Maths at Ludlow Primary School

Our Curriculum Drivers at Ludlow Primary School			
Confident Communicator	Citizen of the World	Growth Mindset	Healthy Body Healthy Mind
Our Core Values			
Independence	Happiness	Honesty	Kindness

When Ludlow Primary School was created in 2019 from the amalgamation of Ludlow Infant and Ludlow Junior School, we had the exciting opportunity to consider our school community's needs and create a curriculum specifically tailored for them.

We have devised four drivers that run through our school curriculum. They are tailored to our pupil's specific needs and take account of the opportunities and challenges in the context of our school community and our pupils' lives.

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 and therefore provides a foundation for understanding the world.

CURRICULUM INTENT

What Maths looks like in our school:

- A curriculum which caters for the needs of all individuals
- Provision for flexibility to enable children to work with different people over the course of time, depending on their skills/confidence in the different focuses
- Daily basic skills outside of the daily maths lesson
- Independent use of Maths help desks in all classrooms
- Haylock and Cockburn approach (Concrete, pictorial, abstract)
- Daily White Rose Reasoning & Problem-solving opportunities
- Questioning is a key part of the maths lesson – letting the children demonstrate what they know and challenging them every step
- Pupils are required to explore maths in depth, using mathematical vocabulary to reason and explain their workings
- A well planned ready-to-progress criterion for each year group which links to pupils' prior knowledge and future applications
- Structed daily interventions to help close the gaps for targeted children
- Mastering number sessions delivered in every year group across the school.
- A focus on oracy through use of the Voice 21 talk tactics.

This is our philosophy:

- To become fluent in the fundamentals of mathematics so that children develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- To be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- To reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language
- To have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently, and accurately to be successful in mathematics

This is the knowledge and understanding gained at each stage:

By the end of EYFS pupils will:

- Count reliably with numbers from 1 to 20, place them in order and 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
- Use everyday language to talk about size, weight, capacity, position, distance, time, and money to compare quantities and objects and to solve problems
- Recognise, create, and describe patterns
- Explore characteristics of everyday objects and shapes and use mathematical language to describe them

By the end of Key Stage 1 pupils will:

- Develop confidence and mental fluency with whole numbers, counting and place value
- Use numerals, words and the four operations, including with practical resources
- Recognise, describe, draw, compare and sort different shapes and use the related vocabulary
- a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money
- 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
- Read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1

By the end of Lower Key Stage 2 pupils will:

- Be increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value
- Develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers
- Develop their ability to solve a range of problems, including with simple fractions and decimal place value
- Draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties and confidently describe the relationships between them
- Use measuring instruments with accuracy and make connections between measure and number
- By the end of year 4, memorised their multiplication tables up to and including the 12-multiplication table
- Read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling

By the end of Key Stage 2 pupils will:

- Understand the number system and place value to include larger integers
- Make connections between multiplication and division with fractions, decimals, percentages and ratio
- 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
- Use the language of algebra as a means for solving a variety of problems
- Classify shapes with increasingly complex geometric properties and use the vocabulary they need to describe them
- Be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals, and percentages
- Read, spell, and pronounce mathematical vocabulary correctly

CURRICULUM IMPLEMENTATION

This is how it works:

- We foster positive can-do attitudes, and we promote the fact that 'We can all do maths'
- We believe all children can achieve in mathematics and teach for secure and deep understanding of mathematical concepts through manageable steps
- We use mistakes and misconceptions as an essential part of learning
- Teachers share the objectives for the lesson with the children and make sure they are clear what is being expected of them to successfully achieve the objective
- We provide challenge through rich and sophisticated problems
- Support is determined during each lesson to ensure secure understanding based on the needs of the child
- Challenge is visible throughout the whole session, where children are asked to reason and prove their understanding at a deeper secure level
- Daily 15 minutes outside of the daily maths lesson focusing on Four Rules, Place Value, Doubling and Halving, Balancing the Equals, Number Bonds, Fractions and remembering more
- Pre-teaching and/or immediate interventions to prepare children for learning the next day
- 123Maths used for daily intervention for the lowest achieving pupils in all year groups from year 2 and across Ks2
- Children KS2 will receive extra 'booster groups' to ensure that they are reaching their potential

This is what adults do:

- Planning documents include discrete focus on 3 aims of curriculum- Fluency, Reasoning and Problem Solving
- Create a learning environment rich in resources that support learning
- Regular book looks, learning walks, planning audits and pupil voice
- Whole school CPD
- Termly pupil progress meetings
- Identify those children who need extra support in order to provide them with urgent, catch-up sessions

This is how we support:

- High quality teaching
- Adaptive teaching so that all children are able to meet the learning objective
- Small group/1:1 adult support given where required
- Use teacher and self-assessment to quickly identify any child who requires additional support in specific areas
- These pupils will then receive additional support or resources to use

This is how we challenge:

- Lessons will be adaptive to challenge all
- Additional activities to stretch the learning within the lesson
- More able children will be stretched through adapted group work and extra challenges
- Teachers will direct questions towards children to ensure learning progresses for all children in the class.

