

Woodlands Primary School



MATHEMATICS POLICY & STATEMENT OF INTENT

Status:	Current	
Date Adopted by Governing body:	20 th October 2021	
Created by Jess Martindale	19 th August 2022	
Review by Curriculum Committee	October 2023	2 years

Woodlands Primary School Mathematics Policy

Statement of Intent

The 2014 changes to the national curriculum in mathematics set out three main aims: to become fluent in the fundamentals of mathematics; to reason mathematically and to solve problems. At Woodlands we want a mathematics curriculum which is accessible to all and will maximise the development of every child's ability and academic achievement, therefore we want our children to develop deep and sustainable maths subject knowledge. We achieve this by focusing teaching and learning on:

- Fluency – mental agility, slick written methods and clarity of language.
- Problem solving and reasoning – pupils develop a range of skills that allow them to 'crack' into and solve a range of problem
- Teaching for mastery – all lessons are planned and delivered with the 5 principles of mastery in mind.

Teaching for mastery is underpinned by 5 key principles:

Cohesion: Sufficient time is spent on well planned sequences to ensure that key concepts are developed and deeply embedded before moving on.

Representation and structure: Mathematical concepts are explored and understood through strong models and images such as Base 10, 10-grids, numicon, block modelling, cuisenaire.

Fluency: Factual knowledge (e.g. number bonds and times tables), procedural knowledge (e.g. formal written methods) and conceptual knowledge (e.g. of place value) are taught in a fully integrated way and are all seen as important elements in the learning of mathematics. Children are able to efficiently select the best method from a variety that they have developed to solve problem. At Woodlands, we use Big Maths to ensure daily fluency opportunities.

Variation: Conceptual variation and procedural variation are used extensively throughout teaching, to present the mathematics in ways that promote deep, sustainable learning. This is especially evident in the practice that children are given in each session.

Deep mathematical thinking: The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores in detail how answers were obtained, why the method/strategy worked and what might be the most efficient method/strategy.

We intend for our pupils to be able to apply their mathematical knowledge to science and other subjects. We want children to realise that mathematics has been developed over centuries, providing the solution to some of history's most intriguing problems. We want them to know that it is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. We encourage children to have mathematical confidence so they can challenge ideas presented by peers and adults alike, so they can verbalise their ideas and extend their own thinking. Our math lessons develop children's social skills by teaching them to actively listen to what has actually been said and to respond appropriately and build on other's ideas. We guide children to look at problems from different angles and know that there may be more than one way to approach a problem. We celebrate the difficulties and mistakes made, to help push children's learning on, as well as developing growth mind set. As our pupils progress, we intend for them to be able to understand the world, have the ability to reason mathematically, have an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

How is this implemented across the school?

At our school teachers must have high expectations of children and promote and instil a positive mindset about Mathematics. Mathematics is taught daily and within our lessons:

- Teachers reinforce an expectation that all children are capable of achieving high standards in Mathematics.
- The large majority of children progress through the curriculum content at the same pace.
- Differentiation is achieved by emphasising deep knowledge and through individual support and intervention.
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concept.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children keep up.

Knowledge Acquisition and Lesson Design

Big Maths CLIC sessions - 20 minutes per day

Big Maths is an approach to teaching number that aims to ensure that children are confidently numerate as they progress through school. Big Maths provides this rigorous and progressive structure, these steps of progression are called 'Progress Drives' and enable children to fully embed key skills and numeracy facts through fun and engaging lessons. It is based on 4 key elements which make up each Big Maths lesson: CLIC

Children acquire the basic skills of Mathematics through the chronology of CLIC:

- Counting – Counting is done in many ways including counting forwards and backwards in various increments; work on place value and reading and ordering numbers.
- Learn Its – There are 72 number facts which are learned throughout the years from Reception to Year 4. They are split across the different terms so that each class works on a few 'Learn Its' at a time to ensure they are fully embedded. 36 are addition facts and 36 are multiplication facts; these are learned in class and are tested each week.
- It's Nothing New – Children use a bank of facts and methods that they already have to solve problems and that each step of progress is very small; children will use and apply their skills and methods to a range of different situations and problems.
- Calculation – This is often the main part of the Big Maths lesson which focuses on teaching solid written and mental methods for addition, subtraction, multiplication and division. The children move through progress drives which introduce small, focused steps of progress throughout the year.

