Maths Curriculum

Subject Leader: Alistair Scott

Rode Heath Primary School

Contents

Overall maths: Intent, Implementation and Impact
Structure of lessons at Rode Heath Primary School
Calculation Policy
Multiplication Policy
Fluency Policy
Rode Heath Primary School - Early Years Foundation Stage
Year 1 to 6 Curriculum Overview and End Points

Intent

We nurture brave, excited mathematicians who use existing knowledge to make connections, experiment and think systematically.

Here at Rode Heath Primary School, we embrace a mastery curriculum approach to our mathematics teaching. This means spending greater time going into depth in particular areas/concepts as opposed to quickly moving through the curriculum and the year group objectives.

We have high expectations that all children will achieve, and to do this, we believe that all children should be given the opportunity to explore, pattern find, become fluent, reason and problem solve and that there should be carefully crafted questions and activities and a wide range of manipulatives at hand for each child to accomplish this. Mathematics is an interconnected subject. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across all subject areas.

We strive to ensure that the whole class moves through content at the same pace and when we differentiate, it is through depth rather than acceleration; everyone is given time to think deeply about the maths and we strive to develop a positive attitude in order to build self-confidence, resilience and a sense of achievement. The school's values of: teamwork, fairness, resilience and curiosity are embedded in all that we do.

Pupil premium is used to ensure that all children have full access to the mathematics curriculum. For children with SEND, our maths curriculum and the resources we use are adapted so that all children have an opportunity to receive their full educational entitlement and make use of considered and measurable interventions to support those who need it. Our maths curriculum is designed so that all may be challenged to fulfil their potential. We passionately believe that all children can reach these high standards.

Implementation

In EYFS, we ensure that maths is part of their daily diet and give the children a wide range of experiences and opportunities to apply their mathematical skills. In order for the mastery approach to become successful in KS1 and KS2, we have created a bespoke maths lesson structure, incorporating the Maths- No Problem! scheme.

The way we structure our lessons ensures a more consistent approach to teaching maths; a greater emphasis on the sequence of learning; a better use of open-ended investigational type questions, maths language via stem sentences and working walls and the continued development of mathematical pedagogy.

Fluency is a key component of the maths curriculum and there are opportunities outside the main lesson time, where children can learn and apply facts in order to be more efficient when solving problems. Declarative, procedural and conditional knowledge is woven throughout the scheme of work. Declarative knowledge – 'I know that' – is about the relationships between facts, concepts and formulae. Procedural knowledge – 'knowing how' – is about methods, procedures and algorithms. Conditional knowledge – 'knowing when' – is about forming strategies from the combinations of facts and methods to reason and problem-solve.

The mastery approach at Rode Heath also ensures that there is a greater expectation on all children; little chance for passive learning as there is a greater emphasis on talking maths, collaborating, exploring and investigating; the use of equipment is encouraged and there are always planned opportunities for children to make connections between subjects. Children are constantly pushed to the limits of what they are learning.

Rode Heath Maths Mastery Definition

When taught to master maths, children develop their mathematical fluency without resorting to rote learning and are able to solve non-routine maths problems without having to memorise procedures. Evidence shows that children need to be able to understand a concept, apply it in a range of situations and then be creative to really understand it. This means spending greater time going into depth about a subject as opposed to quickly moving through the curriculum and moving children onto learning in the next year group. The Five Big Ideas about teaching for mastery underpins all that we do: coherence, representation and structure, mathematical thinking, fluency and variation.

Here are the underpinning principles as outlined by NCETM's: The Essence of mathematics teaching for mastery:

- Mathematics teaching for mastery assumes everyone can learn and enjoy mathematics.
- Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to make connections.
- Teachers continually develop their specialist knowledge for teaching mathematics, working collaboratively to refine and improve their teaching.
- Curriculum design ensures a coherent and detailed sequence of essential content to support sustained progression over time.

Impact

At Rode Heath Primary School, there is a consistent approach to the teaching of maths mastery across the school.

Children will make good or better progress from their own personal starting points. By the end of KS2 they will be able to fluently recall their times tables up to 12x; they will have a great understanding of place value; secure with the four operations; understand the relationship between fractions, decimals and percentages; use measurements effectively and accurately; understand how ratio and proportion can be used; solve algebraic problems; have a good understanding of geometry and be able to analyse statistics. End Points are included to show where children should be at the end of their year group.

This is measured through a variety of methods such as: summative and formative assessments each term, pupil voice, lesson observations, learning walks, questioning and marking of books.

For a full breakdown of our results, please click on this link: Whole School Data 2026

The Structure of our lessons at Rode Heath Primary School using the Maths No Problem Scheme (MNP)

1. **Exploration –** (Explore – problem of the day)

2. **Structured Learning –** whiteboards, blue books and interactive whiteboards (includes discussion of methods and strategies in the Master section of the textbook)

3. **Practice and Apply –** Guided Practice in blue books, identifying children who need additional support. MNP workbooks and blue books (BB) for apply stage.

4. **Expand, Extend and Stretch –** expand, extend and stretch learning for children who are ready (supplement learning with agreed material). This is to take place in the blue books

Remember:

CPA (Concrete, Pictorial and Abstract) approach; plenty of opportunities for talking maths; reinforce positive attitudes and develop metacognition (learning to learn); model specific language and maths sentences and let the children work in mixed groups (don't cap learning).

1. Explore (Exploration) - Problem of the Day - No more than *20 minutes for section one and two*

This is the first part of the lesson and the most thought provoking. Pupils are shown the Explore maths story (see MNP textbooks) but not any methods at this stage. This part encourages children to explore their own thoughts and methods in pairs to solve the problem.

