Woodlane High School

achieving success in a nurturing environment

Subject Policy: Mathematics

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Rationale – *What is the evidence base for selected strategies and curriculum choices?*

This section is kept succinct to ensure this policy remains accessible to a variety of audiences. Please review our Teaching and Learning Policy for further information on our whole school approach and evidence informed practice. We have selected 3 subject specific areas of focus to highlight our evidence informed practice, as follows:

Improving Mathematics in Key Stages 2 and 3

We continually strive to develop the quality of teaching and learning, to ensure pupils are making consistent progress in Maths throughout the school. We acknowledge the key findings from the Education Endowment Foundation (November 2022), which highlights:

- *"Use assessment to build on pupils' existing knowledge and understanding"*
- *"Use manipulatives and representations"*
- *"Teach pupils strategies for solving problems"*
- *"Enable pupils to develop a rich network of mathematical knowledge"*
- *"Develop pupils' independence and motivation"*
- *"Use tasks and resources to challenge and support pupils' mathematics"*
- *"Use structured interventions to provide additional support"*
- *"Support pupils to make a successful transition between primary and secondary school."*

"The focus is on improving the quality of teaching. Excellent maths teaching requires good content knowledge, but this is not sufficient. Excellent teachers also know the ways in which pupils learn mathematics and the difficulties they are likely to encounter, and how mathematics can be most effectively taught."

The research informs our practice in the following ways:

- Encouraging pupils to take responsibility for, and play an active role in, their own learning.
- Providing regular opportunities for pupils to develop metacognition by encouraging them to explain their thinking to themselves and others.
- When pupils arrive in Year 7, they are assessed and baselined, so that we are able to have a good understanding of their strengths and weaknesses.
- Using assessment of pupils' strengths and weaknesses to inform the level and type of tasks set.
- Assessment is used not only to track pupils' progress but also to provide teachers with information about what pupils do and do not know. This helps inform the planning of future lessons and the focus of targeted support.
- Pupils that are not making expected progress are selected for structured and targeted interventions.

Efficacy of Teaching Mathematics with Concrete Manipulatives

Concrete manipulatives are used effectively in lessons in order to support pupils with their understanding of key concepts in Maths and to encourage independent learning. We acknowledge the key findings from the Journal of Educational Psychology (March 2013), which highlights: *"Math manipulative-based instructional techniques are approaches that include opportunities for students to physically interact with objects to learn target information (Carbonneau & Marley, 2012). As examples, at the elementary level, teachers use play money to help students learn basic arithmetic functions, and at the high school level, teachers use plastic algebra tiles to teach concepts associated with division and multiplication within an equation. The National Council of Teachers of Mathematics (NCTM, 2000) has recommended that students be provided access to manipulatives in order to develop mathematical understanding."*

We use concrete manipulatives to support pupils with their understanding within a range of topics, which include the following:

- Time - interactive analogue clocks
- Money - play money, supermarket items, cash register
- Weight - balance scales
- Capacity - measuring jugs and containers
- Temperature - thermometer
- Measuring length, area, perimeter - rulers, metre sticks, trundle wheels
- Other - 2D and 3D shapes, fraction tiles, geoboards, numicon, base ten blocks, cuisenaire rods, chalk, play dough etc.

Manipulatives are used purposefully and appropriately to ensure they have an impact. There is always a clear rationale for using a particular manipulative to teach a specific mathematical concept. Manipulatives can also be used as a temporary measure, acting as a 'scaffold' that can be gradually removed once independence is achieved

Learning from Errors and Misconceptions

Teachers and TAs are prepared for the potential errors and misconceptions that could arise during Maths lessons and they are addressed and managed productively in the classroom using a range of strategies. We acknowledge the key findings from Children's Mathematics 4-15: Learning from Errors and Misconceptions (April 2007), which highlights:

A teacher preparing to teach a topic might have very practical questions in mind: for example, 'What does research say about the errors and misconceptions related to the

topic I am about to teach?' We have provided in Appendix 1, a fully indexed set of errors arising from a major survey; finding a particular topic and error there, a teacher might go to the indexed parts of the book where there is related discussion about such errors and how they might be understood or managed. A teacher with sufficient interest will then find in Chapters 1 and 2 a wide-ranging set of common diagnostic errors organised according to a typology, together with a pedagogical approach to handling these in the classroom. This approach provides a strategy for eliciting and handling errors in a relatively productive way, and offers a contrast to the typical approaches we have often seen in classrooms where errors are simply and unproductively corrected.

The research informs our practice in the following ways:

- Teachers and TAs provide regular verbal and written feedback, as a result they: set SMART targets; recap prior learning; regularly and systematically check for understanding; address errors and misconceptions.
- Discussions take place between the teacher and TA regarding the potential errors and misconceptions that could arise in lessons, in order to ensure that a consistent approach is used by both the teacher and TA.
- Knowledge of common misconceptions can be invaluable in planning lessons to address errors before they arise.
- Teachers not only have to address misconceptions but also understand why pupils may persist with errors.
- Strategies are put into place so that these errors and misconceptions can be managed productively in lessons.
- The Maths TA has sufficient subject knowledge and is confident modelling and demonstrating to pupils using a specific method or approach, as discussed with the teacher.

Intent – ***What is Woodlane aiming to achieve through its Maths curriculum?***

- Present an environment where all pupils can learn Maths to the best of their ability and where all pupils' needs are addressed positively and sensitively.
- Offer a variety of approaches to teaching and learning to engage and motivate pupils, encouraging their active participation in Maths.
- Provide pupils with techniques so that they can investigate and solve problems in school Maths and other curricular areas.
- Develop and extend a pupil's ability to express themselves clearly; to reason logically and to be able to generalise.
- Build a pupil's confidence in their own ability and develop mathematical skills for their usefulness and applicability in the real world.

- Develop mathematical knowledge and oral, written and practical skill that encourages confidence and enjoyment.
- Utilise pupils' interests and popular current events in the world to stimulate learning.
- Set realistic yet challenging targets, with high expectations for all pupils.
- To ensure all pupils leave Woodlane with a Maths qualification which reflects the best of their ability.

Implementation – *How is the Woodlane Maths curriculum delivered?*

Curriculum Delivery

- Pupils have full access to the Maths National Curriculum which is differentiated to meet pupils' learning needs and styles.
- The Maths curriculum is designed to be challenging, appropriate to each pupil's stage of development.
- The Maths Curriculum offers opportunities for cross-curricular learning, to ensure pupils make significant personal development, including:
    - ✓ Maths Theme days;
    - ✓ Maths parental engagement workshops;
    - ✓ Educational visits;
    - ✓ SaLT strategies/Word Aware integrated in to teaching;
    - ✓ Modelling and encouraging appropriate speaking and listening skills and encouraging pupils to interact with one another, extend and reflect on their responses;
    - ✓ Encouraging focused questioning and discussion skills;
    - ✓ Improving pupils' reasoning and problem-solving skills;
    - ✓ Use calculators and other ICT resources appropriately and effectively to solve problems;
    - ✓ Developing pupils' skills in handling information effectively and using the internet appropriately as a learning tool to find things out, develop ideas and exchange and share information.
- The KS3 Maths curriculum is taught through 2.5 hours (average) contact time per week (10% curriculum time).
- The KS4 Maths curriculum is taught through 2.92 hours (average) contact time per week (12% curriculum time).
- The Maths curriculum is designed to build and expand on previous skills and subject knowledge, over a 5-year period. It also plans for opportunities for repetition to embed knowledge, increasing the chance of information recall and

to integrate new knowledge into larger ideas (view our Maths curriculum map in appendix).

- We offer a wide range of qualifications in Maths, which are selected to appropriately challenge, based on each pupil's stage of development, including:
  - ✓ Maths (GCSE)
  - ✓ Maths (Entry Level)
  - ✓ Maths Functional Skills (NCFE Level 1 and 2)
  - ✓ Non-Qualification Maths Units for learners below Entry Level (AQA Unit Award Scheme)
- The love of learning is incredibly important to us, we therefore also run an annual Maths Theme Day, where pupils participate in fun and engaging activities throughout the day.
- We provide additional extra-curricular activities at lunch time, including:
  - ✓ GCSE Maths support
  - ✓ Opportunities for homework support

Teaching and Learning

- Our pupils are taught by transition teachers in Year 7 and subject specialists from Year 8 to Year 11.
- Our Maths Subject Leader is well qualified, possessing a PGCE in Secondary Maths, a BSc in Maths with Physics and is a SpLD specialist teacher.
- The Maths curriculum is differentiated broadly into 3 levels of challenge, 'all', 'most' and 'some'. Further differentiation and personalisation is implemented when required.
- Maths homework is provided on a standardised format and is differentiated to provide the appropriate level of challenge, using all', 'most' and 'some'.
- In Maths we have a 3-tiered approach to supporting a pupil's learning, including:

  <u>Universal</u> – this is the teaching your child will receive from the Maths subject teacher and will include adaptations to match learning needs. All classes:

  - ✓ are supported by a teaching assistant (TA);
  - ✓ have a maximum of 12 pupils per class to ensure there is a high level of support available from the teacher and TA;
  - ✓ are multi-sensory;
  - ✓ are dyslexia friendly;
  - ✓ integrate speech, language and communication support; and
  - ✓ are supported either directly or indirectly by speech and language therapists.

Targeted – it may be appropriate to consider making additional short term special educational provision to remove or reduce any obstacles to your child's learning. This takes the form of a graduated four-part approach of a) **assessing** your child's needs, b) **planning** the most effective and appropriate intervention, c) **providing** this intervention and d) **reviewing** the impact on your child's progress towards individual learning outcomes.

Interventions may include:

- ✓ Specific targeted numeracy small group activities run outside the classroom. These will be limited to a number of weeks to minimise disruption to the regular curriculum;
- ✓ Termly numeracy and SaLT targets;
- ✓ Maths parent-pupil workshops delivered every year to enable parents to best support their child and work in partnership with the school.

Specialist – it may be necessary to seek specialist advice and regular long-term support from a specialist professional in order to plan for the best possible learning outcomes for your child.

- ✓ Maths parent-pupil workshops are delivered every year to enable parents to best support their child and work in partnership with the school.
- ✓ Maths homework is provided on a standardised format and is differentiated to provide the appropriate level of challenge.

Assessment

- Pupils collate Pupil Achievement Books, where they showcase their best work and progress over time in Maths.
- Our bespoke Flight Path is used to track the progress of pupils in Maths and determine expected outcomes from different starting points.
- Maths teachers use a range of formative and summative assessment procedures to assess progress and attainment, including:
  - ✓ daily marking (click here for teaching and learning policy);
  - ✓ self/peer assessment;
  - ✓ Maths (MALT) age assessment;
  - ✓ Mathletics;
  - ✓ informal/formal examinations; and
  - ✓ B-Squared etc.

