



Archbishop Temple School

A Church of England Specialist College

NUMERACY POLICY

Date Agreed : February 2021

To Be Reviewed : February 2024

Name of Policy: Numeracy Policy

Sub-Committee Responsible: Education & Curriculum Committee

Lead Responsibility in School: Assistant Headteacher

Source of Policy: (Please tick)

- LA:**
- Diocesan:**
- School: X**
- Other – Please specify:**

This policy supports our work as a Church school as summarised in our Vision Statement:

Purpose

Archbishop Temple School seeks to care for young people and prepare them well for adulthood, valuing the whole person.

Mission

Through our faith in God, Father, Son and Holy Spirit, we strive to nurture each person's ability, gifts and talents so that they can 'have life and have it to the full' (John 10:10) and use it in the service of God and other people.

Aims:

All teachers are teachers of numeracy. We are committed to raising the standards of numeracy of all our students, so they develop the ability to use numeracy skills effectively in all areas of the curriculum and the skills necessary to cope confidently with the demands of further education, employment and adult life.

Our aim is to:

- Develop, maintain and improve standards in numeracy across the school. Ensure consistency of practice including methods, vocabulary, notation, etc.
- Indicate areas for collaboration between subjects.
- Assist the transfer of students' knowledge, skills and understanding between subjects.
- Promote numeracy as an important life skill and recognise its development as a basic entitlement for every pupil.

Rationale:

- Raising standards in numeracy across our school cannot be solely judged in increased test percentages. There is a need to evaluate the students' ability to transfer mathematical skills into other subject areas and during tutor time, applying techniques to problem solving.
- Numeracy skills enable students to understand and interpret numerical and graphical information. This facilitates improvement in students' abilities to make their own judgements and to draw sensible conclusions from information.
- All subjects depend on students having competence in basic numeracy skills.
- If students' numeracy skills are not developed and used they may well be denied the opportunity to develop the level of understanding of some topics or subjects at the level expected for their age.
- Developing basic numeracy skills builds confidence, self-esteem and allows the learner to develop independence.
- Students must be confident in areas such as arithmetic, ratios and proportion. Students will also be encouraged to apply themselves in different ways to non-routine problems, solve real-world problems and demonstrate financial literacy.

What is Numeracy?

The Framework for **Teaching Mathematics DfES** states that '*Numeracy is a proficiency that is developed 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. Numeracy 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, as presented in graphs and diagrams, charts and tables.*'

In addition, the **New National Curriculum 2014** (page 10) states that: *Teachers should use every relevant subject to develop students' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum.*

Teachers should develop students' numeracy and mathematical reasoning in all subjects so that they understand and appreciate the importance of mathematics. Students should be taught to apply arithmetic fluently to problems, understand and use measures, make estimates and check their work. Students should apply their geometric and algebraic understanding, and relate their understanding of probability to the notions of risk and uncertainty. They should also understand the cycle of collecting, presenting and analysing data. They should be taught to apply their mathematics to both routine and non-routine problems, including breaking down more complex problems into a series of simpler steps.

The numerate pupil:

- Has a sense of the size of a number and where it fits into the number system.
- Will be able to formalise written methods of calculation.
- Will be able to use ratio, proportion and rates of change.
- Will be able to provide clear mathematical arguments.
- Will focus on problem-solving, which may require multi-step solutions.
- Reads numbers correctly from a range of meters, dials and scales.
- Knows basic number facts and recall them quickly and confidently.
- Uses what is known to work out answers mentally.
- Uses calculators and other ICT resources appropriately and effectively to solve mathematical problems.
- Makes sense of number problems, recognises the operation(s) needed and can work confidently with numbers.
- Knows when answers are reasonable and gives results to an appropriate degree of accuracy.
- Is able to manipulate algebraic expressions and simple formulae.
- Understands and uses correct mathematical notation and terminology.
- Is able to explain methods, reasoning and conclusions.
- Uses units of measurement of length, angle, mass, capacity and time; can suggest suitable units for measuring, makes sensible estimates of measurements and measures accurately using a range of instruments.
- Understands and uses compound measures and rates.
- Uses simple formulae and substitutes numbers into them.
- Measures and estimates measurements, choosing suitable units and calculate simple perimeters, areas and volumes.
- Draws plane figures to given specifications and appreciates the concept of scale in geometrical drawings and maps.
- Understands the difference between the mean, median and mode and the purpose for which each is used.
- Collects data, discrete and continuous and draws, interprets and predicts from graphs, diagrams, charts and tables.
- Understands concepts of probability and risk.

Roles and Responsibilities:

Every maths teacher will:

- Work together to ensure there is consistency of practice across the school.
- Use INSET and coaching to support other staff to gain a better understanding of key numeracy and problem solving skills and mathematical techniques which need to be promoted so that a correct and consistent approach is used in all subjects.
- Will share information with other subject teachers on appropriate expectations of students and difficulties likely to be experienced in various age and ability groups.
- Will seek opportunities to use topics and examination questions from other subjects in mathematics lessons.

Teachers of subjects other than mathematics:

- Will ensure they are familiar with correct mathematical language, notation, conventions and techniques, relating to their own subject, and encourage students to use these correctly.
- Will be aware of appropriate expectations of students and difficulties that might be experienced with numeracy skills.
- Will provide information for mathematics teachers on the stage at which specific numeracy and problem solving skills will be required for particular groups.
- Will provide resources for mathematics teachers to enable them to use examples of applications of numeracy relating to other subject in mathematics lessons.
- Will encourage clear and accurate presentation of solutions to problems as it supports logical thinking.
- Will use ICT to support students' numeracy skills.
- Where appropriate use methods and procedures consistent with the Maths Department.
- Will encourage the development of problem solving skills, such as, logical thinking, systematic procedures and sound reasoning.

All Form Group Tutors:

- Will promote a positive image of mathematics and the impress upon all pupils the importance and relevance of being numerate in society, even with the increased availability of technology.

Examples of use of numeracy in other subjects:**Business Studies**

Basic financial terms calculating profit and loss. Interpreting simple cash flow statements. The importance of cash flow statements. Identifying solutions to cash flow problems.

Design & Technology

Various arithmetical calculations on decimals and fractions including ratio, use of formulae, percentages. Graphs and charts of all kinds. Construction and measure of 2D and 3D shapes. Development castings.

Art

Islamic art and design; shape in 2D and 3D; simple ratios; perspective; Golden ratio. Escher tessellations. The art of Wassily Kandinsky and others use geometrical shapes.

Approach to Teaching

Teachers should strive to:

- Use effectively the data handling policy and measurement glossary to promote consistency of vocabulary and methodology.
- Build students' confidence when they are struggling with a calculation.
- Encourage students to understand the methods that they are using.
- Use mathematical language accurately and consistently within the department and across the school.
- Value students' different methods for calculation and regularly ask 'How did you do that?' and 'Did anyone do that a different way?'

Approach to Learning

Students should be encouraged to:

- Try all calculations and problem solving tasks themselves.
- Use mental calculation as the first step when faced with any calculation.
- Explain any calculation they have done by showing all their working out.
- Estimate before a calculation is done whenever possible.
- Consider the reasonableness of their answers after a calculation has been done.
- Use the appropriate method of presentation for the data.
- Correctly label a graph/chart.
- Know how to use all the relevant buttons on their calculator efficiently and effectively when it is appropriate and to be able to interpret the display.
- Choose and use appropriate units of measure.