At Woodlands the majority of the class should access the CLIC sessions in class, but a small group may

need to go out with teacher / TA to secure any gaps in learning. To help with formative assessment our students are given regular Big Maths Beat that assessments, which help to identify gaps and inform future planning.

At year 6 level students apply skills to the rigor of the SAT arithmetic assessment. .

Main Math Lessons

To ensure whole school consistency and progression, the school follows the White Rose Mathematics scheme, it ensures there is a consistent, progressive approach – which addresses the five key elements of mastery. The White Rose curriculum is designed using small steps, meaning each lesson leads on to the next. Therefore, if a child is secure in their understanding of a lesson or concept, they are ready for the next step in their learning. As the student's progress through the school they will build on previous learning: being familiar with the models, apparatus, sentence stems and strategies taught, so they can continue to grow in confidence and independence. This maximises learning time.

Teacher Lead Element of Math Lessons

The teacher led element of math lessons will involve deep mathematical thinking, modelling, discussions, practice and games. We aim to ensure that problem solving and reasoning are real life examples that the children can relate to. We believe that all children, regardless of ability, can access problem solving through whole class teaching. We use this opportunity to develop their communication skills, resilience and extend their learning. In this time you will see children engaged and chatting enthusiastically about maths whilst challenging each other. Teachers will use language like convince me, prove it, show me, give me an example – all which prompt children to think deeply about their learning and by modelling the use of mathematical sentence stems they will be able to communicate their reasoning with confidence.

Retrieval- Within our main Maths session we will also use **Flash Back 4** to revise previous concepts - this is normally used at the beginning of the main Maths session but can be used at other points during the lesson.

Remainder of Math Lesson

The remaining part of the session will be used for practice, application and intervention. All children may be playing the same game or completing the same activity. Children may require further support and scaffolding or may be challenged through extension activities and high-level reasoning.

Teachers use formative assessment and student evaluation within lessons, if a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention (during the lesson and before the start of the next lesson) ensures the pupil is ready to move forward with the whole class in the next lesson. Each teacher assesses the knowledge at the end of each unit (using the White Rose End of Unit Assessments) and addressing any gaps in the class. Where children have significant learning gaps in number, they are identified for intervention (listed below).

Maths: Early Years Foundation Stage

In EYFS Woodlands uses Power Maths which combines a mastery approach. It promotes, confidence, achievement and mastery of concepts through a very practical approach involving quality indoor and outdoor learning opportunities for all pupils. The focus on mastery then helps develop the power of the pupil to think rather than just do. Within whole class interactive teaching there is a focus on precise mathematical language, this helps deliver a coherent journey for pupils to tackle concepts in very small steps, enabling them to build upon their foundation knowledge in a progressive way. It is about child-centred learning and lessons embrace Concrete-Pictorial-Abstract (C-P-A). Power Maths promotes positive growth mind-set to understanding maths and that everyone “can do” maths.

Typical EYFS week

Day 1: Starter

Day 2: Discovery and share

Day 3: Think together/ Practice

Day 4: Challenge

Day 5: Practical and reflect

Power Maths Reception, yearly overview

Autumn term

Strand	Unit	Week	Weekly title	Early Learning Goal	
Number – number and place value	Unit 1	Numbers to 5	1	Counting to 1, 2 and 3	Children count reliably with numbers from 1 to 20, place them in order.
			2	Counting to 4	
			3	Counting to 5	
Number – addition and subtraction	Unit 2	Sorting	4	Sorting into 2 groups	Children explore characteristics of everyday objects.
Number – number and place value	Unit 3	Comparing groups within 5	5	Comparing quantities of identical objects	Pre-requisite to: Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
			6	Comparing quantities of non-identical objects	
Number – addition and subtraction	Unit 4	Change within 5	7	One more	Say which number is one more or one less than a given number.
			8	One less	
Measurement	Unit 5	Time	9	My day	Children use everyday language to talk about time to solve problems.