This is how ensure all children can access the curriculum:

- Children with SEND are taught within the daily mathematics lesson and are encouraged to take part when and where possible
- Teaching lessons using the CPA approach
- Targeted intervention for those that need extra support with their basic maths skills
- More frequent repetition and revisiting to help make it stick

CURRICULUM IMPACT

This is what you might typically see:

- Children enjoying their learning in maths
- Different representations of calculations
- A range of different activities including practical and use of technology
- Engagement and perseverance
- Self-motivated children taking ownership for their learning
- Resilient learners
- Confident children talking positively about maths, sharing, and reflecting on their learning and how it relates to real life situations
- Specific gaps in learning addressed through daily interventions

This is how we know how well our pupils are doing:

- AFL at the beginning and throughout every lesson
- Marking and feedback by teacher and peers
- White Rose End of Unit Assessment
- White Rose End of Term assessment
- NFER assessments
- Assessment tracked at the end of each term and entered onto our summative assessment tracking system
- Learning walks, book scrutiny and pupil voice
- Cross school moderation with schools in the Trust and schools using same summative assessment system to ensure accuracy of assessments

This is the impact of the teaching:

- Confident children who can talk about maths
- Children who enjoy their learning in maths
- Depth of understanding/application in different contexts
- Pupils use acquired vocabulary in maths lessons
- They have the skills to use methods independently and show resilience when tackling problems
- The % of children working at ARE within each year group will be at least in line with national average
- The % of children working at Greater Depth within each year group will be at least in line with national average
- Children ready for the next step in their learning
- Children can articulate the context in which maths is being taught and relate this to real life purposes
- Pupils know how and why maths is used in the outside world and in the workplace. They know about different ways that maths can be used to support their future potential

CULTURAL CAPITAL

What is Cultural Capital?

Cultural capital can be defined as powerful knowledge. Knowledge that is one of the key ingredients a child will draw upon to be successful in society, their career, and the world of work. Cultural capital gives a child power. It helps them achieve goals, become successful, and rise the social ladder without necessarily having wealth or financial capital. In maths, this powerful knowledge can be split into two categories: powerful subject knowledge and powerful personal knowledge.

Powerful subject knowledge in Maths

- A rich and vibrant maths curriculum which is ambitious for all learners.
- We develop the essential knowledge, skills and understanding which are the building blocks for later life
- We ensure that all children develop the ability to think logically and clearly and can communicate this using mathematical language
- We foster a fascination and enthusiasm with the subject through practical activity, exploration, and discussion
- Appreciating mathematical principles expressed in other subjects and the way things work adds another dimension to interpreting the world in which we live
- Opportunity to link maths to real-world problem solving
- The knowledge of famous mathematical along with the theories or rules they are famous for and their importance on society and how they have affected the world

Powerful personal knowledge in Maths

- Maths is a fundamental part of human thought and logic and is integral to attempts at understanding the world and ourselves
- Maths provides an effective way of building mental discipline and encourages logical reasoning and mental rigour
- Mathematical knowledge plays a crucial role in understanding the contents of other school subjects such as science, geography, history, and art
- Understanding what opportunities are available to children in the future to allow them to become life-long learners
- Eliciting, valuing, and linking pupils' prior knowledge and experiences from home, family, and social contexts to school maths
- Highlighting the relevance and transferability of maths for pupils' daily and future lives

SMSC LINKS

SMSC links in Maths at Ludlow Primary School

Spiritual, Moral, Social and Cultural (SMSC) development is the over-arching umbrella that encompasses personal development across the whole curriculum. In Maths at Ludlow Primary School, links to SMSC are made across the Maths curriculum and lessons to create a child centred approach to learning Math's knowledge and skills.

Spiritual

- Developing deep thinking and questioning the way in which the world works promotes the spiritual growth of our pupils
- We are sensitive to pupils' individual needs, backgrounds, and experience
- We aim to give all pupils an appreciation of the richness and power of maths
- Maths in nature is embedded in Sequences, Patterns and Symmetry
- We promote a sense of wonder in the exactness of mathematics in the exploration of real-world examples
- We encourage the pupils to appreciate the enormity of the world of Mathematics as it has developed through time

Moral

- Within the classroom, we encourage respect and reward good behaviour
- We value listening to others' views and opinions on problem solving
- We promote discussion about mathematical understanding and challenge assumptions, supporting pupils to question information and data that they are presented with
- It is acceptable to make mistakes as long as the correct methodology to obtain the otherwise correct answers is then learned and remembered

Social

- In classrooms, we look for opportunities for pupils to use mini whiteboards to promote self-esteem and build self-confidence
- We encourage collaborative learning in the classroom – in the form of listening and learning from each other as well as paired discussion / working partners
- We help pupils develop their mathematical voice and powers of logic, reasoning, and explanation by offering explanations to each other
- We seek out events and team maths challenges for increased pupil involvement

Culture

- Mathematics is a universal language with a myriad of cultural inputs throughout the ages
- We share the appreciation with the pupils that mathematics, its language and symbols have developed from many different cultures around the world: e.g. Egyptian, Indian, Islamic, Greek and Russian roots
- We look to make explicit reference to Mathematician's contribution to progression of the subject as we teach topics throughout our Schemes of Work
- We try to develop an awareness of both the history of maths alongside the realisation that many topics we still learn today have travelled across the world and are used internationally