Lots of talking to be expected at this stage with support and prompts from the teacher – *Q: what do we need to know before we tackle this problem?*
It's also an opportunity for children to use concrete materials.

The Explore question can be completed with a preferred method in the 'journal' blue maths books. This can be done informally with the use of jottings, drawings, sentences and equations. The role of the teacher is to listen and observe, supporting when necessary.

2. Structured Learning - discussion of methods (Master section in the book)

This section of the lesson focuses on the class re-grouping and discussing their own methods, at least 2 are to be expected in each session. This is a good opportunity to ask lots of questions to the children and to assess whether the children have a grasped a firm understanding of the particular methods used (convince me). At this stage you may want to model a method or show other methods given in the textbook (Master) and discuss them (this is not necessary if they have already grasped and explored the most efficient and effective methods). This is to be completed in the blue books.

NOTE: You may need to model how to read equations in the textbook as a 'story' using informal maths language or by putting the idea into context.

3. Practice and Apply

Attempt a selection of the guided practice questions (practically / on whiteboards/ in blue maths books) and then move on to the workbook tasks if the children are secure. Teacher identifies any children in the guided practice stage who are not secure enough to go onto the apply stage in order to support them.

Expectation:
Children to work independently; guided help when appropriate. Remember to keep apparatus available. Based on your observational assessments during the first 3 parts of the lesson, it'll become clear who can access the workbook independently and who can't. Support should be implemented where needed.

4. Extension tasks for those who are ready for problem solving questions

Extension tasks to be used at least three times a week for your GDS children or for children who are EXS but are higher achieving.

Extend/ stretch learning with carefully thought-out questioning, maths mastery or maths mastery with greater depth tasks, I See Reasoning, I See Problem-Solving and White Rose tasks (these can be found on the staff shared drive under maths: year group folders). These are to be completed in blue books. The tasks are based on the lesson and help/support is offered by the teacher.

***Ethos**:*

Concrete material. Plenty of Time. Mathematical language used in each lesson. Working in pairs/groups

We need to get the children visualising - hold off showing them what it looks like and give them a chance to imagine what it looks like.

Things to consider:

- Coverage – please ensure that you plan next term very precisely to ensure you cover all of your year group expectations.
- Ensure the majority of your children are secure with their year group multiplications (Y2-Y6) – multiplication test to be used during assessment week.
- If children are self-marking, it is vital that you check their work and apply the correct marking codes (stamps and indicate corrections). Please ensure that children haven't marked things incorrectly. Children should be given time the same day or next day to correct their mistakes.

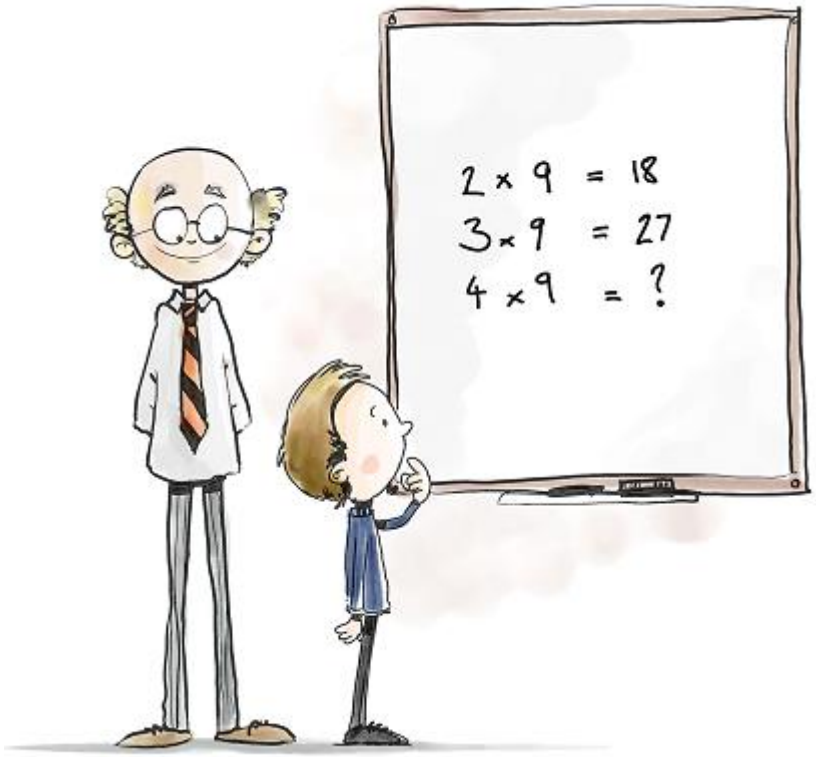
- Are you giving children the opportunity to use practical equipment? Remember: concrete, abstract, pictorial.
- If you are unsure of any methods in the MNP textbook, please refer to the calculations policy (an electronic copy can be found on the staff share: maths, policies).

Rode Heath Primary School
'Inspiring learning; nurturing minds; achieving for life'

MATHS NO PROBLEM!

Rode Heath Primary School: Maths — No Problem!

Calculation Policy



Click on this hyperlink for the policy for KS1/KS2:

http://www.rodeheath.cheshire.sch.uk/serve_file/16722520

Click on this hyperlink for the policy for EYFS:

https://www.rodeheath.cheshire.sch.uk/serve_file/18562559

Click on this hyperlink for maths vocabulary:

http://www.rodeheath.cheshire.sch.uk/serve_file/16722522

Multiplication Policy

The quick recall of multiplication and division facts (times tables) is essential for all children. The ability to recall these facts quickly enables children to answer related questions with ease.