Homework

Homework is used to extend and reinforce learning beyond the classroom. Tasks should be purposeful, accessible and achievable, supporting pupils to consolidate knowledge, develop independence and apply their learning in a range of contexts.

Homework may be used to:

- Consolidate, practise and extend classroom learning.
- Support retrieval practice, revision and knowledge retention.
- Develop independence, organisation and study skills.
- Prepare pupils for future learning, assessments and qualifications.
- Apply learning in practical, home-based or real-life contexts.
- Engage parents and carers in supporting pupils' learning.

Subject homework should:

- Be accessible, inclusive and appropriately differentiated.
- Follow the school's agreed homework presentation and accessibility requirements.
- Use clear, dyslexia-friendly language and provide an appropriate completion timeframe.
- Be set at least weekly (or as part of an extended project where appropriate).

Typically take around 15 minutes to complete at KS3, increasing for KS4 and accredited courses.

Impact – ***What difference is the Woodlane Maths curriculum making on pupils?***

- The vast majority of pupils usually meet or exceed their expected progress in Maths.
- The vast majority of pupils usually meet or exceed their expected outcomes in Maths (external qualifications).
- The vast majority of pupils leave Woodlane with at least one formally recognised Maths qualification.
- Many pupils join mainstream colleges/sixth forms at post-16 where they study a range of different qualifications and subjects following excellent progress from their starting points in Maths and following successful completion of the Maths GCSE, Entry Level or Functional Skills qualifications.
- Pupils are well-prepared for the next stage of their education.

- Analysis of Maths outcomes and pupil progress indicates that there is little statistical significance between key groups. Where any small differences are identified strategies are implemented swiftly.
- Numeracy is embedded across the school and feeds into other subjects. Excellent progress in Maths has a significant benefit for pupils in other subjects.
- Although a small number of pupils enter the school functionally numerate, a high number move towards this throughout their time at Woodlane.
- Functional skills and life-skills are embedded in the Maths curriculum and are personalised for each pupil. This supports pupils to make the leap to post-16 provision and meets their needs when entering the world of work.

Appendix:

Mathematics Curriculum Map – *What will the pupils learn and when?*

Year 7		Autumn	Spring	Summer
Content (Entry Level)		Number and Place Value Geometry: Properties of Shapes; Position and Direction	Number: Addition and Subtraction; Multiplication and Division Consolidation: Geometry; Number and Place Value	Number: Fractions Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Count forwards up to 100. • Read and write numbers up to and beyond 50 in numerals. • Read and write numbers from one to twelve in words. • Count in twos, fives and tens up to 50 using objects. • Say one more or one less than a number up to 20. • Identify and represent numbers in different ways. • Provide simple explanations of mathematical concepts. • Recognise and name common 2D and 3D shapes. • Make pictures and patterns with 2D shapes. • Make models with 3D shapes. • Describe where things are using the language of position and direction.	• Recognise the signs +, - and = and explain their meaning. • Recall and represent number facts within five and some higher facts. • Add and subtract numbers within ten by combining and partitioning practically. • Use pictures, equipment and numbers to represent addition and subtraction stories. • Provide simple explanations of mathematical concepts. • Add and subtract zero. • Group objects in twos, fives and tens. • Count objects in twos, fives and tens. • Explain that a double is two of something. • Explain that a half is one of two same-sized groups. • Make an array.	• Share into two equal groups to find half of a quantity. • Share into four equal groups to find a quarter of a quantity. • Recognise and find half or quarter of an object or shape. • Find half in different ways. • Describe and compare lengths, heights, capacities, weights and times using simple vocabulary. • Measure length, heights, capacities and weights using non-standard units. • Recognise some coins and notes. • Put two or three simple events in chronological order. • Recognise and use the names of the days of the week and know some months of the year. • Tell the time to the hour on an analogue clock and draw the hands. • Reason about measurements to solve simple practical problems.
	Most	• Count up to and beyond 100, forwards and backwards. • Count, read and write numbers up to 100 in numerals. • Read and write numbers from one to 20 in words. • Count in twos, fives and tens up to the tenth multiple. • Say one more or one less than a given number up to 100. • Compare numbers using the language: equal to, more than, less than, fewer, most, least. • Identify and represent numbers up to 100 in different ways. • Use their knowledge of place value to explain concepts of number. • Use number and place value skills fluently to solve a variety of problems. • Recognise 2D and 3D shapes in real life. • Recognise 2D and 3D shapes in different sizes and orientations. • Describe turns, including quarter, half and whole turns. • Begin to recognise and use the clockwise direction to turn. • Describe position including left, right, above and below.	• Read, write and understand calculations involving addition (+), subtraction (–) and equals (=) signs. • Recall number facts to ten and related subtraction facts, using these to derive number facts to 20. • Add and subtract one-digit and two-digit numbers to 20, including zero. • Solve one-step problems in familiar contexts that involve addition and subtraction, using equipment, pictures and models. • Use number facts to solve missing number problems. • Count the number of groups they have made. • Find how many groups make a given total. • Find the total number of objects by counting in groups. • Double a number using equipment. • Find half of a number using equipment. • Use doubling and halving to solve problems. • Make a context from an array.	• Name halves and quarters. • Explain that half is one of two same size pieces. • Explain that quarter is one of four equal sized pieces. • Find half of measures of length, weight or capacity. • Describe and compare lengths, heights, capacities, weights and times using mathematical vocabulary. • Measure length, heights, capacities, weights and times using standard and non-standard units. • Know the value of coins and notes. • Sequence familiar events in chronological order. • Order the days of the week and months of the year. • Tell the time to the hour and half past the hour on an analogue clock. • Draw the hands on an analogue clock face to show the hour and half past the hour. • Understand fully-numbered scales, such as on a ruler or measuring jug. • Reason about measurements to solve practical problems.

		• Describe movement including forwards and backwards.		
	Some	• Use reasoning about numbers and place value to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Solve number and place value problems of greater complexity by applying procedures fluently. • Count forwards and backwards in twos, fives and tens from any multiple. • Count forwards and backwards through odd numbers. • Explore and investigate numbers greater than 100 by applying their understanding of place value. • Use shapes to solve different types of problems that involve reasoning and problem solving. • Begin to recognise and use the clockwise and anticlockwise directions to turn.	• Use reasoning about number facts to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations, for example explaining the effect of adding and subtracting zero or that adding one will make one more. • Solve addition and subtraction problems of greater complexity by applying procedures fluently. • Make an array from a context. • Remember some doubles. • Remember some halves. • Explain that doubling and halves are opposites.	• Put two halves together to make one whole. • Put four quarters together to make one whole. • Explain why 2 halves and 4 quarters make the whole shape. • Reason about lengths, heights, capacities, weights and times to solve more complex problems. • Use an analogue clock to calculate a duration in hours. • Combine coins and notes to make a given value. • Interpret calendars and dates. • Use appropriate vocabulary to sequence more complex events in chronological order. • Calculate the difference between two times shown on analogue clock faces. • Understand and interpret partially numbered scales such as on a ruler or measuring jug.

Year 7		Autumn	Spring	Summer
Content (Advanced)		Number and Place Value Geometry: Properties of Shapes; Position and Direction	Number: Addition and Subtraction; Multiplication and Division Consolidation: Geometry; Number and Place Value	Number: Fractions Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Continue number sequences. • Recognise numbers in a variety of ways. • Partition numbers into hundreds, tens and ones. • Read simple numbers up to 1000 in numerals and words. • Count in multiples of 4, 8, 50 and 100 from zero. • Find 10 more or less than a given number up to 100. • Find 100 more or less than a given number up to 500. • Compare numbers using inequality and equality signs. • Order numbers up to 1000. • Solve simple problems involving place value of 3-digit numbers • Draw 2D shapes, make and describe 3D shapes and recognise 3D shapes in different orientations. • Recognise angles as a property of shape or a description of a turn and identify right angles. • Identify horizontal and vertical lines.	• Secure fluency in addition and subtraction facts that bridge ten, through continued practice • Calculate number bonds of 100 • Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure • Understand and use the commutative property of addition, and understand the related property for subtraction • Add and subtract up to three-digit numbers using columnar methods • Recall multiplication and division facts for the 3x, 4x, 8x tables. • Use multiplication facts from the 3x, 4x and 8x tables to solve word problems. • Begin to identify patterns in the 3x, 4x and 8x tables when presented visually (e.g. coloured on a hundred square). • Multiply multiples of 10 using known facts up to 12x. • Use the grid method to multiply two and three-digit numbers. • Use number lines to solve division problems beyond known facts. • Solve missing number problems using known facts. • Solve simple scaling and correspondence problems using facts from the 3x, 4x and 8x tables.	• Use resources to add and subtract fractions with the same denominator • Use resources to compare and order unit fractions • Share objects to find a fraction of a set of objects • Identify pairs of equivalent fractions on a fraction wall • Estimate and measure in exact cm, m and multiples of 10mm • Measure and draw lines in cm and mm to the nearest 5mm • Solve word problems by adding and subtracting two measurements in cm • Solve addition problems involving metres by adding two three-digit numbers totaling up to 350m • Solve subtraction problems involving metres by subtracting two three-digit numbers, not involving exchanging • Solve addition and subtraction problems involving mm by adding three amounts • Use <, > and = to compare two single-unit length measurements • Order single-unit length measurements • Measure the perimeter of rectangles and squares • Calculate the perimeter of rectangles and squares (all side measurements given) • Draw two different rectangles with the same perimeter • Compare money amounts up to 50p • Make different money combinations using coins up to 50p • Choose the correct symbol <, > or = to compare the money amounts • Add together up to three items in pence where the total equals up to 50p • Add together up to three items in pounds where the total equals up to £100 • Calculate the change required when paying for a single item and several items, paying with 50p • Read the time in five-minute intervals on an analogue clock • Read digital clocks in fifteen-minute intervals and state the time in analogue form • Read clocks with Roman numerals in fifteen-minute intervals • Identify whether events could be a.m. or p.m. or both • Use vocabulary such as o'clock, a.m. and p.m., morning, afternoon, noon and midnight