Power Maths Reception, yearly overview

Spring term

Strand	Unit	Week	Weekly title	Early Learning Goal	
Number – addition and subtraction	Unit 6	Number bonds within 5	1	Introducing the part-whole model	Pre-requisite to: Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
Number – number and place value	Unit 7	Numbers to 10	2	Counting to 6, 7 and 8	Children count reliably with numbers from 1 to 20, place them in order.
			3	Counting to 9 and 10	
Number – number and place value	Unit 8	Comparing numbers within 10	4	Comparing groups up to 10	Children explore characteristics of everyday objects.
Number – addition and subtraction	Unit 9	Addition to 10	5	Combining 2 groups to find the whole	Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
Number – addition and subtraction	Unit 10	Number bonds to 10	6	Using a ten frame	Pre-requisite to: Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
			7	The part-whole model to 10	
Geometry – properties of shape	Unit 11	Shape and space	8	Spacial awareness	Children explore characteristics of everyday objects and shapes and use mathematical language to describe them.
			9	3D shapes	
			10	2D shapes	

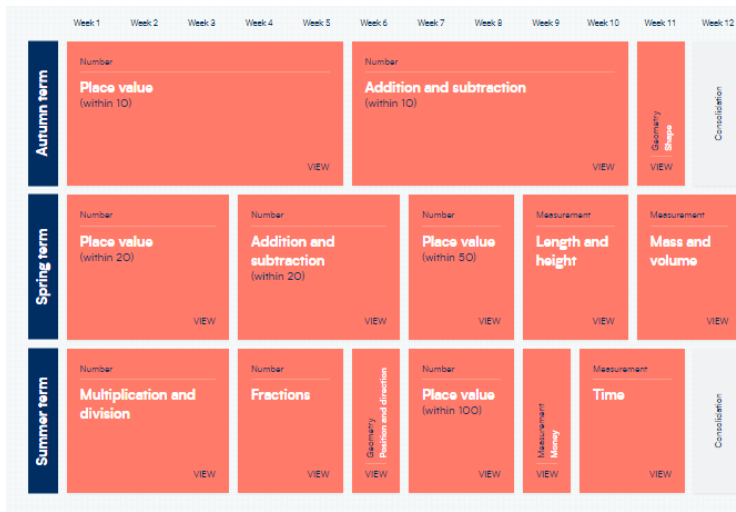
Power Maths Reception, yearly overview

Summer term

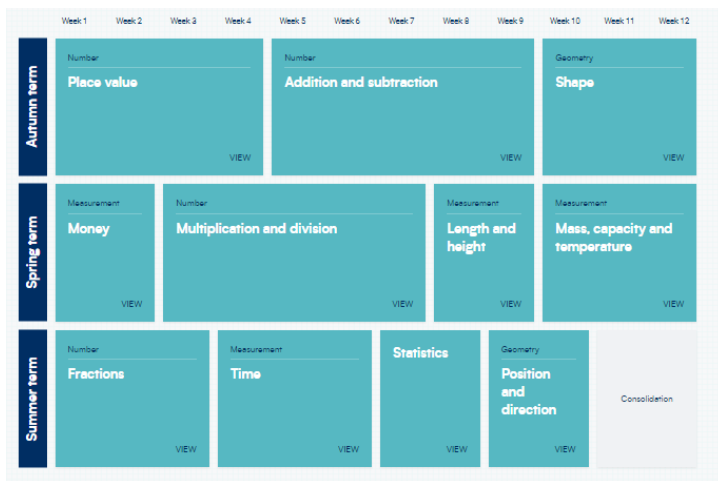
Strand	Unit	Week	Weekly title	Early Learning Goal	
Geometry – properties of shape	Unit 12	Exploring patterns	1	Making simple patterns	Children recognise, create and describe patterns.
			2	Exploring more complex patterns	
Number – addition and subtraction	Unit 13	Counting on and counting back	3	Adding by counting on	Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
			4	Taking away by counting back	
Number – number and place value	Unit 14	Numbers to 20	5	Counting to 20	Children count reliably with numbers from 1 to 20, place them in order.
Number – multiplication and division	Unit 15	Numerical patterns	6	Doubling	They solve problems, including doubling, halving and sharing.
			7	Halving and sharing	
			8	Odds and evens	
Number – number and place value	Unit 16	Measure	9	Length, height and distance	Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems.
			10	Weight	
			11	Volume and capacity	