It is therefore important that we approach the teaching and testing of times tables in a similar and progressive format from Year 2 to Year 6.

At Rode Heath, the expectation of times tables in each Year Group is as follows:

Year 2: 2x, 5x, 10x and corresponding division facts.

Year 3: Recall of 5x and 10x tables from Y2. 2x, 4x, 8x (the relationship between them), 3x and corresponding division facts.

Year 4: 3x, 6x, 9x (the relationship between them and corresponding division facts), 7x, 11x, 12x. All x and ÷ facts in preparation for the Multiplication Tables Check (MTC)

Year 5: All x and ÷ facts. Secure and maintain fluency in all multiplication tables and corresponding division facts, through continued practice.

Year 6: All x and ÷ facts and related language/symbols e.g. % and square root

These facts will be practised in KS2 at least once a week on Times Tables Rock Stars (TTRS) using the Garage and Arena game modes (The Gig is available on the 1st day of each month and needs to be completed to update the Garage and Arena questions). There will be a group a day, so the children will have one Fix-it Time on TTRS and four with Daily 10 to improve recall and fluency. Year 4 and 5 will also fit in a soundcheck session to keep a track on the children's progress.

Year 3 will have a times table lesson each week outside the Maths – No Problem! scheme of work. The lesson will teach children facts to improve their times tables and then use a worksheet and tracking system on TTRS to see their progress (tests take 5 minutes). All children will be shown how to access their heatmaps so they can take ownership of their learning. Furthermore, Year 3 will have 4 sessions of Mastering Number resources weekly too. Years 4 and 5 take part in Mastering Number daily.

If children are not improving, introduce intervention strategies at assembly time/fix-it time to help with this. This can still be at the discretion of the teacher; as individual learning needs need to be catered for so that a positive attitude towards maths is maintained. By the end of each academic year, the vast majority of the children should be able to use and apply their multiplication facts appropriate to their year group.

These tests are designed to **test times tables knowledge, rather than to teach it.** There are many ways in which children can learn times tables - for example, playing games, quick-fire questions from an adult, chanting tables, writing the tables out, using songs and Times Tables Rock Stars. It is also important for children to learn their times tables at home too. The heatmaps can be given out at parent consultation evenings.

Children should learn the multiplication tables in 'families' (2x, 4x and 8x for example). Making connections between the multiplication tables in each family will enable children to develop automatic recall more easily, and to provide a deeper understanding of multiplication and division.

Multiplication and division facts

The full set of multiplication calculations that pupils need to be able to solve by automatic recall are shown in the table below. Pupils must also have automatic recall of the corresponding division facts.

1 × 1	1 × 2	1 × 3	1 × 4	1 × 5	1 × 6	1 × 7	1 × 8	1 × 9	1 × 10	1 × 11	1 × 12
2 × 1	2 × 2	2 × 3	2 × 4	2 × 5	2 × 6	2 × 7	2 × 8	2 × 9	2 × 10	2 × 11	2 × 12
3 × 1	3 × 2	3 × 3	3 × 4	3 × 5	3 × 6	3 × 7	3 × 8	3 × 9	3 × 10	3 × 11	3 × 12
4 × 1	4 × 2	4 × 3	4 × 4	4 × 5	4 × 6	4 × 7	4 × 8	4 × 9	4 × 10	4 × 11	4 × 12
5 × 1	5 × 2	5 × 3	5 × 4	5 × 5	5 × 6	5 × 7	5 × 8	5 × 9	5 × 10	5 × 11	5 × 12
6 × 1	6 × 2	6 × 3	6 × 4	6 × 5	6 × 6	6 × 7	6 × 8	6 × 9	6 × 10	6 × 11	6 × 12
7 × 1	7 × 2	7 × 3	7 × 4	7 × 5	7 × 6	7 × 7	7 × 8	7 × 9	7 × 10	7 × 11	7 × 12
8 × 1	8 × 2	8 × 3	8 × 4	8 × 5	8 × 6	8 × 7	8 × 8	8 × 9	8 × 10	8 × 11	8 × 12
9 × 1	9 × 2	9 × 3	9 × 4	9 × 5	9 × 6	9 × 7	9 × 8	9 × 9	9 × 10	9 × 11	9 × 12
10 × 1	10 × 2	10 × 3	10 × 4	10 × 5	10 × 6	10 × 7	10 × 8	10 × 9	10 × 10	10 × 11	10 × 12
11 × 1	11 × 2	11 × 3	11 × 4	11 × 5	11 × 6	11 × 7	11 × 8	11 × 9	11 × 10	11 × 11	11 × 12
12 × 1	12 × 2	12 × 3	12 × 4	12 × 5	12 × 6	12 × 7	12 × 8	12 × 9	12 × 10	12 × 11	12 × 12

Pupils must be fluent in these facts by the end of year 4, and this is assessed in the multiplication tables check. Pupils should continue with regular practice through year 5 to secure and maintain fluency.

The 36 most important facts are highlighted in the table. Fluency in these facts should be prioritised because, when coupled with an understanding of commutativity and fluency in the formal written method for multiplication, they enable pupils to multiply any pair of numbers.

Fluency Policy

Addition and subtraction facts

The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table below. Pupils must also be able to solve the corresponding subtraction calculations with automaticity.

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

Pupils must be fluent in these facts by the end of year 2, and should continue with regular practice through year 3 to secure and maintain fluency. It is essential that pupils have automatic recall of these facts before they learn the formal written methods of columnar addition and subtraction.