				• State how many days there are in each month and how many days in a year and a leap year; • Calculate the number of days from one date to another up to 20 days; • Compare the times of events in minutes and seconds • Calculate and compare the length of events using digital times in fifteen-minute intervals
	Most	• Read numbers up to 1000 in numerals and words. • Recognise multiples of 4, 8, 50 and 100. • Find missing numbers in a given sequence. • Solve problems involving multiples, place value & partitioning. • Solve problems involving comparing and ordering numbers. • Solve problems involving numbers in different representations. • Solve place value problems involving measures. • Describe the properties of 3D shapes using the vocabulary faces, edges and vertices. • 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 pairs of perpendicular and parallel lines.	• Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction • Estimate 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 • Continue to practice both mental methods to aid fluency • Recall multiplication and division facts for the 3x, 4x and 8x tables with increasing speed and accuracy. • Use multiplication and division facts from the 3x, 4x and 8x tables to solve word problems with more than one step. • Identify patterns in known multiplication tables. • Multiply multiples of 10 (including three-digit numbers) mentally using known facts. • Use the grid method to solve multiplication problems which go beyond known facts. • Begin to use expanded multiplication when working with numbers beyond known facts. • Use number lines to solve division problems beyond known facts with increasing accuracy and speed. • Begin to use the bus stop method as a written method for division. • Solve missing number problems which go beyond known facts. • Solve scaling problems with increasing accuracy, beginning to work out the scale used from the measurements. • Spotting patterns when solving correspondence problems and beginning to predict the number of possibilities.	• Add and subtract fractions with the same denominator • Compare and order simple fractions • Use resources to identify equivalent fractions • Complete fraction number lines and number sequences • Use resources to support finding a fraction of a set of objects or number • Estimate and measure to the nearest cm, m and 5mm multiple • Measure and draw lines in mixed units (cm and mm) • Solve word problems by adding and subtracting three measurements in cm • Solve addition problems involving metres by adding two three-digit numbers totaling up to 550m • Solve subtraction problems involving metres by subtracting two three-digit numbers involving exchanging • Solve addition and subtraction problems involving mm by adding four amounts • Use <, > and = to compare two mixed-unit length measurements • Order mixed-unit length measurements • Calculate the perimeter of squares (side measurements given) • Compare money amounts up to £1 • Make different money combinations using coins up to £1 • Add together up to three items in pence where the total equals up to £1 • Add together up to three items in pounds where the total equals up to £150 • Calculate the change required when paying for a single and several items, paying with £1 • Read the time in minute intervals on an analogue clock • Read digital clocks in five-minute intervals and state the time in analogue form • Read clocks with Roman numerals in five-minute intervals • Order times that use a.m. and p.m. • Calculate the number of days from one date to another (up to 50 days) • Calculate and compare the length of events using digital times in ten-minute intervals

	Some	• Identify and sort numbers using set criteria. • Partition numbers in a variety of ways. • Read numbers up to 1000 in numerals and words. • Identify 3D shapes from their nets and be able to sort 2D and 3D shapes on Venn and Carroll diagrams. • Identify acute and obtuse angles. • Compare and classify geometric shapes, based on the property of lines.	• Use reasoning about number facts to answer increasingly complex questions • Explain ideas fluently using mathematical vocabulary and make generalisations • Confidently record addition and subtraction in columns including decimals • Quickly and accurately recall multiplication and division facts for the 3x, 4x and 8x tables. • Solve mathematical problems and puzzles using known multiplication and division facts; identifying and explaining patterns and making predictions. • Multiply multiples of 10 mentally. • Use a range of written methods for multiplication and division with increasing confidence.	• Use <, > and = to compare groups of fractions • Place fractions appropriately on a blank number line • Understand the link between tenths as fractions and as decimals • Calculate unit and non-unit fractions of sets of objects or numbers • Recall equivalents for unit and non-unit fractions • Complete and create fraction number sequences • Estimate and measure in whole and half cm and m • Estimate and measure in multiples of 1mm • Order sets of mixed measurements • Solve length problems involving calculating a missing number • Compare money amounts up to £1.50 • Make different money combinations using coins up to £1.50 • Work out missing money amounts where the total and one amount is given • Add together up to three items in pounds where the total equals up to £250 • Calculate the change required when paying for a single item and several items, paying with £2 • Read clocks with Roman numerals – minute intervals • Write a definition for time vocabulary such as: o'clock, a.m. and p.m., morning, afternoon, noon and midnight • Calculate the number of days from one date to another (over 100 days) • Calculate and compare the length of events using digital times in five-minute intervals

Year 8		Autumn	Spring	Summer
Content (Entry Level)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Count forwards and backwards in twos, fives and tens up to 100. • Identify and represent numbers up to 100 in some different ways. • Say one more or one less than a given number up to 100. • Compare numbers using the language 'more than', 'less than' and 'equal to'. • Read and write numbers to 50 in words. • Read and write numbers to 100 in numerals. • Partition two-digit numbers into tens and ones. • Provide simple explanations of mathematical concepts. • Name some common 2D and 3D shapes from a group of shapes or in pictures (e.g. triangles, rectangles, squares, circles, cuboids, cubes, pyramids and spheres) • Describe some shape properties • Sort 2D and 3D shapes in simple ways • Read some shape names • Create 2D shapes using geoboards • Make simple 2D and 3D shape patterns • Create 3D shape structures • Order and arrange combinations of mathematical objects in patterns and sequences	• Recall and use at least four out of six number facts to ten and derive their associated subtraction facts. • Add and subtract: two-digit numbers and ones, and two-digit numbers and tens, where no regrouping is required. • Explain their addition and subtraction methods verbally, in pictures or using apparatus. • Understand that two numbers can be added in any order and the answer will be the same. • Sort objects into equal groups and recognise equal and unequal groups. • Count fluently in twos, fives and tens from zero and keep track of their count to multiply. • Use equipment and different models and images to demonstrate multiplication and division. • Use equipment and different models and images to solve simple multiplication and division problems. • Recognise odd and even numbers up to 20 and explain the difference between them. • Know some doubles and halves of numbers. • Make a tally chart. • Complete a pictogram. • Complete a block diagram. • Complete a simple table.	• Find half and then half again, to find one quarter. • Put three of the four groups together to make three quarters. • Share objects into three groups to find one third. • Recognise that half and two quarters look the same when coloured on a shape. • Explain what a half is and is not. • Use standard units to estimate and measure length/height (cm/m), mass (g/kg), temperature (°C), capacity (litres/ml) accurately • Compare and order length, mass, volume/capacity using the language more than, less than and equal to • Read scales on rulers, scales, thermometers, and measuring vessels in divisions of ones • Recognise the symbols for pounds (£) and pence (p) and know the value of different coins • Solve simple, practical one-step measurement problems with all four operations
	Most	• Count forwards and backwards in steps of two, three and five from zero. • Count forwards and backwards in steps of ten from any number. • Know the value of the tens and ones in a two-digit number. • Partition two-digit numbers into different combinations of tens and ones. • Identify, represent and estimate two-digit numbers using a range of representations. • Compare numbers using <, > and = signs. • Order numbers up to 100. • Read and write numbers to at least 100 in numerals and in words. • Use knowledge of place value to explain concepts of number.	• Recall number facts to and within ten and related subtraction facts. Use these to derive number facts to and within 20 and 100 • Add and subtract within 100: a two-digit number and ones, a two-digit number and tens, two two-digit numbers. • Add three one-digit numbers using efficient strategies; • Understand that addition is commutative but subtraction is not, and explain what this means; • Use the inverse relationship between addition and subtraction to solve problems and check answers to calculations. • Solve addition and subtraction problems, in the context of quantities and measures, using equipment, pictures and mentally	• Name half, quarter, two quarters, three quarters and one third. • Recognise the equivalence of half and two quarters. • Write a simple fraction sentence for half and one quarter. • Explain that a fraction has been divided into equal groups. • Count in halves. • Use standard units to estimate and measure length/height (cm/m), mass (g/kg), temperature (°C), capacity (litres/ml) to the nearest unit accurately • Compare and order length, mass, volume/capacity using the symbols <, > and = • Read scales on rulers, scales, thermometers, and measuring vessels in divisions of ones, twos, fives and tens

		• Use number and place value skills fluently to solve a variety of problems. • Name common 2D and 3D shapes, use general terms to name groups of shapes, such as quadrilateral, polygon and polyhedron • Recognise regular and irregular polygons in different sizes and orientations • Describe the properties of 2D and 3D shapes using the language sides, vertices, edges and faces • Identify vertical lines of symmetry in 2D shapes • Identify 2D faces on 3D shapes • Sort 2D and 3D shapes by their properties • Read and write some shape names • Create 2D shapes using geoboards and draw polygons using straight lines • Make 2D and 3D shape patterns • Create and describe 3D shape structures • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line • Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns in clockwise and anticlockwise directions.	• Recall and use multiplication and division facts for the two, five- and ten-times tables; • Recognise odd and even numbers up to 100 and use Reasoning to explain how to identify larger odd and even numbers. • Write expressions and calculations using the multiplication (x), division (÷) and equals (=) symbols. • Understand that multiplication is commutative but that division is not. • Demonstrate that multiplication and division are inverse. • Recall doubles and halves of numbers up to 20. • Link doubling and halving to multiplying and dividing by two and use this to solve problems. • Use equipment, draw a picture, skip count, use a number line or recall facts to solve a one-step multiplication or division problem. • Make and interpret a tally chart. • Construct and interpret a pictogram. • Complete and interpret a block diagram. • Complete and interpret a simple table. • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.	• Recognise the symbols for pounds (£) and pence (p) and use different coins to make the same amount • Read and write the time on an analogue clock to the nearest 5 minutes • Know there are 60 minutes in 1 hour and 24 hours in 1 day • Compare and sequence time intervals • Solve practical addition and subtraction money problems, including giving change • Solve measurement problems involving all four operations
	Some	• Use reasoning about numbers and place value to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Solve number and place value problems of greater complexity by applying procedures fluently. • Explore and investigate numbers greater than 100 by representing them in different ways. • Understand zero as a place holder. • Compare 2D and 3D shapes by identifying the similarities and differences, in their properties • Investigate shape patterns, for example, predicting shapes that come further along the sequence. • Explore regular polyhedrons such as dodecahedrons and octahedrons • Sort and compare shapes using increasingly complex criteria • Use reasoning about shapes to answer increasingly complex questions • Explain ideas fluently using mathematical vocabulary and make generalisations • Work with patterns of shapes, including those in different orientations • Use the concept and language of angles to describe 'turn' by applying rotations in practical contexts.	• Use reasoning about number facts to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Solve unfamiliar word problems that involve more than one step. • Use the terms ‘sum’ and ‘difference’ with understanding. • Begin to record addition and subtraction in columns. • Use known multiplication facts for the two, five- and ten-times tables to make deductions outside these facts. • Make links between known facts, for example, the relationship between the five- and ten-times tables and make generalisations about what they notice. • Use reasoning skills to solve problems that involve more than one step. • Explain ideas fluently using mathematical vocabulary and make rules and generalisations • Generate, present and compare data in different ways. • Move beyond answering simple retrieval questions and extend to finding the total number and finding a difference.	• Find a whole amount from knowing a fraction. • Explain how they can find the full amount from a fraction. • Write fraction sentences for one third and three quarters. • Count in quarters. • Count in thirds. • Place halves and quarters on a number line. • Read scales where not all numbers on the scale are given and estimate points in between • Use reasoning about lengths, heights, capacities, weights and times to solve more complex problems and explain their thinking • Solve unfamiliar word problems that involve more than one step and all four operations.

