

# Madras College

## Numeracy Policy



The Policy was adopted by the School Community: December 2015

*“Numeracy is a Proficiency which involves confidence and competence with numbers and measures. It requires an understanding of the numbers system, a repertoire of computational skills and an inclination and ability to solve number problems in a variety of contexts. Numeracy also demands practical understanding of the ways in which information is gathered by counting and measuring, and is presented in graphs, diagrams, charts and tables.”*

*“A Numerate pupil is one who has the ability to cope confidently with the mathematical needs of adult life. There should be an emphasis on the wider aspects of numeracy and not purely the skills of computation.”*

## **Mission Statement**

At Madras College we are committed to raising the numeracy standards of all our pupils. We want all our pupils to use transferable numeracy skills across the curriculum to make their progress in each subject more efficient and better defined. Furthermore, we want to empower our pupils beyond school; we want them to use and develop these skills to be successful in further education and in everyday life. Numeracy at Madras will go beyond mathematic knowledge and computational skills; it will develop the pupil’s ability to be systematic through problems involving numbers, shapes, space and measures.

All staff at Madras will:

- I. Support the pupils understanding of the size of a number and where it fits into a number system.
- II. Develop shared language and methods in areas where it is necessary to use established mathematical conventions.
- III. Support the development of a variety of methods to solve a problem such as written, oral and mental methods.
- IV. Develop the awareness of possible difficulties and common misconceptions in pupils understanding of numerical methods.
- V. Develop the pupils’ skills in estimation and approximation and have strategies for checking the reasonableness of their answers.
- VI. Empower pupils to explain their methods and reasoning using consistent language.
- VII. Communicate, when necessary, with the mathematics department and other departments regarding difficulties and successes in developing a pupil’s numeracy skills.
- VIII. Support the development of interpretation skills among pupils encouraging them to explain how and why certain predictions are made from information given in graphs, charts and tables.
- IX. Identify and share key numeracy skills and applications that occur in different curriculum areas within the school.
- X. Make explicit situations when pupils and staff are drawing on numerical skills to solve problems or interpreting information.
- XI. Encourage the use of written or mental methods to solve problems and only to use a calculator when appropriate.

- XII. Link with the Support Faculty to help deliver the core numeracy strategies determined to aid those pupils encountering basic numeracy problems.

*“The Acquisition of at least basic mathematical skills is vital to the life opportunities and achievements of individual citizens. Research shows that problems with basic skills have a continuing adverse effect on people’s lives and that problems with numeracy lead to the greatest disadvantage for the individual in the labour market.”*

*Smith, 2004 Making Mathematics Count*

Pupils at Madras will be expected to:

- I. Cooperate with the requests of staff at all times
- II. Revisit previous work whenever necessary to support their strategies when solving a problem, or to make notes of a problem that they need further assistance with.
- III. Attempt to use key words learnt in mathematics lessons to support their learning in other subjects.
- IV. Encourage parental involvement by sharing the work done in school and discuss where numerical skills have been used.
- V. Be able to refer to and use correctly the list of numeracy vocabulary and methods outlined in the Numeracy toolkit.

## Vocabulary and Literacy

To highlight the challenge of Numeracy vocabulary where words in a Mathematical context might be used differently outside that context, a list of vocabulary with ambiguous meanings is detailed below.

Word	Possible interpretation	Mathematical interpretation
Average	Estimate a general standard	Used synonymously with arithmetic mean; for a set of discrete data this is the sum of quantities divided by the number of quantities
Difference	Being dissimilar, non-identical	The result of subtraction
Even	Level or smooth	A positive integer that is divisible by two
Expression	Intonation of voice or aspect of face indicating emotion	A mathematical form expressed symbolically
Face	Front of head from forehead to chin	One of the flat surfaces of a solid shape
Mean	Small minded, malicious, ill-tempered	The arithmetic mean of a set of discrete data is the sum of quantities divided by the number of quantities

Negative	Image on developed film	A number less than zero
Odd	Extraordinary, strange, remarkable	A positive integer that has a remainder of 1 when divided by 2
Power	Mechanical or electrical energy as opposed to manual labour	This is a way of indicating how a number (symbol) must be operated on by using another number written as a subscript to the first (e.g. $x^2$ )
Prime	Chief or most important	A whole number greater than one has exactly two factors, itself and 1
Product	A thing or substance produced by a natural process or manufacture	The result of multiplying one number by another
Sign	Write one's name, a signature, important information displayed on a board	A quantity added or subtracted from others in an arithmetic or algebraic expression

### Language of operations

Some pupils may experience difficulty in associating terms with symbols. The table below outlines a range of words associated with the four Numeracy operators +, -, x, ÷

+	-	x	÷
Add	Decrease	Multiply	Divide
Increase	Difference	Of	Share
More	Less	Product	
Plus	Minus	Times	
Sum	Reduce		
total	Subtract		
	Take		

## Monitoring and Evaluating

To check that the policy is being successful the, mathematics department will:

- I. Monitor the levels and grades that pupils achieve from P7 through to S4.
- II. Distribute, or make available the Madras Numeracy Toolkit to all stakeholders.
- III. Occasionally carry out pupil interviews to ensure that pupils are making links between different curriculum areas.
- IV. Ask selected pupils to keep a diary for a week documenting when they have used mathematics in other subjects
- V. At the end of each academic year the numeracy policy will be discussed within the maths department and other departments to find areas of possible development and forward any possible suggested improvements to the SLT for consideration.
- Vi. Each May/June the Mathematics department will link with the primary cluster schools to help the P7 transfer of information in the evaluation of pupil progression in Level 2. This information will also be used to assist with cross sector feedback and support.

## Numeracy Toolkit

The [Numeracy Toolkit](#) will be the main source for highlighting the school's common approaches to carrying out numerical (and some mathematical) calculations.

It is the responsibility of each teacher to explicitly demonstrate connections to numeracy through their subject **where appropriate**.

*"We are numerate if we have developed the confidence and competence in using Number which allow us to solve problems, analyse information and make informed decisions based on calculations".*

*Curriculum for Excellence – Numeracy across Learning*