The White Rose programmes of study are set out year by year.

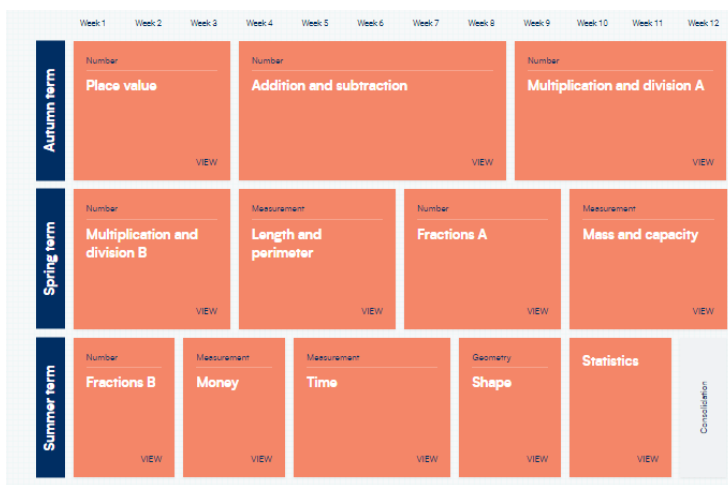
Year 1 :



Year 2:



Year 3:



Year 4:

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value VIEW		Number Addition and subtraction VIEW			Measurement Area VIEW	Number Multiplication and division A VIEW		Consolidation			
Spring term	Number Multiplication and division B VIEW		Measurement Length and perimeter VIEW		Number Fractions VIEW		Number Decimals A VIEW					
Summer term	Number Decimals B VIEW	Measurement Money VIEW	Measurement Time VIEW	Consolidation		Geometry Shape VIEW	Statistics VIEW	Geometry Position and direction VIEW				

Year 5:

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value VIEW		Number Addition and subtraction VIEW		Number Multiplication and division A VIEW		Number Fractions A VIEW					
Spring term	Number Multiplication and division B VIEW		Number Fractions B VIEW		Number Decimals and percentages VIEW		Measurement Perimeter and area VIEW	Statistics VIEW				
Summer term	Geometry Shape VIEW		Geometry Position and direction VIEW		Number Decimals VIEW		Number Negative numbers VIEW	Measurement Converting units VIEW	Measurement Volume VIEW			

Year 6:

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number Place value VIEW	Number Addition, subtraction, multiplication and division VIEW				Number Fractions A VIEW		Number Fractions B VIEW	Measurement Converting units VIEW			
Spring term	Number Ratio VIEW	Number Algebra VIEW	Number Decimals VIEW	Number Fractions decimals and percentages VIEW	Measurement Area, perimeter and volume VIEW	Statistics VIEW						
Summer term	Geometry Shape VIEW		Geometry Position and direction VIEW	Themed projects, consolidation and problem solving								

Maths Environment

1. **Children should not be grouped according to their ‘ability’** as this can change from one lesson to the next. Instead, seating should be flexible so that any children that you need to work with or need additional support can move to work with you.