Year 8		Autumn	Spring	Summer
Content (Advanced)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions and Decimals Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Begin to count in multiples of 6, 7, 9, 25 and 1000. • Begin to find 1000 more or less than a given number. • Begin to count backwards through 0 to include negative numbers. • Begin to know that ten-hundreds are equivalent to one thousand, and that 1000 is ten times the size of 100, and use this to work out how many hundreds there are in other four-digit multiples of 100. • Begin to recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning. • Begin to order and compare numbers beyond 1000. • Begin to identify, represent and estimate numbers using different representations. • Begin to reason about the location of any four-digit number, including identifying the previous and next multiple of 100 and 1000. • Begin to round any number to the nearest 10, 100, 1000. • Begin to divide 1000 into 2, 4, 5 and 10 equal parts and read scales/number lines marked in multiples of 1000 with 2, 4, 5 and 10 equal parts. • Begin to solve number and practical problems that involve all of the above. • Begin to read Roman numbers to 100. • Recognise and name a range of triangles and quadrilaterals • Identify and describe right angles • Identify if a 2D shape has one or more lines of symmetry • Read a coordinate in the first quadrant; • Translate an object or shape in one direction on a 2D grid	• Have a secure understanding of addition and subtraction facts that bridge ten, through continued practice. • Calculate complements to 100. • Understand the inverse relationship between addition and subtraction, and how both relate to the part–whole structure. • Understand and use the commutative property of addition, and understand the related property for subtraction. • Add and subtract up to three-digit numbers using columnar methods. • Recall multiplication and division facts for multiplication tables up to 12 × 12 • Use place value and multiplication tables facts when multiplying and dividing mentally, including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • Identify factor pairs and use inverses when solving problems • Use the expanded written method to multiply two and three-digit by one-digit numbers • Calculate using the short method for division where there are no remainders • Use partitioning and rounding and adjusting to solve two-digit by one-digit multiplication problems • Use known multiplication and division facts to scale up and down • Begin to use branching diagrams to solve correspondence problems • Begin to solve division problems involving fractions • Interpret data • Present data as a bar chart • Answer comparison, sum and difference questions about data presented in tables, pictograms and bar charts • Interpret and present data in a two-circle Venn diagram	• Find groups of equivalent fractions using supporting materials • Recognise hundredths and count in steps of one hundredth using a hundredths square • Add and subtract fractions up to one whole • Identify some pairs of fraction and decimal equivalents • Complete place value grids to divide by 10 and 100 • Round decimals to the nearest whole number using number lines to support them • Compare decimals with same number of decimal places using number lines to support • Solve one-step problems involving fractions • Convert 12-hour times to 24-hour and 24-hour to 12-hour (o'clock and ½ past times) • Solve time problems which involve conversion from hours and minutes to minutes and vice versa (times 15-minute intervals) • Convert and compare: years and months; weeks and days; minutes and seconds • Estimate the length of lines in cm, up to one decimal place • Convert between: mm, cm. m and km (below 20 units) • Compare two measurements of length using <, > or = (multiples of 250) • Solve length problems, calculating difference • Record pence (less than a pound) using a £ sign and subtract single pence from whole pounds • Add together up to three money amounts which have 99p in them (e.g. £14.99) – totals up to £25. • Measure the sides of rectangles and squares in cm and add the measurements together to calculate the perimeter • Use a formula to calculate the perimeters of squares in centimetres and metres (multiples of 10) • Calculate the area of rectangles and squares by using arrays and multiplication • Calculate the area of an L shaped rectilinear shape (shapes made up of two rectangles)

	Most	• Count in multiples of 6, 7, 9, 25 and 1000. • Find 1000 more or less than a given number. • Count backwards through 0 to include negative numbers. • Know that ten-hundreds are equivalent to one thousand, and that 1000 is ten times the size of 100, and use this to work out how many hundreds there are in other 4-digit multiples of 100 • Recognise the place value of each digit in a four-digit number. • Compose and decompose four-digit numbers using standard and non-standard partitioning, writing the related addition calculation, and being able (with standard partitioning) to subtract any single place value part from the whole number. • Order and compare numbers beyond 1000. • Identify, represent and estimate numbers using different representations. • Reason about the location of any four-digit number, including identifying the previous and next multiple of 100 and 1000. • Round any number to the nearest 10, 100 or 1000. • Divide 1000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1000 with 2, 4, 5 and 10 equal parts. • Solve number and practical problems that involve all of the above and with increasingly large positive numbers. • Read Roman numbers to 100 (I to C). • Compare and classify triangles and quadrilaterals based on their mathematical properties • Identify, compare and order angles up to 180° using the vocabulary acute and obtuse • Complete a symmetrical image or pattern with a horizontal or vertical line of symmetry • Read and write a coordinate in the first quadrant • Translate an object or shape horizontally then vertically on a 2D grid	• Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction. • Estimate 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. • Continue to practice mental methods to aid fluency. • Recall multiplication and division facts for multiplication tables up to 12 × 12 with increasing speed and accuracy • Begin to calculate multiples of numbers beyond 12 × 12 • Use a range of mental calculation strategies for multiplication and division with increasing accuracy including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • Use factor pairs and inverses when solving multiplication and division problems • Use the expanded method and short method to multiply two-digit and three-digit by one-digit numbers • Calculate using the short-written method for division for two-digit and three-digit by one-digit numbers, including those with remainders • Use partitioning and rounding and adjusting to solve two-digit by one-digit number problems with increasing confidence • Use multiplication and division facts to scale up and down • Solve division problems involving fractions • Identify the difference between discrete and continuous data • Interpret discrete and continuous data • Present data as grouped bar charts • Begin to interpret data in time graphs and line graphs • Answer comparison, sum and difference questions about data presented in tables, pictograms, grouped bar charts and climate graphs • Interpret and present data in a two-circle Venn diagram and a Carroll diagram	• Find groups of equivalent fractions by multiplying • Recognise hundredths and count in steps of multiple hundredths using a hundred square if needed • Add and subtract fractions up to and over one whole using fraction bars • Identify fraction and decimal equivalents for halves, quarters and tenths • Use place value grids to divide by 10 and 100 • Draw number lines to round decimals to the nearest whole • Compare decimals with same number of decimal places • Solve a variety of problems involving fractions selecting support where needed • Convert 12-hour times to 24-hour and 24-hour to 12-hour (5-minute intervals) • Convert between: mm, cm, m and km (below 30 units) • Order mixed units of length measurement with decimal notation • Solve length problems, calculating the difference (km) with one decimal place) between 2 distances – answers up to 120km • Convert money amounts written in pence to decimal notation, e.g. 547p = £5.47 and vice versa (less than £15) • Order four money amounts, some written in pence, some in decimal form • Add given dimensions on scaled rectangles and squares to calculate perimeter in metres (multiples of 5) • Use the formula to calculate the perimeters of squares in metres (multiples of five) • Calculate the area of a composite rectilinear shape (shapes made up of three rectangles)
	Some	• Apply their number and place value knowledge to answer increasingly complex reasoning and problem-solving questions. • Use mathematical vocabulary to explain ideas fluently and make generalisations. • Solve number and place value questions of greater complexity by applying procedures fluently. • Explore and investigate numbers up to 10,000 by representing them in different ways. • Explain how some 2D shapes can belong to more than one classification	• Use reasoning about number facts to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Confidently record addition and subtraction in columns including decimals. • Quickly recall multiplication and division facts for multiplication tables up to 12 × 12 • Calculate multiples of numbers beyond 12 × 12	• Find groups of equivalent fractions by multiplying and dividing • Recognise hundredths and count in steps of multiple hundredths • Add and subtract fractions up to and over one whole • Identify a range of fraction and decimal equivalents including thousandths • Divide any number by 10 and 100 • Round decimal numbers to the nearest whole number • Compare decimals with one and two decimal places • Solve problems involving fractions

		• Talk about a range of angle facts and use them to describe shapes and derive facts about them • Complete a symmetrical image or pattern where there is a diagonal line of symmetry or the original image does not intersect the mirror line • Read, write and plot coordinates in the first quadrant • Translate an object or shape on a 2D grid by writing a more complex set of instructions • Plot specified points to complete a given polygon or picture	• Perform multiplication and division calculations mentally including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • Use factor pairs and inverses accurately when solving multiplication and division problems • Use the expanded method and the short method, to multiply two-digit and three-digit by one-digit numbers, with increasing accuracy • Calculate accurately using the short-written method for division for two-digit and three-digit by one-digit numbers, including those with remainders • Use the distributive law, partitioning and re-combining, or rounding and adjusting confidently to solve two-digit by one-digit multiplication problems • Use multiplication and division facts within and beyond multiplication tables knowledge to scale up and down • Use and devise their own branching diagrams and begin to use multiplication to calculate the number of options when solving correspondence problems • Solve division problems involving fractions with confidence • Interpret a wide range of discrete and continuous data • Present data as grouped or stacked bar charts • Interpret and present data in line graphs • Answer comparison, sum and difference questions about data presented in tables, pictograms, grouped or stacked bar charts, climate graphs and line graphs • Interpret and present data in a three-circle Venn diagram and a Carroll diagram.	• Calculate the actual time where the times shown on clocks are fast or slow • Solve simple problems involving conversion of digital and analogue times • Solve time problems which involve conversion from hours and minutes to minutes and vice versa (times minute intervals) • Calculate the difference between two ages • Convert between: mm, cm, m and km (below 150 units) • Convert money amounts written in pence to decimal notation, e.g. 547p = £5.47 and vice versa (less than £30) • Order five money amounts, some written in pence, some in decimal form • Measure the sides of rectangles and squares in whole and half cm and add the measurements together to calculate the perimeter • Measure the sides of squares in whole and half cm and use a formula to calculate the perimeter in cm • Use a formula to calculate the perimeters of squares in m • Calculate the area of an L-shaped rectilinear shape (shapes made up of four rectangles).

