivery and cross-curricular links. Subject leaders should ensure that the delivery of numeracy follows the guidelines outlined below.

Where support is required the Numeracy co-ordinator will deliver staff training and routinely visit departments during part of their department meetings. The numeracy co-ordinator will facilitate the sharing of good practice and ensure that a folder of exemplar material is available for departments.

Why is Numeracy important?

Numeracy is not just simply using numbers in a maths problem but it is:

- breaking the problem down into more manageable parts,
- logical deduction,
- hypothesising,
- predicting and testing.

Something which all subjects should recognise in the pursuit of well-rounded success in understanding tasks, engaging responses and structuring to questions posed.

Since the change to the 9-1 GCSEs most subjects have an increased quantity of numeracy marks.

How will numeracy be coordinated across Bramhall High School?

- Using INSET time and departmental time the numeracy coordinator will provide guidance of how we would like certain approaches to happen, possible scenarios that may activate a conversation regarding numeracy in lessons.
- Problems and skills to share in Core Time e.g. Numeracy Ninjas
- School wide competitions and inter form events.

- Numeracy facts and its use in the wider world will routinely be shared via core time activities and on the TV screens. Numeracy displays will be routinely updated with topical content.
- Numeracy information and its importance will routinely be shared through the bulletin, to ensure that parents appreciate the value of these life skills.

Consistency across the curriculum

General strategies:

- Running through an example with 'easy' numbers first.
- Checking answers with an estimation.
- Do the units or results 'make sense' in the context of the question?

Calculators

- Use of calculators allows freedom from repetitive difficult calculations. Students should have open access to calculators (preferably their own) but be encouraged to use them sensibly e.g. not for working out simple calculations. Where possible students should be encouraged to keep the same calculator for the duration of their time at Bramhall High School, so they become familiar with it.
- It is good practice to always estimate answers before using a calculator.
- Sensible rounding is expected (staff to advise re subject requirements).
- Students should be encouraged to set down method working, whether using a calculator or not. Answers only should **NOT** be acceptable.
- Care must be taken when students are using basic calculators as the order of operations is often not always in-built (remember "BODMAS" – brackets, orders, divide/multiply, add/subtract). New scientific calculators on mobile phones often do calculations in the order they are entered.

Number

- In all arithmetic, the importance of place value should be stressed, e.g. 8p is 0.08 unless working in pence.
- When referring to decimals, say "three point one four" rather than "three point fourteen".
- In a line of working, an "equals" sign should appear only once. Working should develop down the page, with equal's signs in line. (The following is **poor** practice: $6 \times (3 + 4) = 7 = 6 \times 7 = 42$, as students are equating unequal things.)
- Emphasise the link between fractions, decimals, ratios and percentages. The % button needs to be used with care. Note, however, that the fraction button is very useful.
- The correct written form of numbers in standard form must be used, i.e. a calculator display of 1.5763₀₃ must be written as 1.5763×10^3

Algebra

- Running through a formula with "easy" numbers may aid student understanding.
- Trial and improvement is an acceptable mathematical method.

Shape, Space and Measures

- The word "similar" in mathematics is used to describe objects that are exactly the same shape, but not necessarily the same size - one object is an exact scaled version of the other.
- Work is done in mathematics on common Imperial units and their metric equivalents. Technology needs students to be particularly familiar with millimetres.
- Appropriate units must always be stated; e.g. in answers, **graph axes** etc.
- Try not to add to the common confusion of 'mass' with 'weight'.

Summary: *it is better to use the term 'mass' instead of 'weight'.*

- We use the following language for bearings:

- bearings always start with 0° from North
- bearings are always measured clockwise
- bearings need the ° (degree) symbol
- bearings need 3 figures.

Handling Data

- Always use degrees when constructing pie charts; label sectors with the data or a key.
- All graphs should have a title and labelled axes, with units marked. All graphs should have accurately drawn axes that are to scale. Graphs should be re-drawn where this is not the case.
- When interpreting graphs, make sure students know what each "small square" represents on **each** axis.
- Encourage students to always consider whether an information graph axis should or should not start from zero in a particular case; and the implication of this.
- Bar charts are used to display discrete data and must have gaps between bars (data which is counted). Histograms have no gaps and are used to display continuous data (data which is measured).
- When using the term "average" please say "mean average" (or median).
- Probabilities should be written as fractions, decimals or percentages and definitely not as "1 in 7" or "1 out of 7" or "1:7".
- When reading off the gradient of a line, ensure that students have a full understanding of the scale on each axis.
- Line graphs should be: straight lines drawn with a ruler and pencil; **or** smooth curves drawn with a pencil and no ruler.

A numerate pupil is one who:

- Has a sense of size of a number and where it fits into the number system;
- Knows certain facts by heart and can recall them quickly;
- Is able to answer questions using mental arithmetic, on paper or using a calculator;
- Explains their methods and reasoning using correct mathematical terms and vocabulary;
- Judges whether their answers are reasonable and have strategies for checking them where necessary;
- Makes sensible estimates of measurements and measure accurately using appropriate units of measurements;
- Can explain and make predictions from numerical data in a graph, chart or table.

The details of how this will be developed at BHS and how impact will be measured is detailed in the Cross Curricular Numeracy Development Plan. This will be developed and adapted on an annual basis.