Factual fluency progression

	Year 1	Year 2	Year 3	Year 4	Year 5
Additive factual fluency	Addition and subtraction within 10.	Addition and subtraction across 10.	Secure and maintain fluency in addition and subtraction within and across 10, through continued practice.		
Multiplicative factual fluency			Recall the 10 and 5 multiplication tables, and corresponding division facts.	Recall the 3, 6 and 9 multiplication tables, and corresponding division facts.	Secure and maintain fluency in all multiplication tables, and corresponding division facts, through continued practice.
			Recall the 2, 4 and 8 multiplication tables, and corresponding division facts.	Recall the 7 multiplication table, and corresponding division facts.	
				Recall the 11 and 12 multiplication tables, and corresponding division facts.	

EYFS, Year 1, Year 2 (4 times a week), Year 4, Year 5 and Year 6 (5 times a week) classes use Mastering Number to assist with their fluency progression and automaticity of facts. Years 1 and 2 also use Numbots to assist with fluency of addition and subtraction facts.

The Explore stage in the Maths – No Problem! scheme of work also develops fluency skills.

Rode Heath Primary School

EYFS Mathematics Curriculum

Rode Heath Primary School – Early Years Foundation Stage – Mathematics

Intent

We aim to develop confident, curious and enthusiastic mathematicians by providing a rich, engaging and play-based mathematics curriculum from Pre-School through to the end of Reception. We recognise that children develop mathematical understanding through meaningful experiences, practical exploration and high-quality interactions with adults and peers. Our curriculum is carefully sequenced to build secure foundations in Number, Numerical Patterns and Shape, Space and Measure, ensuring clear progression from Pre-School into Reception and beyond.

Through our mathematics curriculum, children develop a deep understanding of number, counting and numerical relationships, whilst learning to recognise patterns, compare quantities and make connections in the world around them. We encourage children to reason, problem solve and use mathematical language to explain their thinking. Mathematical concepts are presented through practical experiences, stories, songs, games, investigations and contexts that foster enjoyment and confidence.

We intend that all children will:

- Develop a positive attitude towards mathematics and believe they can succeed.
- Build secure number sense through counting, subitising, comparison and composition of number.
- Explore and identify patterns and relationships within mathematics and the wider environment.
- Develop spatial reasoning through shape, space and measure experiences.
- Use mathematical vocabulary confidently to explain their ideas and reasoning.
- Apply their mathematical understanding independently through play and purposeful problem-solving opportunities.
- Be ready for the challenges they will meet in the Key Stage 1 mathematics curriculum.

Implementation

Mathematics is taught through a combination of adult-led teaching, carefully planned play opportunities and responsive interactions that reflect children's interests and developmental needs. Our curriculum is aligned with White Rose Maths Version 3.0 and provides a clear progression of knowledge and skills throughout the Early Years Foundation Stage.

In Pre-School, children develop early mathematical concepts through exploration, investigation and practical experiences. They learn to count, compare, sort, match, notice patterns and develop an understanding of shape and space through everyday play.

In Reception, children build upon these foundations and develop deeper understanding of number composition, subitising, number bonds, numerical patterns and spatial reasoning. Mathematical learning is structured around progressive teaching sequences while remaining responsive to children's needs and interests. We also use the NCETM Mastering Number programme four times a week to support the development of quick number pattern recognition, efficient number facts recall, explaining mathematical thinking, solving problems confidently and building strong foundations for later calculation and arithmetic work in KS1

Throughout the EYFS:

- Mathematical language is explicitly modelled and encouraged in all areas of learning.
- Adults identify and extend mathematical opportunities during child-initiated play.
- Children have regular opportunities to practise counting, comparing, pattern spotting and problem solving.
- Resources are carefully chosen to support concrete and visual understanding before abstract concepts are introduced.
- Indoor and outdoor environments provide rich opportunities for mathematical exploration.
- Children revisit prior learning regularly to strengthen understanding and retention.
- Assessment for learning informs planning, ensuring support and challenge are appropriately matched to children's needs.

Our provision promotes active learning and ensures mathematics is meaningful, engaging and embedded within children's everyday experiences.

Impact

Our mathematics curriculum ensures that children develop strong mathematical foundations and leave the Early Years as confident, capable and enthusiastic learners. They demonstrate a secure understanding of number, numerical relationships and pattern, and are able to apply their knowledge across a range of contexts.

By the end of Reception, children:

- Have developed a deep understanding of number to 10 and beyond.
- Use counting skills accurately and confidently.
- Subitise and recognise quantities without counting.
- Understand how numbers are composed and can be partitioned in different ways.
- Compare quantities and explain their reasoning using appropriate mathematical vocabulary.
- Recognise, continue and create patterns.
- Demonstrate confidence when solving practical mathematical problems.
- Understand and use language related to shape, space, measure, position and direction.
- Apply mathematical knowledge independently within play and real-life situations.
- Are well prepared for the expectations of the Key Stage 1 mathematics curriculum.

Most importantly, our children leave EYFS with a genuine enjoyment of mathematics, resilience when faced with challenges and the confidence to explore, investigate and reason mathematically.