Year 9		Autumn	Spring	Summer
Content (Entry Level)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Count forwards and backwards in twos, fives and tens up to 100. • Identify and represent numbers up to 100 in some different ways. • Say one more or one less than a given number up to 100. • Compare numbers using the language 'more than', 'less than' and 'equal to'. • Read and write numbers to 50 in words. • Read and write numbers to 100 in numerals. • Partition two-digit numbers into tens and ones. • Provide simple explanations of mathematical concepts. • Name some common 2D and 3D shapes from a group of shapes or in pictures (e.g. triangles, rectangles, squares, circles, cuboids, cubes, pyramids and spheres) • Describe some shape properties • Sort 2D and 3D shapes in simple ways • Read some shape names • Create 2D shapes using geoboards • Make simple 2D and 3D shape patterns • Create 3D shape structures • Order and arrange combinations of mathematical objects in patterns and sequences	• Recall and use at least four out of six number facts to ten and derive their associated subtraction facts. • Add and subtract: two-digit numbers and ones, and two-digit numbers and tens, where no regrouping is required. • Explain their addition and subtraction methods verbally, in pictures or using apparatus. • Understand that two numbers can be added in any order and the answer will be the same. • Sort objects into equal groups and recognise equal and unequal groups. • Count fluently in twos, fives and tens from zero and keep track of their count to multiply. • Use equipment and different models and images to demonstrate multiplication and division. • Use equipment and different models and images to solve simple multiplication and division problems. • Recognise odd and even numbers up to 20 and explain the difference between them. • Know some doubles and halves of numbers. • Make a tally chart. • Complete a pictogram. • Complete a block diagram. • Complete a simple table.	• Find half and then half again, to find one quarter. • Put three of the four groups together to make three quarters. • Share objects into three groups to find one third. • Recognise that half and two quarters look the same when coloured on a shape. • Explain what a half is and is not. • Use standard units to estimate and measure length/height (cm/m), mass (g/kg), temperature (°C), capacity (litres/ml) accurately • Compare and order length, mass, volume/capacity using the language more than, less than and equal to • Read scales on rulers, scales, thermometers, and measuring vessels in divisions of ones • Recognise the symbols for pounds (£) and pence (p) and know the value of different coins • Solve simple, practical one-step measurement problems with all four operations
	Most	• Count forwards and backwards in steps of two, three and five from zero. • Count forwards and backwards in steps of ten from any number. • Know the value of the tens and ones in a two-digit number. • Partition two-digit numbers into different combinations of tens and ones. • Identify, represent and estimate two-digit numbers using a range of representations. • Compare numbers using <, > and = signs. • Order numbers up to 100. • Read and write numbers to at least 100 in numerals and in words. • Use knowledge of place value to explain concepts of number.	• Recall number facts to and within ten and related subtraction facts. Use these to derive number facts to and within 20 and 100 • Add and subtract within 100: a two-digit number and ones, a two-digit number and tens, two two-digit numbers. • Add three one-digit numbers using efficient strategies; • Understand that addition is commutative but subtraction is not, and explain what this means; • Use the inverse relationship between addition and subtraction to solve problems and check answers to calculations. • Solve addition and subtraction problems, in the context of quantities and measures, using equipment, pictures and mentally	• Name half, quarter, two quarters, three quarters and one third. • Recognise the equivalence of half and two quarters. • Write a simple fraction sentence for half and one quarter. • Explain that a fraction has been divided into equal groups. • Count in halves. • Use standard units to estimate and measure length/height (cm/m), mass (g/kg), temperature (°C), capacity (litres/ml) to the nearest unit accurately • Compare and order length, mass, volume/capacity using the symbols <, > and = • Read scales on rulers, scales, thermometers, and measuring vessels in divisions of ones, twos, fives and tens

		• Use number and place value skills fluently to solve a variety of problems. • Name common 2D and 3D shapes, use general terms to name groups of shapes, such as quadrilateral, polygon and polyhedron • Recognise regular and irregular polygons in different sizes and orientations • Describe the properties of 2D and 3D shapes using the language sides, vertices, edges and faces • Identify vertical lines of symmetry in 2D shapes • Identify 2D faces on 3D shapes • Sort 2D and 3D shapes by their properties • Read and write some shape names • Create 2D shapes using geoboards and draw polygons using straight lines • Make 2D and 3D shape patterns • Create and describe 3D shape structures • Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line • Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns in clockwise and anticlockwise directions.	• Recall and use multiplication and division facts for the two, five- and ten-times tables; • Recognise odd and even numbers up to 100 and use Reasoning to explain how to identify larger odd and even numbers. • Write expressions and calculations using the multiplication (x), division (÷) and equals (=) symbols. • Understand that multiplication is commutative but that division is not. • Demonstrate that multiplication and division are inverse. • Recall doubles and halves of numbers up to 20. • Link doubling and halving to multiplying and dividing by two and use this to solve problems. • Use equipment, draw a picture, skip count, use a number line or recall facts to solve a one-step multiplication or division problem. • Make and interpret a tally chart. • Construct and interpret a pictogram. • Complete and interpret a block diagram. • Complete and interpret a simple table. • Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity.	• Recognise the symbols for pounds (£) and pence (p) and use different coins to make the same amount • Read and write the time on an analogue clock to the nearest 5 minutes • Know there are 60 minutes in 1 hour and 24 hours in 1 day • Compare and sequence time intervals • Solve practical addition and subtraction money problems, including giving change • Solve measurement problems involving all four operations
	Some	• Use reasoning about numbers and place value to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Solve number and place value problems of greater complexity by applying procedures fluently. • Explore and investigate numbers greater than 100 by representing them in different ways. • Understand zero as a place holder. • Compare 2D and 3D shapes by identifying the similarities and differences, in their properties • Investigate shape patterns, for example, predicting shapes that come further along the sequence. • Explore regular polyhedrons such as dodecahedrons and octahedrons • Sort and compare shapes using increasingly complex criteria • Use reasoning about shapes to answer increasingly complex questions • Explain ideas fluently using mathematical vocabulary and make generalisations • Work with patterns of shapes, including those in different orientations • Use the concept and language of angles to describe 'turn' by applying rotations in practical contexts.	• Use reasoning about number facts to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Solve unfamiliar word problems that involve more than one step. • Use the terms ‘sum’ and ‘difference’ with understanding. • Begin to record addition and subtraction in columns. • Use known multiplication facts for the two, five- and ten-times tables to make deductions outside these facts. • Make links between known facts, for example, the relationship between the five- and ten-times tables and make generalisations about what they notice. • Use reasoning skills to solve problems that involve more than one step. • Explain ideas fluently using mathematical vocabulary and make rules and generalisations • Generate, present and compare data in different ways. • Move beyond answering simple retrieval questions and extend to finding the total number and finding a difference.	• Find a whole amount from knowing a fraction. • Explain how they can find the full amount from a fraction. • Write fraction sentences for one third and three quarters. • Count in quarters. • Count in thirds. • Place halves and quarters on a number line. • Read scales where not all numbers on the scale are given and estimate points in between • Use reasoning about lengths, heights, capacities, weights and times to solve more complex problems and explain their thinking • Solve unfamiliar word problems that involve more than one step and all four operations.

Year 9		Autumn	Spring	Summer
Content (Advanced)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions and Decimals Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Begin to count in multiples of 6, 7, 9, 25 and 1000. • Begin to find 1000 more or less than a given number. • Begin to count backwards through 0 to include negative numbers. • Begin to know that ten-hundreds are equivalent to one thousand, and that 1000 is ten times the size of 100, and use this to work out how many hundreds there are in other four-digit multiples of 100. • Begin to recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning. • Begin to order and compare numbers beyond 1000. • Begin to identify, represent and estimate numbers using different representations. • Begin to reason about the location of any four-digit number, including identifying the previous and next multiple of 100 and 1000. • Begin to round any number to the nearest 10, 100, 1000. • Begin to divide 1000 into 2, 4, 5 and 10 equal parts and read scales/number lines marked in multiples of 1000 with 2, 4, 5 and 10 equal parts. • Begin to solve number and practical problems that involve all of the above. • Begin to read Roman numbers to 100. • Recognise and name a range of triangles and quadrilaterals • Identify and describe right angles • Identify if a 2D shape has one or more lines of symmetry • Read a coordinate in the first quadrant; • Translate an object or shape in one direction on a 2D grid	• Have a secure understanding of addition and subtraction facts that bridge ten, through continued practice. • Calculate complements to 100. • Understand the inverse relationship between addition and subtraction, and how both relate to the part–whole structure. • Understand and use the commutative property of addition, and understand the related property for subtraction. • Add and subtract up to three-digit numbers using columnar methods. • Recall multiplication and division facts for multiplication tables up to 12 × 12 • Use place value and multiplication tables facts when multiplying and dividing mentally, including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • Identify factor pairs and use inverses when solving problems • Use the expanded written method to multiply two and three-digit by one-digit numbers • Calculate using the short method for division where there are no remainders • Use partitioning and rounding and adjusting to solve two-digit by one-digit multiplication problems • Use known multiplication and division facts to scale up and down • Begin to use branching diagrams to solve correspondence problems • Begin to solve division problems involving fractions • Interpret data • Present data as a bar chart • Answer comparison, sum and difference questions about data presented in tables, pictograms and bar charts • Interpret and present data in a two-circle Venn diagram	• Find groups of equivalent fractions using supporting materials • Recognise hundredths and count in steps of one hundredth using a hundredths square • Add and subtract fractions up to one whole • Identify some pairs of fraction and decimal equivalents • Complete place value grids to divide by 10 and 100 • Round decimals to the nearest whole number using number lines to support them • Compare decimals with same number of decimal places using number lines to support • Solve one-step problems involving fractions • Convert 12-hour times to 24-hour and 24-hour to 12-hour (o'clock and ½ past times) • Solve time problems which involve conversion from hours and minutes to minutes and vice versa (times 15-minute intervals) • Convert and compare: years and months; weeks and days; minutes and seconds • Estimate the length of lines in cm, up to one decimal place • Convert between: mm, cm. m and km (below 20 units) • Compare two measurements of length using <, > or = (multiples of 250) • Solve length problems, calculating difference • Record pence (less than a pound) using a £ sign and subtract single pence from whole pounds • Add together up to three money amounts which have 99p in them (e.g. £14.99) – totals up to £25. • Measure the sides of rectangles and squares in cm and add the measurements together to calculate the perimeter • Use a formula to calculate the perimeters of squares in centimetres and metres (multiples of 10) • Calculate the area of rectangles and squares by using arrays and multiplication • Calculate the area of an L shaped rectilinear shape (shapes made up of two rectangles)