2. Teachers will develop Maths Working Walls which will show:
 - The Unit being taught
 - Learning Objectives
 - Examples of representation and structure (e.g. ten frames, 100 squares, numicon)
 - Mathematical Vocabulary
 - Sentence Stems
 - Examples of shared teaching – for children to reference
 - Student work examples

3. Students should have access to manipulative materials: any concrete objects that allow students to explore an idea in an active, hands-on approach.

Books

Each lesson has a LO and short date.

As much as possible work is to be written up into squared books by the children in the book. Rich tasks and problems should be stuck into the book before attempting.

Maths journaling throughout the lesson and during the plenary are to be modelled by the teacher, then supported by the teacher and, ultimately, independently and naturally completed by the children.

Children will self-assess at the end of each lesson – KS1 – emoji’s, LKS2 – ticking a box provided in LO, UKS2 WWW (What Went Well) EBI (Even Better If)

For further guidance on feedback and assessment, see the policy.

Times Tables

At Woodlands have high expectations of children mastering their times tables at the end of Year 4.

Alongside the CLIC program we have a program of study for introducing and teaching the times tables up to 12 x 12

National Curriculum

Year 2	Year 3	Year 4	Year 5 & 6
2 times tables 10 times tables 5 times tables	3 times tables 4 times tables 8 times tables	6 times tables 7 times tables 9 times tables 11 times tables 12 times tables	Continue to practise all times tables regularly

Please refer to times table policy for calendar of teaching.

Formal Interventions

Numbers Count

Number Stack – Year 3, 4 ,5 and 6

Impact

The school has a supportive ethos and our approaches support the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Students can underperform in Mathematics because they think they can't do it or are not naturally good at it. The White Rose Curriculum addresses these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing a growth mindset. Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child.

How do we plan at Woodlands?

Long Term planning will be provided by Maths Leader – White Rose SOW

Medium Term planning will take the form of White Rose Small Steps

Weekly Planning is constructed by teachers using the rationale above. Further support may be sought from NRICH, 3rd Space Learning, Classroom Secrets, Numicon planning documents etc. Key is to ensure the 5 principles of mastery.

Planning is linked to children's prior knowledge. Class teachers are aware of what has been taught in other classes and can link their own class' learning back to this. While we give children of all abilities the opportunities to develop their skills, knowledge and understanding, we also plan progression into each unit of work, so that there is an increasing challenge for the children as they move up through the school.

How does Mathematics contribute to other areas of the curriculum?

The skills that children develop in Mathematics are linked to, and applied in, every subject of our curriculum. The children's skills in reasoning and problem solving enable them to communicate and express themselves in all areas of their work at school.

How do we include everyone?

At our school, we teach Mathematics to all children, whatever their ability and individual needs. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see separate policies: Special Educational Needs; Gifted and Talented Children; English as an Additional Language (EAL). **We adapt; we don't differentiate.**

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum and assessment expectations allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

Teachers use careful questions to draw out children's discussions and their reasoning. The class teacher then leads children through strategies for solving the problem, including those already discussed. Independent work provides the means for all children to develop their fluency further, before progressing to more complex related problems. Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time. Each lesson phase provides the means to achieve greater depth, with children being offered rich and sophisticated problems, as well as exploratory, investigative tasks, within the lesson as appropriate.

Calculations Policy

A calculation policy has been developed and agreed after using the National Curriculum objectives and

methods.

We recognise that mathematics can only be used effectively when the user understands the tool, and has ownership of it. With our calculation policy, we can be confident throughout school, that the hard work we all put into teaching the children each year to calculate, will be consolidated and extended the following year.

By agreeing on the use of strategies and mathematical language the children will be taught in a consistent way in all classes, developing their understanding as they progress through school. This will hopefully cause less confusion for the children and ensure they have the necessary strategies and scaffolding to enable them to solve mathematical problems.

Children will then be encouraged to use the calculation strategies they are secure with, whether done mentally or using pencil and paper methods.

