Leigh Academy Rainham

Numeracy Strategy

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Policy Status	
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Sections

1. Introductory statement

At Leigh Academy Rainham (LAR) we are committed to developing highly numerate students. The purpose of this policy is not only to raise standards but also to ensure consistency across the Academy and so allow the students to transfer skills from one area of the curriculum to another with greater ease.

Definition

At LAR, numeracy is a proficiency which is developed not only in Mathematics but also in other subjects. It is more than the ability to perform basic operations, it involves developing confidence and competence with numbers and measures. It requires understanding the number system, a plethora of mathematical techniques and an ability to solve problems in a range of unique contexts. Being numerate also demands an understanding of the ways in which data is gathered and shared through graphical and diagrammatic representations. Numeracy is not only a way of improving results in Mathematics, but is also a mathematical and statistical skill which promotes student learning and progress in other areas of the curriculum.

2. The Why

Improving levels of numeracy allows students to function meaningfully within society, it provides them with:

- competence and confidence in mathematical knowledge, concepts and skills
- an ability to work systematically, logically and accurately
- the ability to work independently and cooperatively with others
- an ability to communicate effectively, through appropriate notations
- the ability to apply mathematics across the curriculum and beyond the Academy
- an understanding of how mathematical knowledge is generated

2. The How

Through consistent approaches to learning across the curriculum the LAR staff will ensure all students receive the best possible learning experience.

Teachers of Mathematics 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 misconceptions likely to be experienced
- 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 Mathematics lessons.

Teachers of subjects other than Mathematics will:

Promote the importance of numeracy, particularly the importance of accurate use of statistics, data and scientific method in enquiry, specifically they:

- should be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills
- they may provide information for Mathematics teachers on the stage at which specific numeracy skills will be required for particular groups, and
- may provide resources for Mathematics teachers to enable them to use examples of applications of numeracy relating to other subjects in Mathematics lessons.
- as some rules and conventions are subject specific, teachers of other subjects involving high levels of subject specific numeracy should ensure that they are familiar with correct mathematical language, notation, conventions and techniques, relating to their own subject and ensure students use them accurately.
- Provide additional support to students through Maths Progress Clinic and notify parents when students are behind their peers.

Examples:

- For multistep problems each step should be on a separate line:

  This encourages misconceptions and incorrect notation 2 x3 = 6 x4 = 24 -9 = 15 /3 = 5

  This encourages accuracy and a systematic approach:

  2 x 3 = 6

  6 x 4 = 24

  24 – 9 = 15

  15/3 = 5

- Any calculations involving measurements should include units in the answers where appropriate – some quantities, such as refractive index do not have units
- In Maths, for multistage calculations no intermediary answers should be rounded if they will be used again in finding the final answer. This is not a requirement at GCSE or A-level science, although it is good practice.
- If a final answer is rounded the degree of accuracy (in science this word should be precision) to which it has been rounded should be stated eg (2dp) or (3sf). In science it is a requirement that answers should be rounded to the same number of significant figures as the data provided in the question. Answers in science should *never* be given

as fractions, multiples of π, square roots or with a dot indicating a recurring number, but always to 2 sf or 3 sf, otherwise marks are deducted in science exams.

- All graphs should be drawn in pencil, have uniform scales, a title, labelled axis and where appropriate the independent variable on the x-axis. A line of best fit should either be a smooth curve or a straight line drawn using a ruler.
- All maps should show an appropriate scale or should be labelled 'not to scale'.

Teachers of Mathematics will support other departments by:

This is a list of the main Mathematics topics that are engaged with in various subject areas across the curriculum. Each subject is attached to a teacher of Mathematics. This teacher will be able to support the department with the mathematical pedagogy associated with the teaching of these topics.

Subjects	**Maths Topics**	**Maths Support**
Science (LBE)	Statistical graphs, charts and tables: data, bar charts, Graphs including lines of best fit, proportionality, Fractions, percentages, ratios. Probability. Algebraic symbols. Equations and Formulae. Calculations (including estimation and multiplicative. Use angular measures in degrees. Standard form and significant figures	AKI
Geography (MMU)	Statistical graphs, charts and tables: data, bar charts Design data collection sheets, collect and analyse data Averages and spread Graphs and bivariate data including lines of best fit, proportionality, Percentages and ratios. Visualise and represent 2-D and 3-D forms, including. Calculate areas of triangles and rectangles, surface areas.	SFA

	Units and compound units, including conversion between.	
History (AGU)	Chronology and timeline (sense of time, BC and AD) Roman numerals Use of statistics to strengthen arguments Graphs to describe trends Scales to measure significance	SFA
MFL (PFE & ATO)	Sequencing Telling the time Dates Percentages and statistics Interpreting and analysing by using quantitative and spatial information Algebra and application of rules for syntax and grammar	SFA
Design and Technology (LJO)	Decimal places Significant figures Ratio Percentages Standard form 2D and 3D shapes Area Volume Working with data Measuring and use of units Using a protractor and other instruments	MWI
Art (VSW)	Tessellation 2D and 3D shapes Geometric patterns Sequences Ratio and proportion	DHE
Food Technology (JPO)	Convert units Scale recipes Manage kitchen inventory and costs Computation skills Fractions Decimals	MWI

	Percentages Geometry	
Music (ACO)	Sequencing and number patterns	EFO
Computer Science (JCO/DSH)	Linear algebra Probability Statistics Matrices Number theory Information theory Graph theory Logic Binary Maths Calculus Discrete maths	EFO
Physical Education (JGE)	Sequencing, number patterns and algebraic thinking Fractions for court marking Angles for projectile motions to analyse performance Interpreting and representing data Comparing and understanding units of measure Positioning and locating Measuring time	SBL
Dance (SRO)	Sequencing and number patterns	DHE
Religious Education (SOL)	Chronology of time Use of statistics to strengthen arguments Graphs to describe trends	SFA
Life Skills (SRO)	Collecting, presenting and interpreting discrete data Calculation with measure	DHE
Travel and Tourism (MMU)	Collecting, presenting and interpreting discrete data Calculation with measure	AKI
Retail Business (JCO)	Percentages eg profit and loss Use of quantitative information to strengthen arguments Analysing trends Collecting, presenting and interpreting discrete data Calculation with measure	MWI