	Most	• Count in multiples of 6, 7, 9, 25 and 1000. • Find 1000 more or less than a given number. • Count backwards through 0 to include negative numbers. • Know that ten-hundreds are equivalent to one thousand, and that 1000 is ten times the size of 100, and use this to work out how many hundreds there are in other 4-digit multiples of 100 • Recognise the place value of each digit in a four-digit number. • Compose and decompose four-digit numbers using standard and non-standard partitioning, writing the related addition calculation, and being able (with standard partitioning) to subtract any single place value part from the whole number. • Order and compare numbers beyond 1000. • Identify, represent and estimate numbers using different representations. • Reason about the location of any four-digit number, including identifying the previous and next multiple of 100 and 1000. • Round any number to the nearest 10, 100 or 1000. • Divide 1000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1000 with 2, 4, 5 and 10 equal parts. • Solve number and practical problems that involve all of the above and with increasingly large positive numbers. • Read Roman numbers to 100 (I to C). • Compare and classify triangles and quadrilaterals based on their mathematical properties • Identify, compare and order angles up to 180° using the vocabulary acute and obtuse • Complete a symmetrical image or pattern with a horizontal or vertical line of symmetry • Read and write a coordinate in the first quadrant • Translate an object or shape horizontally then vertically on a 2D grid	• Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction. • Estimate 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. • Continue to practice mental methods to aid fluency. • Recall multiplication and division facts for multiplication tables up to 12 × 12 with increasing speed and accuracy • Begin to calculate multiples of numbers beyond 12 × 12 • Use a range of mental calculation strategies for multiplication and division with increasing accuracy including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • Use factor pairs and inverses when solving multiplication and division problems • Use the expanded method and short method to multiply two-digit and three-digit by one-digit numbers • Calculate using the short-written method for division for two-digit and three-digit by one-digit numbers, including those with remainders • Use partitioning and rounding and adjusting to solve two-digit by one-digit number problems with increasing confidence • Use multiplication and division facts to scale up and down • Solve division problems involving fractions • Identify the difference between discrete and continuous data • Interpret discrete and continuous data • Present data as grouped bar charts • Begin to interpret data in time graphs and line graphs • Answer comparison, sum and difference questions about data presented in tables, pictograms, grouped bar charts and climate graphs • Interpret and present data in a two-circle Venn diagram and a Carroll diagram	• Find groups of equivalent fractions by multiplying • Recognise hundredths and count in steps of multiple hundredths using a hundred square if needed • Add and subtract fractions up to and over one whole using fraction bars • Identify fraction and decimal equivalents for halves, quarters and tenths • Use place value grids to divide by 10 and 100 • Draw number lines to round decimals to the nearest whole • Compare decimals with same number of decimal places • Solve a variety of problems involving fractions selecting support where needed • Convert 12-hour times to 24-hour and 24-hour to 12-hour (5-minute intervals) • Convert between: mm, cm, m and km (below 30 units) • Order mixed units of length measurement with decimal notation • Solve length problems, calculating the difference (km) with one decimal place) between 2 distances – answers up to 120km • Convert money amounts written in pence to decimal notation, e.g. 547p = £5.47 and vice versa (less than £15) • Order four money amounts, some written in pence, some in decimal form • Add given dimensions on scaled rectangles and squares to calculate perimeter in metres (multiples of 5) • Use the formula to calculate the perimeters of squares in metres (multiples of five) • Calculate the area of a composite rectilinear shape (shapes made up of three rectangles)
	Some	• Apply their number and place value knowledge to answer increasingly complex reasoning and problem-solving questions. • Use mathematical vocabulary to explain ideas fluently and make generalisations. • Solve number and place value questions of greater complexity by applying procedures fluently. • Explore and investigate numbers up to 10,000 by representing them in different ways. • Explain how some 2D shapes can belong to more than one classification	• Use reasoning about number facts to answer increasingly complex questions. • Explain ideas fluently using mathematical vocabulary and make generalisations. • Confidently record addition and subtraction in columns including decimals. • Quickly recall multiplication and division facts for multiplication tables up to 12 × 12 • Calculate multiples of numbers beyond 12 × 12	• Find groups of equivalent fractions by multiplying and dividing • Recognise hundredths and count in steps of multiple hundredths • Add and subtract fractions up to and over one whole • Identify a range of fraction and decimal equivalents including thousandths • Divide any number by 10 and 100 • Round decimal numbers to the nearest whole number • Compare decimals with one and two decimal places • Solve problems involving fractions

		• Talk about a range of angle facts and use them to describe shapes and derive facts about them • Complete a symmetrical image or pattern where there is a diagonal line of symmetry or the original image does not intersect the mirror line • Read, write and plot coordinates in the first quadrant • Translate an object or shape on a 2D grid by writing a more complex set of instructions • Plot specified points to complete a given polygon or picture	• Perform multiplication and division calculations mentally including multiplying by 0 and 1, dividing by 1, and multiplying together three numbers • Use factor pairs and inverses accurately when solving multiplication and division problems • Use the expanded method and the short method, to multiply two-digit and three-digit by one-digit numbers, with increasing accuracy • Calculate accurately using the short-written method for division for two-digit and three-digit by one-digit numbers, including those with remainders • Use the distributive law, partitioning and re-combining, or rounding and adjusting confidently to solve two-digit by one-digit multiplication problems • Use multiplication and division facts within and beyond multiplication tables knowledge to scale up and down • Use and devise their own branching diagrams and begin to use multiplication to calculate the number of options when solving correspondence problems • Solve division problems involving fractions with confidence • Interpret a wide range of discrete and continuous data • Present data as grouped or stacked bar charts • Interpret and present data in line graphs • Answer comparison, sum and difference questions about data presented in tables, pictograms, grouped or stacked bar charts, climate graphs and line graphs • Interpret and present data in a three-circle Venn diagram and a Carroll diagram.	• Calculate the actual time where the times shown on clocks are fast or slow • Solve simple problems involving conversion of digital and analogue times • Solve time problems which involve conversion from hours and minutes to minutes and vice versa (times minute intervals) • Calculate the difference between two ages • Convert between: mm, cm, m and km (below 150 units) • Convert money amounts written in pence to decimal notation, e.g. 547p = £5.47 and vice versa (less than £30) • Order five money amounts, some written in pence, some in decimal form • Measure the sides of rectangles and squares in whole and half cm and add the measurements together to calculate the perimeter • Measure the sides of squares in whole and half cm and use a formula to calculate the perimeter in cm • Use a formula to calculate the perimeters of squares in m • Calculate the area of an L-shaped rectilinear shape (shapes made up of four rectangles).

Year 10		Autumn	Spring	Summer
Content (Entry Level)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Continue number sequences. • Recognise numbers in a variety of ways. • Partition numbers into hundreds, tens and ones. • Read simple numbers up to 1000 in numerals and words. • Count in multiples of 4, 8, 50 and 100 from zero. • Find 10 more or less than a given number up to 100. • Find 100 more or less than a given number up to 500. • Compare numbers using inequality and equality signs. • Order numbers up to 1000. • Solve simple problems involving place value of 3-digit numbers • Draw 2D shapes, make and describe 3D shapes and recognise 3D shapes in different orientations. • Recognise angles as a property of shape or a description of a turn and identify right angles. • Identify horizontal and vertical lines.	• Secure fluency in addition and subtraction facts that bridge ten, through continued practice • Calculate number bonds of 100 • Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure • Understand and use the commutative property of addition, and understand the related property for subtraction • Add and subtract up to three-digit numbers using columnar methods • Recall multiplication and division facts for the 3x, 4x, 8x tables. • Use multiplication facts from the 3x, 4x and 8x tables to solve word problems. • Begin to identify patterns in the 3x, 4x and 8x tables when presented visually (e.g. coloured on a hundred square). • Multiply multiples of 10 using known facts up to 12x. • Use the grid method to multiply two and three-digit numbers. • Use number lines to solve division problems beyond known facts. • Solve missing number problems using known facts. • Solve simple scaling and correspondence problems using facts from the 3x, 4x and 8x tables. • Collect data in a tally chart • Collate data into a frequency table • Create simple bar charts and pictograms • Ask and answer one-step questions about simple charts, tables and diagrams	• Use resources to add and subtract fractions with the same denominator • Use resources to compare and order unit fractions • Share objects to find a fraction of a set of objects • Identify pairs of equivalent fractions on a fraction wall • Estimate and measure in exact cm, m and multiples of 10mm • Measure and draw lines in cm and mm to the nearest 5mm • Solve word problems by adding and subtracting two measurements in cm • Solve addition problems involving metres by adding two three-digit numbers totaling up to 350m • Solve subtraction problems involving metres by subtracting two three-digit numbers, not involving exchanging • Solve addition and subtraction problems involving mm by adding three amounts • Use <, > and = to compare two single-unit length measurements • Order single-unit length measurements • Measure the perimeter of rectangles and squares • Calculate the perimeter of rectangles and squares (all side measurements given) • Draw two different rectangles with the same perimeter • Compare money amounts up to 50p • Make different money combinations using coins up to 50p • Choose the correct symbol <, > or = to compare the money amounts • Add together up to three items in pence where the total equals up to 50p • Add together up to three items in pounds where the total equals up to £100 • Calculate the change required when paying for a single item and several items, paying with 50p • Read the time in five-minute intervals on an analogue clock • Read digital clocks in fifteen-minute intervals and state the time in analogue form • Read clocks with Roman numerals in fifteen-minute intervals • Identify whether events could be a.m. or p.m. or both • Use vocabulary such as o'clock, a.m. and p.m., morning, afternoon, noon and midnight

				• State how many days there are in each month and how many days in a year and a leap year; • Calculate the number of days from one date to another up to 20 days; • Compare the times of events in minutes and seconds • Calculate and compare the length of events using digital times in fifteen-minute intervals
	Most	• Read numbers up to 1000 in numerals and words. • Recognise multiples of 4, 8, 50 and 100. • Find missing numbers in a given sequence. • Solve problems involving multiples, place value & partitioning. • Solve problems involving comparing and ordering numbers. • Solve problems involving numbers in different representations. • Solve place value problems involving measures. • Describe the properties of 3D shapes using the vocabulary faces, edges and vertices. • 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 pairs of perpendicular and parallel lines.	• Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction • Estimate 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 • Continue to practice both mental methods to aid fluency • Recall multiplication and division facts for the 3x, 4x and 8x tables with increasing speed and accuracy. • Use multiplication and division facts from the 3x, 4x and 8x tables to solve word problems with more than one step. • Identify patterns in known multiplication tables. • Multiply multiples of 10 (including three-digit numbers) mentally using known facts. • Use the grid method to solve multiplication problems which go beyond known facts. • Begin to use expanded multiplication when working with numbers beyond known facts. • Use number lines to solve division problems beyond known facts with increasing accuracy and speed. • Begin to use the bus stop method as a written method for division. • Solve missing number problems which go beyond known facts. • Solve scaling problems with increasing accuracy, beginning to work out the scale used from the measurements. • Spotting patterns when solving correspondence problems and beginning to predict the number of possibilities. • Create scaled bar charts and pictograms • Create Venn and Carroll diagrams • Create a table of information • Ask and answer two-step questions about charts, tables and diagrams	• Add and subtract fractions with the same denominator • Compare and order simple fractions • Use resources to identify equivalent fractions • Complete fraction number lines and number sequences • Use resources to support finding a fraction of a set of objects or number • Estimate and measure to the nearest cm, m and 5mm multiple • Measure and draw lines in mixed units (cm and mm) • Solve word problems by adding and subtracting three measurements in cm • Solve addition problems involving metres by adding two three-digit numbers totalling up to 550m • Solve subtraction problems involving metres by subtracting two three-digit numbers involving exchanging • Solve addition and subtraction problems involving mm by adding four amounts • Use <, > and = to compare two mixed-unit length measurements • Order mixed-unit length measurements • Calculate the perimeter of squares (side measurements given) • Compare money amounts up to £1 • Make different money combinations using coins up to £1 • Add together up to three items in pence where the total equals up to £1 • Add together up to three items in pounds where the total equals up to £150 • Calculate the change required when paying for a single and several items, paying with £1 • Read the time in minute intervals on an analogue clock • Read digital clocks in five-minute intervals and state the time in analogue form • Read clocks with Roman numerals in five-minute intervals • Order times that use a.m. and p.m. • Calculate the number of days from one date to another (up to 50 days) • Calculate and compare the length of events using digital times in ten-minute intervals