Rode Heath Primary School

Pre-School Mathematics

Rode Heath
PRE-SCHOOL

	Number	Numerical Patterns	Shape, Space and Measure
Autumn	• I can join in with number rhymes and counting songs. • I can say some number names in order. • I can count objects by touching each one as I say a number. • I can count up to 3 objects accurately. • I know that the last number I say tells me how many there are altogether. • I can show 1, 2 and 3 using my fingers. • I can recognise 1, 2 and 3 without counting every time. • I know that numbers help us count and describe quantities.	• I can notice when things are the same and different. • I can sort objects by colour. • I can sort objects by size. • I can match objects that belong together. • I can talk about which group has more objects. • I can copy simple patterns using objects. • I can continue a simple AB pattern with support. • I know that patterns repeat.	• I can explore shapes in my environment. • I can build towers and simple structures. • I can talk about where things are using in, on and under. • I can use positional language during play. • I can compare objects using the language big or small. • I can compare objects using the language heavy or light. • I can explore filling and emptying containers. • I know that shapes can look different but still be the same shape.
Spring	• I can count objects carefully to 5. • I can match numerals to quantities to 3. • I can count things arranged in different ways. • I can count out up to 3 objects from a larger group. • I can subitise groups up to 3. • I can begin to recognise numerals to 5. • I know that counting tells me how many objects there are. • I can explore one more and one less.	• I can compare two groups and say which has more or fewer. • I can identify when groups have the same number. • I can create simple repeating patterns. • I can spot mistakes in simple patterns. • I can continue an AB pattern independently. • I can use matching to make equal groups. • I know that equal groups have the same number. • I can talk about patterns I see around me.	• I can describe objects using size language. • I can compare weight using everyday language. • I can compare capacity using full and empty. • I can talk about events using first, next and then. • I can describe routes using positional language. • I can combine shapes to make pictures and models. • I can notice common 2D shapes. • I know that shapes have different properties.

Summer	• I can count reliably to 5 and beyond. • I can recognise numerals to 5. • I can match quantities to numerals to 5. • I can subitise up to 3 and sometimes 4 objects. • I know that moving objects does not change how many there are. • I can count out up to 5 objects. • I can talk about one more and one less within 3. • I know that numbers can help solve problems.	• I can compare quantities using more and fewer. • I can recognise and create repeating patterns. • I can identify the odd one out in a pattern. • I can notice equal and unequal groups. • I can begin to say what happens when one more is added or taken away. • I can order numbers to 5 with support. • I know that numbers can be compared. • I know that patterns help us predict what comes next.	• I can name some common 2D shapes. • I can talk about sides and corners. • I can explore 3D shapes. • I can use positional language without pointing. • I can follow instructions involving position and direction. • I can describe familiar routes and locations. • I can sequence familiar events. • I know that shapes can be combined to make new shapes. •

Pre-School Assessment (Reception Readiness Indicators)

- I can count reliably to 5 or more
- I can subitise to 3
- I can match numerals and quantities to 5
- I can compare groups using more, fewer and the same
- I can continue repeating patterns
- I can name common 2D shapes
- I can use positional language to compare size, weight and capacity

Pre-School Provision

To support the development of early mathematical understanding, children will have daily access to a wide range of practical resources that encourage counting, sorting, matching, comparing, pattern-making and exploring shape and space through play.

Number	Numerical Patterns	Shape, Space & Measure
Number songs and rhymes resources, Counting baskets and treasure collections, Natural materials (cones, pebbles, shells, sticks), Small world toys for counting, Counting bears, Simple number cards, Finger puppets, Counting books, Dot cards and picture cards for subitising, Soft toys and objects for counting games, Loose parts collections	Sorting trays, Coloured counters, Pattern blocks, Peg boards, Beads and threading resources, Natural materials for pattern making, Matching and sorting games, Colour and shape sorting resources, Pattern cards, Interactive displays and visual pattern prompts	Construction blocks, Duplo, Large-scale outdoor construction resources, Shape sorters, 2D shape resources, Water trays and containers, Sand play equipment, Bucket scales, Position and directional games, Simple maps and pathways, Large and small loose parts, Role-play resources to explore size, capacity and measure

Continuous Provision

Mathematical language modelled throughout play, daily counting opportunities, pattern spotting indoors and outdoors, shape hunts, comparing and sorting activities, water and sand exploration, construction and small-world play, mathematical stories, songs and rhymes, adult-led and child-initiated problem-solving opportunities

Rode Heath Primary School

Reception Mathematics

Term	Number	Numerical Patterns	Shape, Space and Measure
Autumn	• I can count objects accurately to 5 and beyond. • I can recognise numerals to 5 and beyond. • I can match numerals to quantities up to 5. • I can subitise groups up to 5. • I can count carefully using one number for each object. • I know that the last number counted tells me the total amount. • I can find one more and one less within 5. • I know that numbers can be made from smaller numbers.	• I can sort objects using different rules. • I can explain why objects belong in a group. • I can identify when groups are equal. • I can compare groups using more than, fewer than and the same as. • I can copy, continue and create simple repeating patterns. • I know that each number is one more than the number before it. • I can recognise and explain simple patterns around me. • I know that patterns help us predict what comes next.	• I can compare objects by length using mathematical language. • I can compare objects by height and size. • I can compare weight using heavier and lighter. • I can compare capacity using full, empty and nearly full. • I can recognise and name common 2D shapes. • I can use positional language such as besides, between and next to. • I can follow instructions involving position and direction. • I know that shapes have different properties.
Spring	• I can recognize numerals to 10. • I can match numerals and quantities to 10. • I can count out up to 10 objects from a larger group. • I can confidently subitise numbers to 5 and beyond. • I can explain how numbers are composed. • I can find one more and one less within 10. • I know that numbers represent quantities that can be compared. • I can solve practical addition and subtraction problems within 10.	• I can compare numbers and quantities to 10. • I know that numbers can be partitioned into smaller groups. • I know different ways to make numbers to 10. • I can identify doubles within 10 using practical resources. • I can identify odd and even arrangements through sharing and grouping. • I can continue and create more complex repeating patterns. • I know that patterns can repeat in different ways. • I know that equal groups contain the same quantity.	• I can order objects by length, height and weight. • I can use non-standard measures to compare objects. • I can use everyday language to talk about time. • I can sequence events throughout the day. • I can recognise and name common 3D shapes. • I can describe shapes using mathematical vocabulary. • I can use maps and routes in familiar environments. • I can use language such as clockwise, forwards and backwards during play.

