

Mathematics Policy

Thorntree Academy



2020-2021

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1: Curriculum Intent

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (National Curriculum 2014)

The intent of mathematics in Thorntree Academy is to develop:

- a positive attitude towards mathematics and an awareness of the relevance of mathematics in the real world
- competence and confidence in mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately.
- initiative and an ability to work both independently and in cooperation with others
- an ability to communicate mathematics
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and experiment
- children's fluency, reasoning and problem solving skills through a series of small steps in concepts

2: What does mathematics look like at Thorntree Academy?

2.1 Concrete, Pictorial, Abstract

Across school, maths is presented to all groups of learners in different ways to ensure children gain a deep understanding of concepts. Children are supported in their learning through concrete and pictorial resources. These resources are available for all children to use and access within lessons. Abstract problems are given to children to ensure they can apply the concepts they have been taught out of context.

2.2 Secure Understanding of Multiplication and Division Facts

School uses and tracks children's understanding of multiplication and division facts through the use of times tables booklets and Times Tables Rock Stars. The subject leader monitors the children's progress at age related knowledge through the collection of data from TTRS and through monitoring of the times table chart scheme.

2.3 Thorntree Academy Multiplication Tables Policy

To ensure that all children at Thorntree Academy are able to instantly recall time tables facts, the following overview for teaching should be followed:

Year 1:

Autumn 1- 1x Tables (no division facts)
Autumn 2- 10 x Tables to 6 (no division facts)
Spring Term 1- 10 x tables to 12 (no division facts)
Spring Term 2- 2 x tables to 6 (no division facts)
Summer 1- 2x tables to 12 (no division facts)
Summer 2- 5 times tables to 12 (no division facts)

Year 2:

Autumn 1- 5x tables to 12 including division facts
Autumn 2- Recap 2,5 and 10 x tables with division facts
Spring Term 1- 4x tables to 12 including division facts
Spring Term 2-8x tables to 12, making explicit links to 4x tables and including division facts.
Summer 1- 3x tables to 12 including division facts.
Summer 2- 6x tables to 12, making explicit links to 3x tables and including division facts.

Year 3:

Autumn 1- 3 and 6 times tables recap plus division facts
Autumn 2- 9 times tables making explicit links to the 3 times tables
Spring 1- 7 times tables to 12 including division facts
Spring 2- 11 times tables to 12 including division facts
Summer 1- 12 times tables to 12 including division facts, making links to the 6 times tables
Summer 2- Recap of all times tables.

Y4-6 will teach the children based on need until 3 cycles of the above plan have completed.

The above is the outline for teaching within the first 15 minutes of maths lessons.
Children should continue to complete their times tables charts. ALL children should have their times tables chart matched to the tables they are accessing on Times Tables Rock Stars.

MF to monitor weekly.

2.4 Maths in Early Years

In Early Years, children are immersed in mathematics within their learning areas. Concepts are taught throughout the week which are then reinforced through activities designed to be accessed during independent play. Children are supported through the use of resource such as Numicon to give them the experience of what numbers actually look like.

To ensure pupils enter Y1 ready to access the National Curriculum, staff at Thorntree Academy recognise that it is vital to ensure that the following ELGs are met:

- Children count reliably with numbers from 1 to 20.
- They place them in order.
- They say which number is one more or one less than a given number.
- Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.
- They solve problems, including doubling, halving and sharing.

2.5 Maths in Y1-Y6

At Thorntree Academy, we believe strongly that all children, regardless of ability, should experience the same high quality teaching. This is to ensure that all pupils receive appropriate challenge and are able to value their own potential. Maths is planned to ensure all pupils experience fluency, reasoning and problem solving activities to either, develop, consolidate or master their learning. Within lessons, teachers set pupils off at their own pace which may mean certain groups of children start independent work from the outset; equally it may mean that certain groups of learners receive adult guidance and scaffolding throughout a whole session. There may be sessions where different groups of children are working on different tasks and lessons where all pupils work on the same tasks. Where the children work on the same task, these are 'Low ceiling, high threshold tasks' meaning that all abilities can access the task in some form. The differentiation comes through skilled teaching to move the children's understanding and reasoning forward.

2.6 When is Mathematics taught?

Maths is taught on a morning for approximately 1 hour and 15 minutes.