Marking

The quality of marking is crucial. If the teacher makes a comment in a pupils' book it should refer back to the learning objective and will normally involve ticking the LO met / LO partly met / LO not met box. Marking should be both diagnostic and summative and school policy believes that it is best done through conversation with the child but acknowledges that constraints of time do not always allow this.

When appropriate the children themselves can mark exercises which involves routine fluency practice with support and guidance from the teacher. The class teacher should mark any reasoning, problem solving or explaining that takes place. Where appropriate children in KS2 are encouraged to check computational exercises by using the inverse operation. This fosters independence in the children (who can seek help if they are unable to locate and correct their errors) and also ensures that pupils receive prompt feedback.

Exercise books for recording

It is the school policy that the following books are used:

- ✓ KS1: 1cm squares
- ✓ Year 3: 1cm squares
- ✓ Year 4: 1cm squares
- ✓ Year 5: 7mm squares
- ✓ Year 6: 7mm squares

All children are encouraged to work tidily and neatly when recording their work with a strong focus on the school handwriting policy being used. When using squares one square should be used for each digit (for more detail refer to the School Marking and Assessment for Learning Policy).

Assessment and record keeping

Teachers use the National Curriculum in England and the White Rose Maths Hub supporting materials to plan assessment activities. The work set, combined with a scrutiny of children's recorded work over the previous six weeks, helps to review how well children have taken in the units of work taught and identifies any remaining misconceptions.

Formal Assessment

Teachers assess all pupils towards the end of T1, T2, T4 and T6 using assessment materials provided by the White Rose Maths Hub and where required NTS (Rising Stars) The results of these assessments are recorded on INSIGHT –Below (Emerging), Just Below (Working Towards), On Track (Expected), Great Depth. Intervention strategies (in addition to the Keep up not Catch up T+L model) are discussed termly in Pupil Progress Meetings with the Headteacher and Assessment Leader.

Evidence – As an **ongoing assessment practice**, teachers and teaching assistants should collect evidence that could be used to support an effective judgement. This must be independent work by the child, i.e. something they require no teaching input to show that they have secure understanding of the topic. This could be:

- End of unit assessments.
- Independent work from Maths books.
- Something that the child has said during the course of a mathematical discussion – recorded on a post-it note or equivalent.

This evidence is used to inform our teacher assessments of each child which is recorded on the INSIGHT system.

Monitoring and Evaluation

The Mathematics leader is released regularly from their classroom in order to work alongside other teachers. This time is used to monitor and evaluate the quality and standards of Mathematics throughout the school and enables the leader to support teachers develop practise in their own classrooms.

Homework

Refer to the school Homework Policy for more detail.

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in Mathematics.

Role of the subject leader

- To take the lead in policy development (including the statement of intent and the curriculum unit overviews for each year group).
- To oversee the continuity of the subject and the progression of teaching and learning through the White Rose SOW (termly and weekly planning).
- To create, maintain and implement an annual Mathematics Action Plan.
- To regularly meet the link governor for Mathematics to discuss progress towards key objectives on the subject action plan (at least 3 meetings per year: x1 Autumn, x1 Spring & x1 Summer).
- The leader will regularly monitor the quality of teaching and the standard of work produced.
- The leader will carry out regular work scrutiny for each year group and provide prompt feedback.
- The leader will monitor staff use of the INSIGHT Assessment tracking system.
- The subject leader will offer support to colleagues and share their expertise and experience.

- The leader will meet new members of staff to go through the policy and curriculum and share how work is record and how assessments are carried out.
- The leader will advise teachers on new teaching methods they may wish to explore. They will support teachers in developing their confidence and skill in the teaching of Mathematics.
- The leader will ensure a high quality CPD programme is in place and this will be delivered during Staff Meeting INSET.
- The subject leader will attend relevant training for Mathematics leaders and share information with staff.
- To take responsibility for the choice, purchase and organisation of central resources for Mathematics, in consultation with colleagues.