Summer	• I can recognize, order and compare numbers to 20. • I know that teen numbers are made of one ten and some more ones. • I can recall number bonds to 5 automatically • I can recall some number bonds to 10. • I can use known facts to solve addition and subtraction problems. • I can estimate quantities and check by counting. • I know that numbers can be partitioned and recombined in different ways. • I can solve practical mathematical problems using my number knowledge.	• I can count forwards and backwards to 20 and beyond. • I can compare quantities to 10 in different contexts. • I can identify and use doubles facts • I can identify odd and even numbers through practical experiences. • I can share quantities equally between groups. • I can explain patterns I notice within numbers. • I know that numbers follow predictable patterns. • I know that equal sharing creates equal groups.	• I can select shapes appropriately for building and modelling. • I can compose and decompose 2D shapes. • I can compose and decompose 3D shapes. • I can rotate and manipulate shapes to make them fit. • I can describe routes using positional and directional language. • I can understand position from words alone without visual prompts. • I can create simple maps of familiar places. • I can describe and sequence events using first, next, then and finally.

Early Learning Goals

Number	Numerical Patterns	Shape, Space and Measure
• I have a deep understanding of number to 10, including the composition of each number. • I can subitise (recognise quantities without counting) up to 5. • I can automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	• I can verbally count beyond 20, recognising the pattern of the counting system. • I can compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. • I can explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.	There are no Early Learning Goals for Shape, Space & Measure

Reception Provision

To support children to develop a deep understanding of number, numerical patterns and shape, space and measure, a range of concrete, pictorial and exploratory resources are available throughout the learning environment. Resources are accessible to enable independent mathematical investigation and application during both adult-led and child-initiated learning.

Number	Numerical Patterns	Shape, Space & Measure
Numicon, Digit cards, Five frames and ten frames, Counters, Number lines, Dice, Beads and bead strings, Buttons, Compare bears, Multilink cubes, Lego, Number fans, Dot cards, Subitising cards, Tens frame manipulatives, Part-whole models, Number tracks, Dominoes, Playing cards, Number puzzles	Sorting trays, Coloured counters, Pattern blocks, Peg boards, Beads and threading resources, Natural materials for pattern making, Matching and sorting games, Colour and shape sorting resources, Pattern cards, Interactive displays and visual pattern prompts	Construction blocks, Duplo, Large-scale outdoor construction resources, Shape sorters, 2D shape resources, Water trays and containers, Sand play equipment, Bucket scales, Position and directional games, Simple maps and pathways, Large and small loose parts, Role-play resources to explore size, capacity and measure
Continuous Provision		
Mathematical language modelled throughout play, daily counting opportunities, pattern spotting indoors and outdoors, shape hunts, comparing and sorting activities, water and sand exploration, construction and small-world play, mathematical stories, songs and rhymes, adult-led and child-initiated problem-solving opportunities		

	Year One
Number Place value	• **Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.** • **Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens;** • Identify one more and one less from a given number. • **Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least;** • Read and write numbers from 1 to 20 in numerals and words.
Addition & Subtraction	• **Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.** • **Represent and use number bonds and related subtraction facts within 20.** • **Add and subtract one-digit and two-digit numbers to 20, including zero.** • **Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9.**
Multiplication and Division	• Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.
Fractions	• **Recognise, find and name a half as one of two equal parts of an object, shape or quantity.** • **Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.**
Measurement	• **Compare, describe and solve practical problems for:** - **lengths and heights [for example, long/short, longer/shorter, tall/short, double/half];** - **mass/weight [for example, heavy/light, heavier than, lighter than];** - **capacity and volume [for example, full/empty, more than, less than, half, half full, quarter];** - **time [for example, quicker, slower, earlier, later].** • **Measure and begin to record the following:** - **lengths and heights;** - **mass/weight;** - **capacity and volume;** - **time (hours, minutes, seconds).** • **Recognise and know the value of different denominations of coins and notes.** • **Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].** • **Recognise and use language relating to dates, including days of the week, weeks, months and years.** • **Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.**
Geometry Properties of Shapes	• **Recognise and name common 2-D and 3-D shapes, including:** - **2-D shapes [for example, rectangles (including squares), circles and triangles];** - **3-D shapes [for example, cuboids (including cubes), pyramids and spheres].**
Position and Direction	• **Describe position, direction and movement, including whole, half, quarter and three-quarter turns.**

	Year Two
Number Place value	• **Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.** • **Recognise the place value of each digit in a two-digit number (tens, ones).** • Identify, represent and estimate numbers using different representations, including the number line. • **Compare and order numbers from 0 up to 100; use <, > and = signs.** • **Read and write numbers to at least 100 in numerals and in words.** • **Use place value and number facts to solve problems.** • **Partition numbers in different ways to support subtraction [for example, 23 = 20 + 3 and 23 = 10 +13]** • **Understand 0 as a place holder.** • **Round numbers (up to 100) to the nearest ten.**
Addition and Subtraction	• Solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures; - applying their increasing knowledge of mental and written methods. • Recall and use addition and subtraction facts to 20 fluently, and derive and **use related facts up to 100** [for example, 3 + 7 = 10; 30 +70 = 100]. • **Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:** - **a two-digit number and ones;** - **a two-digit number and tens;** - **two two-digit numbers;** - **adding three one-digit numbers.** • **Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.** • **Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.** • **Use the vocabulary 'sum' and 'difference'.**
Multiplication and Division	• **Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.** • **Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs.** • **Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.** • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
Fractions	• **Recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity.** • **Write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½.**
Measurement	• Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels. • Compare and order lengths, mass, volume/capacity and record the results **using >, < and = [including using the vocabulary 'half as high' and 'twice as wide'.** • Recognise coins.

