

### **Statement of Intent**

Madeley School is committed to:

- Developing, maintaining and improving standards in numeracy across the school.
- Ensuring consistency of practice, including methods, vocabulary, notation etc.
- Finding areas for collaboration between subjects.
- Assisting the transfer of pupils' knowledge, skills and understanding between subjects.
- Ensuring that all teachers are teachers of numeracy.

Teachers will use every relevant subject to develop pupils' mathematical fluency. Confidence in numeracy and other mathematical skills is a precondition of success across the national curriculum.

### **Definition**

- Numeracy is the capacity to take mathematics and apply knowledge, skills and strategies to deal with everyday life in a variety of situations. It includes being fluent in the four operations and the applications of these in a functional setting to solve problems whilst being able to reason numerically the decisions which have been made.
- Numeracy is key to function fully in modern day life.
- As such, numeracy is the responsibility of all staff within a school and, in fact, the responsibility of every numerate adult. (see appendix for examples of cross-curricular links)
- We recognise that quality teaching and learning across all subject areas has numeracy embedded in Schemes of Learning and lesson plans.
- Numeracy teaching is embedded within Form Time and monitored by the form tutor and Numeracy Lead. Numeracy classes will be introduced to the lower band of Key Stage 3.

Our Numeracy across the curriculum programme includes: Numeracy classes in lower band of Key Stage 3, specifically designed activities to be used in Form Time and a weekly focus of Problem of the Week, use of Numeracy Ninjas and Mental Maths tests in maths lessons.

### **Principles**

Although the school curriculum covers a range of subject areas, Madeley School recognises that numeracy is a whole school cross-curricular issue. Some of the strategies in place include:

- Encourage the use of mental work in the classroom. Routinely ask pupils how they worked something out. Encourage pupils to be clear about their strategies. Encourage talk by questioning to help internalise ideas, flesh them out and offer other strategies. Provide ample opportunities for discussion to explore ideas and enable pupils to learn from each other and from their teachers by sharing and comparing ideas. Let pupils use their own methods if they are confident about them.
- Use discussion to focus on the ways in which the answer was/can be calculated and the most efficient way of doing so.

- Encourage pupils to work answers out mentally or using pen and paper as a first resort. Allow the use of calculators when it is more efficient or it slows up work on other content areas (e.g. algebra).
- Provide opportunities for pupils to choose or devise their own methods. Query these methods when they are very inefficient (or wrong!).
- Present sums in a horizontal format to encourage mental methods.
- Encourage the learning of facts and skills.
- Encourage pupils to feel comfortable about using their fingers.
- Regularly ask pupils to consider “rough” answers. Invite them to estimate answers by approximating and using “nice” numbers.
- Sometimes give a quick mental test to check that pupils have done a learning homework.
- Encourage the learning of number facts. Provide short and often practice (and some homeworks) on the times tables (to 10 x 10), compliments to 10 and doubles of all of the digits. Have occasional quizzes on words: even, square, factor, prime, multiple etc.
- Use diagrams (e.g. a decimal scale) and manipulatives (e.g. interlocking cubes, counters, number cards, Cuisenaire rods) wherever possible to aid understanding, but recognise that language is probably vital to abstract ideas and make sense of such experience.
- Have a directed number line above the board in all classrooms (and also possibly a height measurer).
- Use common words at first, if necessary, then move quickly into ‘proper’ mathematical words. Have a Key Word Display to familiarise pupils with words and spellings. Put key words on the display & explain them clearly.
- Regular use of Mental Maths Assessments and Numeracy Ninjas to assess and improve mental strategies with in maths lessons.
- Raise awareness of the use and misuse of numbers as students should be aware that statistics and numbers can sometimes be misused. This is also taught through maths using misconceptions and mastery in looking at misleading representations in data.

### **Monitoring and Evaluating**

To ensure that we improve the numeracy competence of our pupils, careful monitoring of strategies and methodologies in place, need to be evaluated regularly. Ways in which this can be done include:

- Learning walks.
- Observations across departments.
- Working closely with staff to ensure consistency of approach
- Working closely with pupils, parents and learning support staff.
- Regular discussions at Department meetings.
- Working closely with the SENCO, to organise additional support for pupils needing help with numeracy issues.

## Numeracy Appendix

Every effort is made to link Mathematics with other areas of the curriculum. We aim to draw pupil's attention to these links (nice activity in the Plenary). The table below lists some examples – this is not an exhaustive list.

<b>English</b> Frequency of words(e.g. Shakespeare vs Bacon). Bar charts, pie charts Surveys Line graphs -charting emotional response.	<b>Science</b> Various arithmetical calculations on decimals and fractions including ratio, use of formulae, percentages. Graphs and charts of all kinds. Shape in 2-D and 3-D. Golden ratio/Fibonacci sequence(biology)	<b>Art</b> Islamic Art. Shape in 2-D and 3-D. Simple ratios. Perspectives and golden ratio. Escher – tessellations. The art of Wasilly Kandinsky, Piet Mondrian, Theo Doesburg and others use geometrical shapes. Cubism	<b>Design and Technology</b> Various arithmetical calculations on decimals and fractions including ratio, use of formulae, percentages. Graphs and charts of all kinds. Construction and measure of 2-D and 3-D shapes. Nets.
<b>Geography</b> Various arithmetical calculations on decimals and fractions including ratio, use of formulae, percentages. Graphs and charts of all kinds. Population growth. Hairy ball theorem. 4 figure (or more) grid references.	<b>History</b> Graphs and charts of various kinds. Percentages, ideas of large numbers, wealth. Measures of weight, length, time. Using the number line effectively. Interrogating databases.	<b>ICT</b> Spreadsheets, databases, algebra, flowcharts.	<b>Modern foreign languages</b> Measures of length/distance, time and weight, counting, tables, exchange rates, Money/costs. Speeds, distance.
<b>Music</b> Pythagorean intervals. Fractions, square roots. Doubling frequencies (powers of 2). Aleatory music (using dice to compose). Golden section used by Debussy and Schubert	<b>PE</b> Speed/distace/time, units, weight, graphs and charts, percentages, power/weight ratios. Calculations of energy expanded.	<b>RE</b> Shape – e.g. Pentagon – 5 pillars of Islam. Octagon – eightfold path. Circle. Dates AD and BC Calendar years and years of other faiths. Examples of $\Pi$ e.g. 1 Kings Chapter 7 verse 23 $\Pi=3$ .	

### Policy Review:

Signed by: ..... (Principal)      Signed by: ..... (Chair of Academy Council)

Date: .....

Next Review Date: June 2024