

# Thomas Telford School



## **Whole School Numeracy and Catch up Policy**

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## **Introduction**

At Thomas Telford School, our mission is to cultivate well-rounded students who excel not only in academics but also in real-world scenarios. This comprehensive policy outlines a school-wide strategy to foster students' numeracy skills, including logical thinking, mathematical reasoning, effective mental arithmetic strategies, responsible calculator usage, cross-curricular collaboration together with a dedicated approach to Numeracy Catch-Up.

### **Purpose:**

- Elevate and enhance numeracy standards across the school.
- Ensure consistency in practices, encompassing methods, terminology, and notation.
- Improve students' ability to reason, solve problems, and integrate mental arithmetic strategies.
- Facilitate the seamless transfer of knowledge, skills, and applications across subjects, incorporating diverse mathematical skills with practical examples.
- Promote responsible and effective use of calculators.
- Provide targeted support for students requiring Numeracy Catch-Up.

### **Characteristics of a Numerate Student:**

- Confidence in solving problems requiring numerical skills.
- Proficiency in problem-solving across various contexts and subjects, incorporating mental arithmetic.
- Logical thinking and the ability to articulate their chosen problem-solving method.

### **Consistency of Practice**

Mathematics teachers should:

- Be cognizant of mathematical techniques used in other subjects, offering support and guidance to maintain a unified approach.
- Share information with other subject teachers regarding student expectations and potential challenges, including mental arithmetic strategies.
- Collaborate to ensure students possess appropriate numeracy skills when needed in other subjects, promoting mental arithmetic applications.
- Integrate topics and exam questions from other subjects into mathematics lessons, incorporating mental arithmetic where applicable.
- Provide detailed examples of mathematical skills, such as algebraic problem-solving, geometry applications, and statistical analysis.

### **Collaboration Areas**

Encouraged collaboration includes mental arithmetic techniques, written calculations, and the thoughtful use of calculators. Departments are urged to guide students toward efficient methods and techniques, emphasizing both mental and written approaches, particularly in mental arithmetic. It is vital that, as mathematical skills are taught, their practical applications are highlighted and, conversely, as applications are introduced, foundational skills are revisited.

All subject teachers should:

- Be familiar with correct mathematical language, notation, and techniques related to their subjects.
- Inform mathematics teachers about specific numeracy skills required for student groups, including mental arithmetic proficiency.
- Provide resources for mathematics teachers to incorporate examples of numeracy applications from other subjects, emphasizing mental arithmetic strategies.

## **Examples of Mathematical Integration in Other Curriculum Areas**

**Art:** Symmetry exploration and the use of paint mixing as a ratio context.

**English:** Comparison of two data sets related to word and sentence length.

**Hospitality and Catering:** Utilizing recipes as a ratio context, calculating ingredient amounts, and reading scales.

**Geography:** Representation and interpretation of data, including the use of spreadsheets.

**History:** Timelines and sequencing events in historical contexts.

**ICT:** Representation of data and thoughtful use of graphs, including formulae in spreadsheets.

**Modern Foreign Languages (MFL):** Incorporating dates, sequences, and counting in other languages, using basic graphs and surveys to practice foreign language vocabulary and reinforce data interpretation.

**Music:** Understanding fractions and applying mathematical concepts to timing in musical contexts.

**Physical Education:** Collection of real data for processing in mathematics, presenting data, estimation, time, and measurement.

**Religious Education:** Interpretation and comparison of data gathered from secondary sources (internet) on topics such as the developing and developed world.

**Science:** Application of mathematical skills in calculating with formulae, developing graphing skills, and representing and interpreting data.

**Technology:** Utilizing measuring skills, understanding units of area and volume, considering scale, practical equipment, and proportion.

**Business Studies:** Calculation of profit and loss, finding percentage change, interpreting averages, and drawing/charts.

### **Vocabulary and Terminology**

Focus on key words, varied synonyms, and discussions about words with different meanings in mathematics compared to everyday language. Ensure students confidently understand mathematical terms across all subjects, including mental arithmetic terminology.

### **Transfer of Pupils' Knowledge**

Emphasize the importance of teaching skills alongside applications, including mental arithmetic strategies. The mathematics department leads the curriculum delivery, referencing applications in other subjects. Collaboration between curriculum areas is vital for students to confidently apply skills in various situations, incorporating mental arithmetic proficiency.

### **Whole School Plans**

- Learning overviews for mathematics -available on the school website -guide the timing of topics, fostering cross-curricular connections, and incorporating mental arithmetic.
- The school encourages numeracy skills through weekly Countdown challenges broadcasted across all Personal Tutor groups, with answers being provided by students in the sixth form.
- Teachers can consult with the Head of Department to align approaches and ensure consistency, including mental arithmetic integration.

### **Use of Calculators**

- All students are expected to bring their own scientific calculator to lessons when required.
- Students' first resort should be mental methods.
- Prior to using a calculator, students should have a sufficient understanding of the calculation to determine the most appropriate method.
- Students should possess the technical skills required to use the basic facilities of a calculator constructively and efficiently.
- Students must understand the four arithmetical operations and recognize which to use to solve a particular problem.
- When using a calculator, students should be aware of the processes required and evaluate the reasonability of their answers.
- Students should interpret the calculator display in context.
- Support is provided to ensure the correct order of operations, especially in multi-step calculations.

### **Numeracy Catch-Up Strategy**

In Year 7, students undergo assessments to identify those with numeracy skills below the expected standard. Identified students receive tailored support through a bespoke curriculum, smaller groups, and support from additional adults. Additional mentoring and one-to-one tuition, along with access to high-quality online resources, further support students assessed as requiring Numeracy Catch-Up. The strategy aims to bridge the gap between Key Stage 2 and Key Stage 3, ensuring continuous improvement in the development of a secure understanding of foundational numeracy skills. Throughout all years activities in lessons are planned to encourage wider thinking and embed long term retention; numeracy starters, end of topic tests (APPs), interleaving topics and concepts in the curriculum and frequent summative assessments (KAPs) of knowledge, skills and application identifies priorities for any further intervention and future delivery and allows teachers to gauge progress every module.

This combined policy ensures a rich and interconnected learning experience where mathematical skills are reinforced and applied across various subjects, preparing students for success both within, and beyond, the mathematics classroom.