	• **Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value. [Record £ and p separately as the decimal recording of money is introduced formally in Y4.]** • **Find different combinations of coins that equal the same amounts of money.** • **Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.** • **Compare and sequence intervals of time.** • **Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.** • **Know the number of minutes in an hour and the number of hours in a day.**
Geometry Properties of Shapes	• Identify and **describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line.** • Identify and **describe the properties of 3-D shapes, including the number of edges, vertices and faces.** • **Identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid].** • **Compare and sort common 2-D and 3-D shapes and everyday objects.**
Position and Direction	• Order and arrange combinations of mathematical objects in patterns and sequences. • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and **in terms of right angles** for quarter, half and three-quarter turns (clockwise and anti-clockwise).
Statistics	• **Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.** • **Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.** • **Ask and answer questions about totalling and comparing categorical data.**

	Year Three
Number Place value	• **Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number.** • **Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).** • **Compare and order numbers up to 1000.** • Round numbers **(up to 1000)** to the nearest ten **or hundred.** • Identify, represent and estimate numbers using different representations. • **Read and write numbers up to 1000 in numerals and in words.** • **Use larger numbers to at least 1000, applying partitioning to place value [for example, 146 = 100 + 40 + 6; 146 = 130 + 16].** • **Solve number problems and practical problems involving these ideas.**
Addition and Subtraction	• **Add and subtract numbers mentally, including:** - **a three-digit number and ones;** - **a three-digit number and tens;** - **a three-digit number and hundreds.** • **Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. [See Calculation Policy and video footage.]** • **Estimate the answer to a calculation [by using rounding] and use inverse operations to check answers.** • **Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.**
Multiplication and Division	• **Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. [Through doubling, connect the 2, 4 & 8 multiplication tables.]** • **Develop efficient mental methods [for example, 4 x 12 x 5 = 4 x 5 x 12 = 20 x 12 = 240 and 3 x 2 = 6; 6 ÷ 3 = 2 and 6 ÷ 2 = 3].** • **Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.** • **Solve problems, including:** - **missing number problems** - **positive integer scaling problems [for example, four times as high, eight times as long]** - **correspondence problems in which n objects are connected to m objects [for example, 3 hats and four coats, how many different outfits?]**
Fractions	• **Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. [Link to division by 10.]** • **Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.** • **Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. [Use number lines to deduce relationships between them, such as size and equivalence.]** • **Recognise and show, using diagrams, equivalent fractions with small denominators.** • **Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7].** • **Compare and order unit fractions, and fractions with the same denominators.** • **Solve problems that involve all of the above.**
Measurement	• **Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). [Compare and use mixed units such as 1kg and 200g. use simple equivalents of mixed units, for example, 5m = 500 cm.]**

	• **Measure the perimeter of simple 2-D shapes.** • Add and subtract amounts of money to give change, using both £ and p in practical contexts. [Record £ and p separately as the decimal recording of money is introduced formally in Y4.] • Tell and write the time from an analogue clock, **including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.** • Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours. • **Use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight.** • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Compare durations of events [for example to calculate the time taken by particular events or tasks].
Geometry Properties of Shapes	• **Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them [extending at this stage to symmetrical and non-symmetrical polygons and polyhedral].** • **Recognise angles as a property of shape or a description of a turn.** • Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn. • **Identify whether angles are greater than or less than a right angle.** • **Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.** • **Connect decimals and rounding to drawing and measuring straight lines in centimetres.**
Statistics	• Interpret and present data using bar charts, pictograms and tables. • **Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts [for example, 2, 5, 10 units per cm] and pictograms and tables.**

	Year Four
Number Place value	• **Count in multiples of 6, 7, 9, 25 and 1000.** • **Find 1000 more or less than a given number.** • **Count backwards through zero to include negative numbers**. • **Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).** • **Order and compare numbers beyond 1000.** • Identify, represent and estimate numbers using different representations. • Round any number to the nearest 10, 100 or **1000**. • Solve number and practical problems that involve all of the above and with increasingly large positive numbers. • **Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.**
Addition and Subtraction	• **Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. [See Calculation Policy and video footage.]** • Estimate [by using rounding] and use inverse operations to check answers to a calculation. • Solve addition and subtraction **two-step problems** in contexts, deciding which operations and methods to use and why.
Multiplication and Division	• **Recall multiplication and division facts for multiplication tables up to 12 × 12.** • **Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.** • **Recognise and use factor pairs and commutativity in mental calculations.** • **Multiply two-digit and three-digit numbers by a one-digit number using formal written layout. [See Calculation Policy and video footage.]** • Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
Fractions & Decimals	• Recognise and show, using diagrams, families of common equivalent fractions. • **Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.** • Solve problems involving **increasingly harder fractions** to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. • Add and subtract fractions with the same denominator. • **Recognise and write decimal equivalents of any number of tenths or hundredths.** • **Recognise and write decimal equivalents to ¼, ½, ¾.** • **Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.** • **Round decimals with one decimal place to the nearest whole number.** • **Compare numbers with the same number of decimal places up to two decimal places.** • **Solve simple measure and money problems involving fractions and decimals to two decimal places.**
Measurement	• **Convert between different units of measure [for example, kilometre to metre; hour to minute].** • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.