	Some	• Identify and sort numbers using set criteria. • Partition numbers in a variety of ways. • Read numbers up to 1000 in numerals and words. • Identify 3D shapes from their nets and be able to sort 2D and 3D shapes on Venn and Carroll diagrams. • Identify acute and obtuse angles. • Compare and classify geometric shapes, based on the property of lines.	• Use reasoning about number facts to answer increasingly complex questions • Explain ideas fluently using mathematical vocabulary and make generalisations • Confidently record addition and subtraction in columns including decimals • Quickly and accurately recall multiplication and division facts for the 3x, 4x and 8x tables. • Solve mathematical problems and puzzles using known multiplication and division facts; identifying and explaining patterns and making predictions. • Multiply multiples of 10 mentally. • Use a range of written methods for multiplication and division with increasing confidence. • Ask and answer more complex two-step questions about charts, tables and diagrams	• Use <, > and = to compare groups of fractions • Place fractions appropriately on a blank number line • Understand the link between tenths as fractions and as decimals • Calculate unit and non-unit fractions of sets of objects or numbers • Recall equivalents for unit and non-unit fractions • Complete and create fraction number sequences • Estimate and measure in whole and half cm and m • Estimate and measure in multiples of 1mm • Order sets of mixed measurements • Solve length problems involving calculating a missing number • Compare money amounts up to £1.50 • Make different money combinations using coins up to £1.50 • Work out missing money amounts where the total and one amount is given • Add together up to three items in pounds where the total equals up to £250 • Calculate the change required when paying for a single item and several items, paying with £2 • Read clocks with Roman numerals – minute intervals • Write a definition for time vocabulary such as: o'clock, a.m. and p.m., morning, afternoon, noon and midnight • Calculate the number of days from one date to another (over 100 days) • Calculate and compare the length of events using digital times in five-minute intervals

Year 10		Autumn	Spring	Summer
Content (Advanced)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions and Decimals	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions, Decimals and Percentages Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Read and write numbers up to 100,000. • Identify the value of each digit in a number up to 100,000 using place value grids and counters. • Recognise concrete and visual representations of numbers with one decimal place; • Order numbers up to 100,000. • Compare numbers up to 100 000 using the greater than and less than symbols. • Round numbers to the nearest 10, 100, 1000, 10,000 or 100,000 using a number line. • Calculate intervals across zero using a number line. • Compare and order negative numbers using a number line. • Identify negative numbers in context. • Recognise some powers of 10 within sequences. • Read Roman numerals up to 500 (D) using a symbol chart. • Identify years written in Roman numerals using a symbol chart. • Identify regular and irregular 2D shapes • Identify the net of a cube or cuboid • Compare acute, obtuse and reflex angles • Know angles are measured in degrees • Find angles on a straight line and half a turn • Recognise reflective symmetry; • Translate a shape knowing that it does not change shape	• Add and subtract numbers with up to 5 digits using standard written methods • Round numbers to the nearest 10, 100, 1000 • Understand that addition is the inverse of subtraction • Round numbers using written jottings that support or help check answers to calculations • Choose whether to use mental or written methods of calculation with support • Solve one-step word problems • Use modelled methods of mental calculation to increase speed and accuracy • Use modelled methods of mental calculation to practice adding numbers with up to 5 digits. • Recognise the multiples and factors of numbers and begin to find the common factors of two numbers • Identify the prime numbers less than 20 and find the prime numbers up to 100 using their multiplication tables knowledge • Multiply numbers up to 4 digits by one- or two-digit numbers using short multiplication within their tables knowledge • Multiply and divide numbers mentally using known facts e.g. doubling and halving • Use the formal method of short division to divide numbers up to 4 digits by a one-digit number with increasing confidence • Begin to interpret remainders as whole numbers, decimals and simple fractions where appropriate • Multiply and divide whole numbers by 10, 100 and 1000 • Understand the notation for square and cubed numbers • Recognise that the equals sign indicates equivalence • Solve a range of multiplication and division problems including scaling and rates problems • Interpret data presented in a line graph • Answer comparison, sum and difference questions about data presented in a line graph • Interpret information in tables • Answer questions about information presented in tables	• Compare and order fractions using a fraction wall to support them • Identify equivalent improper fractions and mixed numbers using diagrams to support • Add and subtract improper fractions with the same denominator • Add and subtract proper fractions with different denominators using resources to support them • Multiply proper fractions or mixed numbers by whole numbers using resources to support • Convert between decimal and fraction tenths and thousandths using resources to support them • Round a number with two decimal places to the nearest whole number and nearest tenth using a number line to support • Compare and order numbers with up to three decimal places when they have the same number of decimal places • Understand per cent and give percentage and decimal equivalents for half, quarters, fifths, tenths, twentieths, twenty-fifths, fiftieths and hundredths fractions • Calculate the perimeter of composite rectilinear shapes in cm and m, when given all sides • Use a given formula to calculate the perimeter of rectangles • Find the area of rectangles, multiplying the length by width • Estimate the area of irregular shapes by counting whole and half squares • Convert between metric units of length, recording using decimal notation up to 2 dp. • Solve simple problems involving conversion of metric units • Convert 12 hr. to 24 hr. times and vice versa (15 min intervals) • Convert between minutes and seconds using whole number measurements • Solve simple problems involving conversion of time units, including interpreting timetables • Calculate the amount of days and weeks or just days from one date to another • Estimate the volume of cubes and cuboids

	Most	• Read and write most numbers up to 1,000,000. • Identify the value of most digits in numbers up to 1,000,000. • Use concrete, visual and abstract representations to help identify numbers with two decimal places. • Order most numbers up to 1,000,000. • Compare most numbers up to 1,000,000 using the greater than and less than symbols. • Round numbers up to 1,000,000 to the nearest 10, 100, 1000, 10,000 or 100,000 using a number line. • Count backwards and forwards across zero using number lines • Compare and order negative numbers. • Solve age appropriate problems involving negative numbers. • Count forwards and backwards in steps of powers of 10. • Read Roman numerals up to 1000 (M). • Identify years written in Roman numerals. • Solve reasoning problems using all of the above. • Reason about 2D shapes based on lengths and angles • Identify the nets of a range of 3D shapes • Estimate acute, obtuse and reflex angles • Measure angles using a protractor • Begin to draw angles using a protractor • Find angles at a point and one whole turn • Draw a translated shape • Draw a reflected shape	• Add and subtract numbers with at least 5 digits using mental and written methods • Round numbers to the nearest 10, 100, 1000, 10,000 • Use inverse operations to check answers to addition and subtraction calculations • Mentally round numbers to check answers to calculations and determine, in the context of a problem, levels of accuracy • Choose a sensible way of calculating when solving a problem • Solve one-step and two-step word problems • Independently choose appropriate methods for mental calculation • Practice mental calculation with increasingly large numbers • Find factor pairs and identify the common factors of two or more numbers • Recall the prime numbers up to 20 and be able to find the prime numbers up to 100 using their multiplication tables knowledge • Multiply numbers up to 4 digits by 1 or 2-digit numbers using short and long multiplication • Multiply and divide numbers mentally using known facts e.g. doubling, halving, partitioning and recombining and beginning to use known facts to multiply and divide decimals • Use the formal method of short division to divide numbers up to 4 digits by a one-digit number. • Interpret remainders as whole numbers, decimals and simple fractions and begin to choose the best way to express remainders, depending on the context of the problem • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • Identify and use square numbers, cube numbers and powers • Recognise that the equals sign indicates equivalence and make equations balance • Solve a wide range of multiplication and division problems, applying their mental and written methods including scaling, exchange rate and speed problems • Interpret data presented in a double line graph • Answer comparison, sum and difference questions about data presented in a double line graph • Interpret information in a range of tables • Answer questions about information presented in timetables, applying their knowledge of time	• Compare and order fractions using multiplication to find equivalent fractions • Identify equivalent improper fractions and mixed numbers • Convert between improper fractions and mixed numbers to add and subtract fractions with the same denominator • Add and subtract proper fractions with different denominators • Multiply proper fractions or mixed numbers by whole numbers by drawing diagrams • Use place value to convert between decimal and fraction tenths and thousandths • Compare and order numbers with up to three decimal places when they have different numbers of decimal places • Give percentage and decimal equivalents for half, quarters, fifths and fractions with a denominator of a multiple of 10 or 25 • Calculate the perimeter of composite rectilinear shapes in cm and m, calculating the length of unknown sides • Choose a formula to calculate the perimeter of rectangles • Find the area of rectangles, multiplying the length by width • Solve reasoning style problems involving conversion of metric units of measurement • Convert 12 hr. to 24 hr. times and vice versa (5 min intervals) • Convert between minutes and seconds using measurements up to 1 dp. • Solve reasoning style problems involving the conversion of time units, including interpreting timetables.

