

TVED Mathematics Policy

"No employment can be managed without arithmetic, no mechanical invention without geometry."

Benjamin Franklin

Trust Intent

At TVEd, we recognise that mathematics 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, and a sense of enjoyment and curiosity about the subject.

Learning maths and the language of mathematics is a little like learning a foreign language. All the pieces need to connect and fit together for something to make sense as a whole. As children become fluent in the language of mathematics and become increasingly able to reason and explain their thinking mathematically they become increasingly able to solve problems in a range of contexts, noting connections between areas of maths and proving their answers by using a wide range of mathematical thinking.

Aims of policy:

- To create a lively, exciting and stimulating environment in which the children can learn maths,
- To promote the concept that acquiring maths knowledge and skills provides the foundation for understanding the world around the children,
- To develop mental strategies through the implementation of Schofield and Sims,
- To encourage children to use mathematical vocabulary to reason and explain,
- To allow time for partner talk in order to stimulate and develop a curiosity for maths,
- To challenge children to stretch themselves and take risks in their learning,
- To create a sense of awe and wonder surrounding maths,
- To ensure children in Key Stage 1 are secure in their understanding of number and number relationships and
- To deliver maths in line with new National Curriculum guidelines.

Objectives

Children at TVEd will leave Year 6:

- fluent in mathematics and 'number happy';
- able to reason and explain mathematically using metacognitive strategies to support them;
- able to solve problems which allow them to apply their maths knowledge.

Statutory requirements

Statutory requirements for the teaching and learning of mathematics are laid out in the National Curriculum in England: Mathematics Programmes of Study – Key Stages 1 and 2 (2013) and in the Number and Shape, Space and Measure sections of the Statutory Framework for the Early Years Foundation Stage (2021). The Mathematics programme of study is based on four areas: Number, Measurement, Geometry and Statistics.

In the Foundation Stage

Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

At Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools).

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

In lower Key Stage 2

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

In upper Key Stage 2

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages. Pupils should read, spell and pronounce mathematical vocabulary correctly.

Curriculum delivery

At TVEd, children are taught mathematics within their classes. Through well-planned, differentiated and well-resourced lessons, all pupils receive high quality teaching and appropriate support in order for them to reach their full potential. All lessons have clear learning objectives and success criteria that make it explicit to the children what the new knowledge or skill is that they are learning about. Working walls and challenge areas are a key feature in every classroom; they are used as an effective resource to support the learning during lessons.

Cross-Curricular Opportunities for Mathematics

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Within every Science topic, children will also develop their mathematical skills. This will help children appreciate how to *Work Scientifically* but also practise discrete mathematical skills. Nevertheless the prime focus should be on ensuring *mathematical progress* delivered discretely or otherwise.

Assessment and Target Setting

Work will be assessed in line with Trust's assessment policy for mathematics. TVEd have developed mathematic assessment frameworks, based on the demands of the new curriculum, to assess progress in mathematics. Moderation of mathematics and teacher judgements takes place termly. Assessment for learning is ongoing and is used to ensure every child reaches his or her potential. Focused marking ensures relevant feedback is given to children and new areas for development are targeted. Early Years assessment of mathematics is based on ongoing observation and assessment. Assessments are based primarily on observations of daily number and shape, space and measures in which staff particularly note the learning the children demonstrate spontaneously, independently and consistently in a range of contexts.

Inclusion

We aim to provide for all children so that they achieve as highly as they can in mathematics according to their individual abilities. We will identify which children or groups of children are under-achieving and take steps to improve their progress. Children with SEND will have targets appropriate to their ability and learning will be tailored to meet their individual needs. Gifted and talented children will be identified and suitable learning challenges will be provided. Progress of all groups of children will be carefully tracked and monitored.

Learning environment

Our classrooms and displays are seen as learning tools; we encourage our children to use the working walls and challenge areas as an effective resource to support them in their learning. Using the learning environment, all skills are transferrable and learning is applied across a range of contexts, ensuring intrinsic links between mathematical strands are made and pupils are regularly given time to consolidate learning. Through the learning environment, children are empowered and supported to build independence when working.

Role of the Mathematics subject leader

The Subject Leader is responsible for improving the standards of teaching and learning in mathematics through:

- monitoring and evaluating mathematics - pupil progress and analysis of data, provision of mathematics and Schofield and Sims, ensuring the breadth and balance of the curriculum; mathematics across the curriculum, the quality of the learning environment; taking the lead in policy development;
- auditing and supporting colleagues in their CPD;
- purchasing and organising resources;

- communicating with the Senior Leadership Team, teaching staff and support staff;
- guidance, support and training for parents and carers;
- keeping up to date with recent mathematical developments.

Staff development

At TVEd, staff development is undertaken in the following ways:

- Identifying areas for development during Performance Management reviews (personal development)
- In the academy Review and Development Plan or the Trust Review and Development Plan
- Discussion with the Head Teacher, Trust Mathematics Leader or the academy Mathematics Leader
- Making staff aware of relevant courses
- Observation and feedback
- Whole academy or Trust INSET
- Visits to leading mathematics teachers when appropriate

Parental involvement

We aim to involve parents directly in the life of their children's academy, and thus in the development of children's skills, knowledge and understanding in mathematics.

- parents are encouraged to help children in learning mathematical facts, times tables and skills linked to homework;
- there are opportunities each term when parents can discuss their children's progress with their teacher;
- trust curriculum newsletters provide information about the mathematics curriculum and how parents can support their children;
- parental workshops are delivered to inform parents about calculation methods in mathematics.

Mathematics at Dormanstown Primary Academy

Academy Intent

At Dormanstown Primary Academy our children are entitled to an excellent mathematics education. We will ensure that children have the essential mathematical knowledge and have frequent opportunities to apply this to a range of reasoning and problem solving tasks both within maths and across other subjects. Our expert teaching is rooted in cognitive science and underpinned by a well sequenced, knowledge rich curriculum, explicit teaching to extend their understanding of mathematics vocabulary, frequent opportunities to revisit their learning and responsive teaching and effective feedback approaches.

Academy Specific Variation

Retrieval Practice – From Year 1 onwards the children participate in daily spaced retrieval to ensure that learning sticks through practice and retrieval of previously taught knowledge from the long term memory. This is used to answer the fluency, reasoning and problem solving questions that the children are presented with and builds lasting learning.

Planning – When planning a unit of work consideration is given to prior vocabulary being revisited and prior knowledge being activated. Through the Science of Learning, it is known that working memory is finite, so pupils are helped to focus on what matters by chunking new knowledge, making new concepts explicit, distinct and clear. Meaningful connections are made between old and new learning and ways of applying this are planned. Teachers also consider the misconceptions that may occur and how these barriers will be overcome.

Responsive Teaching – From the clear learning outcomes set when planning, our responsive teaching approach is able to identify what learning has been understood and where misconceptions have arisen. Children are provided with specific feedback to allow them to develop their understanding and take responsibility for improving their own work. Teacher's assessment helps them to recognise when practice had moved from performance to learning.

Times Tables – These are a priority area around the academy and some form of times tables work is undertaken daily in classes. This can include, chanting, games, recall or the application of tables in programs such as Times Tables Rockstars. Children's achievements in this are celebrated through sharing of certificates with the children and weekly winners being posted on the academy BLOG for parents/carers.