	• **Find the area of rectilinear shapes by counting squares.** • **Estimate, compare and calculate different measures, including money in pounds and pence.** • Read, write and **convert time between analogue and digital 12- and 24-hour clocks.** • **Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.**
Geometry Properties of Shapes	• **Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.** • Identify acute and obtuse angles and **compare and order angles up to two right angles by size.** • **Identify lines of symmetry in 2-D shapes presented in different orientations.** • **Complete a simple symmetric figure with respect to a specific line of symmetry.**
Geometry Position & Direction	• **Describe positions on a 2-D grid as coordinates in the first quadrant.** • **Describe movements between positions as translations of a given unit to the left/right and up/down.** • **Plot specified points and draw sides to complete a given polygon.**
Statistics	• **Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs;** • **Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.**

	Year Five
Number Place value	• **Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.** • **Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.** • **Interpret negative numbers in context**, count forwards and backwards with positive and negative whole numbers, including through zero. • Round any number up to 1 000 000 to the nearest 10, 100, 1000, **10 000 and 100 000.** • Solve number problems and practical problems that involve all of the above. • **Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.**
Addition and Subtraction	• **Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) [See Calculation Policy and video footage.]** • Add and subtract numbers mentally **with increasingly large numbers**. • Use rounding to estimate and to check answers to calculations and determine, in the context of a problem, levels of accuracy. • Solve addition and subtraction **multi-step problems** in contexts, deciding which operations and methods to use and why.
Multiplication and Division	• **Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.** • **Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.** • **Establish whether a number up to 100 is prime and recall prime numbers up to 19.** • **Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. [See Calculation Policy and video footage.]** • Multiply and divide numbers mentally drawing upon known facts. • **Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.** • Multiply and divide whole numbers and those involving decimals by 10, 100 and **1000**. • **Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3).** • Solve problems involving multiplication and division **including using their knowledge of factors and multiples, squares and cubes.** • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. • **Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.**
Fractions, Decimals & Percentages	• **Compare and order fractions whose denominators are all multiples of the same number.** • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. • **Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5].** • Add and subtract fractions with the same denominator and **denominators that are multiples of the same number**. • **Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.** • Read and write decimal numbers as fractions [for example, 0.71 = 71/100]. • **Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.** • **Round decimals with two decimal places to the nearest whole number and to one decimal place.** • **Read, write, order and compare numbers with up to three decimal places.** • **Solve problems involving number up to three decimal places.**

	• **Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.** • **Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.**
Measurement	• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre). • **Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.** • Measure and calculate the perimeter of **composite rectilinear shapes** in centimetres and metres. • **Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes.** • **Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water].** • Solve problems involving converting between units of time. • Use all four operations to solve problems involving measure [for example, length, mass, volume, money] **using decimal notation, including scaling.**
Geometry Properties of Shapes	• **Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.** • **Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles.** • **Draw given angles, and measure them in degrees (º).** • **Identify:** - **angles at a point and one whole turn (total 360o);** - **angles at a point on a straight line and ½ turn (total 180º);** - **other multiples of 90º.** • **Use the properties of rectangles to deduce related facts and find missing lengths and angles;** • **Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.**
Geometry Position and Direction	• **Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.**
Statistics	• **Solve comparison, sum and difference problems using information presented in a line graph.** • **Complete, read and interpret information in tables, including timetables.**

	Year Six
Number Place value	• **Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit**. • Round any whole number to a required degree of accuracy. • Use negative numbers in context, and calculate intervals across zero. • Solve number and practical problems that involve all of the above.
Addition, Subtraction, Multiplication and Division	• Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. • **Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.** • Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. • Perform mental calculations, including with mixed operations and large numbers. • Identify common factors, common multiples and prime numbers. • **Use their knowledge of the order of operations to carry out calculations involving the four operations.** • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and explain why. • Solve problems involving addition, subtraction, multiplication and division. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Fractions (including decimals and percentages)	• **Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.** • **Compare and order fractions, including fractions greater than 1.** • **Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.** • **Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, ¼ x ½ = 1/8].** • **Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6].** • **Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8].** • Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. • **Multiply one-digit numbers with up to two decimal places by whole numbers.** • **Use written division methods in cases where the answer has up to two decimal places.** • **Solve problems which require answers to be rounded to specified degrees of accuracy.** • **Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.**
Ratio and Proportion	• **Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.** • **Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison.** • **Solve problems involving similar shapes where the scale factor is known or can be found.** • **Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples [For example, 'I need four eggs and for every egg I need three spoonfuls of flour. How much flour do I need?']**
Algebra	• **Use simple formulae [for example, the formulae for the area of a rectangle *a=lb*]** • **Generate and describe linear number sequences.**

	• **Express missing number problems algebraically [for example, 78 – y = 45, y = ?]** • **Find pairs of numbers that satisfy an equation with two unknowns [for example, p + q = 20. What could p + q be?]** • **Enumerate possibilities of combinations of two variables.**
Measurement	• Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. • Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places. • Convert between miles and kilometres. • **Recognise that shapes with the same areas can have different perimeters and vice versa.** • **Recognise when it is possible to use formulae for area and volume of shapes.** • **Calculate the area of parallelograms and triangles.** • **Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].**
Geometry Properties of Shapes	• **Draw 2-D shapes using given dimensions and angles.** • **Recognise, describe and build simple 3-D shapes, including making nets.** • **Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.** • **Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.** • **Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.**
Position and Direction	• **Describe positions on the full coordinate grid (all four quadrants).** • Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
Statistics	• **Interpret and construct pie charts and line graphs and use these to solve problems.** • **Calculate and interpret the mean as an average.**