Times tables is taught for 15 minutes daily. This session is the opportunity for games, Times Tables Rock Stars or to teach the links between times tables.

Maths is taught for 1 hour a day. In these sessions, children access a range of retrieval activities and are exposed to new curriculum content.

3: Curriculum Organisation

Staff at Thorntree Academy, use the newly introduced Scheme of Work (Appendix 1) to support teaching. This identifies what should be taught and when across the school year. To support this, there is a suggested objective coverage attached to

each year group's Scheme of Work to ensure appropriate pitch and coverage. Within each area of maths, teachers use information from formative and summative assessment to prioritise their teaching. Use of the PIXL Personalised Learning Checklists supports this process. Thorough, granular planning then unpicks the steps to success and plots appropriate retrieval opportunities for children to ensure they remember.

4: Calculation Policy

To support teaching, school uses a calculation policy to support the use of concrete, pictorial and abstract methods.

5: Assessment in Maths

Pupils are assessed weekly by class teachers and evidence is recorded in teacher assessment files. At least 6 key marginal pupils working at B1/A2 are tracked. Workbooks are used as an indication of the progress pupils are making. Pupils are also tested throughout the academic year to support the teacher assessment judgement using PIXL tests. These tests provide the test strengths and weaknesses of each individual child and allow a plan to be devised to address gaps. In EY, children are assessed against the ELGs through workbook evidence and observations within sessions. Maths is discussed with SLT at pupil progress meetings.

6: Monitoring Arrangements:

The subject leader of maths, alongside SLT, is responsible for the monitoring maths. Regular lesson observations, book looks and data analysis are used to inform the current standards within maths. The maths subject leader works within phases during maths lessons to monitor teaching and learning. This information is then communicated with governors through a formal written report and presentation. Timescales and deadlines can be found in our current whole school monitoring plan.

Year 1 Programme of Study						
Autumn Term	Place Value(within 10)	Addition and Subtraction(within 10)	Geometry: Shape		Place Value (within 20)	
Spring Term	Addition and Subtraction (within 20)	Number: Place Value (within 50) (Multiples of 2, 5 and 10 to be included)	Measurement: Length and Height		Measurement: Weight and Volume	
Summer Term	Number: Multiplication and Division (Reinforce multiples of 2, 5 and 10 to be included)	Number: Fractions	Geometry: position and direction	Number: Place Value (within 100)	Measurement: money	Time
Year 2 Programme of Study						
Autumn Term	Number: Place value	Number: Addition and Subtraction	Measurement: Money		Number: Multiplication and Division	
Spring Term	Number: Multiplication and Division	Statistics	Geometry: Properties of Shape	Number: Fractions	Measurement: length and height	
Summer Term	Position and direction	Problem solving and efficient methods	Measurement: Time		Measurement: Mass, Capacity and Temperature	
Year 3 Programme of Study						
Autumn Term	Number – Place Value		Number – Addition and Subtraction		Number – Multiplication and Division	
Spring Term	Number - Multiplication and Division		Measurement: Money	Statistics	Measurement: length and perimeter	Number - Fractions
Summer Term	Number – fractions	Measurement: Time	Geometry – Properties of Shapes		Measurement: Mass and Capacity	
Year 4 Programme of Study						
Autumn Term	Number – Place Value		Number- Addition and Subtraction		Measurement- Length and Perimeter	Number- Multiplication and Division
Spring Term	Number- Multiplication and Division		Measurement- Area		Fractions	Decimals
Summer Term	Decimals	Measurement- Money	Time	Statistics	Geometry- Properties of Shape	Geometry- Position and Direction
Year 5 Programme of Study						
Autumn Term	Number – Place Value		Number – Addition and Subtraction	Statistics	Number – Multiplication and Division	Perimeter and Area
Spring Term	Number – Multiplication and Division		Number – Fractions		Number – Decimals & Percentages	
Summer Term	Number – Decimals		Geometry- Properties of Shapes	Geometry- Position and Direction	Measurement- Converting Units	Measures Volume
Year 6 Programme of Study						
Autumn Term	Number and Place Value		Addition and Subtraction		Number and Place Value	
Spring Term	Multiplication and Division		Fractions		Number and Place Value	
Summer Term	Measures		Geometry		Statistics	Algebra