	Some	• Read and write any number up to 1,000,000. • Identify the value of any digit in any number up to 1,000,000. • Identify the value of a digit in numbers with two decimal places. • Order any set of numbers up to 1,000,000. • Compare a wide range of numbers using the greater than and less than symbols. • Round numbers up to 1,000,000 to the nearest 10, 100, 1000, 10,000 or 100,000. • Count backwards and forwards across zero using mental methods and number lines. • Compare and order negative numbers. • Solve a range of contextualised problems involving negative numbers. • Count forwards and backwards in steps of powers of 10 from given numbers to 1,000,000. • Read Roman numerals up to 1000 (M). • Identify years written in Roman numerals. • Solve a wide range of reasoning problems using all of the above. • Calculate missing angles or lengths of 2D shapes using known facts • Draw nets of 3D shapes • Accurately draw angles using a protractor • Calculate missing angles • Identify missing coordinates of a translated shape • Identify missing coordinates of a reflected shape	• Add and subtract any given number using mental and written methods • Round any number to a required degree of accuracy • Mentally check answers to calculations using inverse • Efficiently and independently choose between mental and written calculations to enhance mathematical fluency and accuracy • Solve a wide range of multi-step word problems • Mentally calculate with a range of large numbers using knowledge of rounding • Identify the common factors and prime factors of numbers • Recall the prime numbers up to 20 and find prime numbers up to and beyond 100 using their multiplication tables knowledge • Multiply numbers up to 4 digits by 1- or 2-digit numbers using short and long multiplication accurately and confidently • Multiply and divide numbers mentally using known facts e.g. doubling, halving, partitioning and recombining and using known facts to multiply and divide decimals • Use the formal method of short division to divide numbers up to 4 digits by a one-digit number. • Interpret remainders as whole numbers, decimals and fractions. Choose from these in order to express remainders appropriately depending on the context • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • Recognise and use square numbers, cube numbers and powers • Calculate square and cube roots through trial and improvement • Recognise that the equals sign indicates equivalence and make equations that balance using all four operations • Use and apply their mental and written multiplication and division methods to solve problems involving speed, distance and time, scaling and exchange rate money problems • Interpret data presented in a straight-line graph • Answer comparison, sum and difference questions about data presented in a straight-line graph • Complete missing information in tables • Answer more complex questions about information presented in tables	• Compare and order fractions using multiplication and division to find equivalent fractions • Convert between improper fractions and mixed numbers • Convert between improper fractions and mixed numbers to add and subtract fractions with different denominators • Multiply proper fractions or mixed numbers by whole numbers • Round a number with two decimal places to the nearest whole number and nearest tenth • Given the area and one side, calculate the length of an unknown side of a rectangle • Solve more complex problems involving conversion of metric units • Convert 12 hr. to 24 hr. times and vice versa (1 min intervals) • Solve more complex problems involving the conversion of time units, including interpreting timetables

Year 11		Autumn	Spring	Summer
Content (Entry Level)		Number and Place Value Geometry: Properties of Shapes; Position and Direction Consolidation: Measurement; Fractions	Number: Addition and Subtraction; Multiplication and Division Statistics Consolidation: Geometry; Number and Place Value	Number: Fractions Measurement Consolidation: Addition, Subtraction, Multiplication, Division
Knowledge / Skills	**All**	• Continue number sequences. • Recognise numbers in a variety of ways. • Partition numbers into hundreds, tens and ones. • Read simple numbers up to 1000 in numerals and words. • Count in multiples of 4, 8, 50 and 100 from zero. • Find 10 more or less than a given number up to 100. • Find 100 more or less than a given number up to 500. • Compare numbers using inequality and equality signs. • Order numbers up to 1000. • Solve simple problems involving place value of 3-digit numbers • Draw 2D shapes, make and describe 3D shapes and recognise 3D shapes in different orientations. • Recognise angles as a property of shape or a description of a turn and identify right angles. • Identify horizontal and vertical lines.	• Secure fluency in addition and subtraction facts that bridge ten, through continued practice • Calculate number bonds of 100 • Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure • Understand and use the commutative property of addition, and understand the related property for subtraction • Add and subtract up to three-digit numbers using columnar methods • Recall multiplication and division facts for the 3x, 4x, 8x tables. • Use multiplication facts from the 3x, 4x and 8x tables to solve word problems. • Begin to identify patterns in the 3x, 4x and 8x tables when presented visually (e.g. coloured on a hundred square). • Multiply multiples of 10 using known facts up to 12x. • Use the grid method to multiply two and three-digit numbers. • Use number lines to solve division problems beyond known facts. • Solve missing number problems using known facts. • Solve simple scaling and correspondence problems using facts from the 3x, 4x and 8x tables. • Collect data in a tally chart • Collate data into a frequency table • Create simple bar charts and pictograms • Ask and answer one-step questions about simple charts, tables and diagrams	• Use resources to add and subtract fractions with the same denominator • Use resources to compare and order unit fractions • Share objects to find a fraction of a set of objects • Identify pairs of equivalent fractions on a fraction wall • Estimate and measure in exact cm, m and multiples of 10mm • Measure and draw lines in cm and mm to the nearest 5mm • Solve word problems by adding and subtracting two measurements in cm • Solve addition problems involving metres by adding two three-digit numbers totaling up to 350m • Solve subtraction problems involving metres by subtracting two three-digit numbers, not involving exchanging • Solve addition and subtraction problems involving mm by adding three amounts • Use <, > and = to compare two single-unit length measurements • Order single-unit length measurements • Measure the perimeter of rectangles and squares • Calculate the perimeter of rectangles and squares (all side measurements given) • Draw two different rectangles with the same perimeter • Compare money amounts up to 50p • Make different money combinations using coins up to 50p • Choose the correct symbol <, > or = to compare the money amounts • Add together up to three items in pence where the total equals up to 50p • Add together up to three items in pounds where the total equals up to £100 • Calculate the change required when paying for a single item and several items, paying with 50p • Read the time in five-minute intervals on an analogue clock • Read digital clocks in fifteen-minute intervals and state the time in analogue form • Read clocks with Roman numerals in fifteen-minute intervals • Identify whether events could be a.m. or p.m. or both • Use vocabulary such as o'clock, a.m. and p.m., morning, afternoon, noon and midnight

				• State how many days there are in each month and how many days in a year and a leap year; • Calculate the number of days from one date to another up to 20 days; • Compare the times of events in minutes and seconds • Calculate and compare the length of events using digital times in fifteen-minute intervals
	Most	• Read numbers up to 1000 in numerals and words. • Recognise multiples of 4, 8, 50 and 100. • Find missing numbers in a given sequence. • Solve problems involving multiples, place value & partitioning. • Solve problems involving comparing and ordering numbers. • Solve problems involving numbers in different representations. • Solve place value problems involving measures. • Describe the properties of 3D shapes using the vocabulary faces, edges and vertices. • 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 pairs of perpendicular and parallel lines.	• Add and subtract numbers with up to four digits using the formal written methods of column addition and subtraction • Estimate 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 • Continue to practice both mental methods to aid fluency • Recall multiplication and division facts for the 3x, 4x and 8x tables with increasing speed and accuracy. • Use multiplication and division facts from the 3x, 4x and 8x tables to solve word problems with more than one step. • Identify patterns in known multiplication tables. • Multiply multiples of 10 (including three-digit numbers) mentally using known facts. • Use the grid method to solve multiplication problems which go beyond known facts. • Begin to use expanded multiplication when working with numbers beyond known facts. • Use number lines to solve division problems beyond known facts with increasing accuracy and speed. • Begin to use the bus stop method as a written method for division. • Solve missing number problems which go beyond known facts. • Solve scaling problems with increasing accuracy, beginning to work out the scale used from the measurements. • Spotting patterns when solving correspondence problems and beginning to predict the number of possibilities. • Create scaled bar charts and pictograms • Create Venn and Carroll diagrams • Create a table of information • Ask and answer two-step questions about charts, tables and diagrams	• Add and subtract fractions with the same denominator • Compare and order simple fractions • Use resources to identify equivalent fractions • Complete fraction number lines and number sequences • Use resources to support finding a fraction of a set of objects or number • Estimate and measure to the nearest cm, m and 5mm multiple • Measure and draw lines in mixed units (cm and mm) • Solve word problems by adding and subtracting three measurements in cm • Solve addition problems involving metres by adding two three-digit numbers totaling up to 550m • Solve subtraction problems involving metres by subtracting two three-digit numbers involving exchanging • Solve addition and subtraction problems involving mm by adding four amounts • Use <, > and = to compare two mixed-unit length measurements • Order mixed-unit length measurements • Calculate the perimeter of squares (side measurements given) • Compare money amounts up to £1 • Make different money combinations using coins up to £1 • Add together up to three items in pence where the total equals up to £1 • Add together up to three items in pounds where the total equals up to £150 • Calculate the change required when paying for a single and several items, paying with £1 • Read the time in minute intervals on an analogue clock • Read digital clocks in five-minute intervals and state the time in analogue form • Read clocks with Roman numerals in five-minute intervals • Order times that use a.m. and p.m. • Calculate the number of days from one date to another (up to 50 days) • Calculate and compare the length of events using digital times in ten-minute intervals

	Some	• Identify and sort numbers using set criteria. • Partition numbers in a variety of ways. • Read numbers up to 1000 in numerals and words. • Identify 3D shapes from their nets and be able to sort 2D and 3D shapes on Venn and Carroll diagrams. • Identify acute and obtuse angles. • Compare and classify geometric shapes, based on the property of lines.	• Use reasoning about number facts to answer increasingly complex questions • Explain ideas fluently using mathematical vocabulary and make generalisations • Confidently record addition and subtraction in columns including decimals • Quickly and accurately recall multiplication and division facts for the 3x, 4x and 8x tables. • Solve mathematical problems and puzzles using known multiplication and division facts; identifying and explaining patterns and making predictions. • Multiply multiples of 10 mentally. • Use a range of written methods for multiplication and division with increasing confidence. • Ask and answer more complex two-step questions about charts, tables and diagrams	• Use <, > and = to compare groups of fractions • Place fractions appropriately on a blank number line • Understand the link between tenths as fractions and as decimals • Calculate unit and non-unit fractions of sets of objects or numbers • Recall equivalents for unit and non-unit fractions • Complete and create fraction number sequences • Estimate and measure in whole and half cm and m • Estimate and measure in multiples of 1mm • Order sets of mixed measurements • Solve length problems involving calculating a missing number • Compare money amounts up to £1.50 • Make different money combinations using coins up to £1.50 • Work out missing money amounts where the total and one amount is given • Add together up to three items in pounds where the total equals up to £250 • Calculate the change required from £2 • Read clocks with Roman numerals – minute intervals • Write a definition for time vocabulary such as: o'clock, a.m. and p.m., morning, afternoon, noon and midnight • Calculate the number of days from one date to another (over 100 days) • Calculate and compare the length of events using digital times in five-minute intervals

Year 11		Autumn	Spring	Summer
Content (Advanced)		Number and Place Value Number: Algebra Geometry: Properties of Shapes; Position and Direction	Number: Addition and Subtraction; Multiplication and Division Number: Ratio and Proportion Statistics	Number: Fractions, Decimals and Percentages Measurement
Knowledge / Skills	**All**	• Read and write numbers up to 1,000,000. • Identify the value of each digit in a number up to 1,000,000. • Identify the value of a digit in numbers with 2 decimal places. • Order numbers up to 1,000,000. • Compare numbers using the greater than and less than symbols. • Round numbers to a required degree of accuracy using a number line. • Calculate intervals across zero using a number line. • Compare and order negative numbers. • Solve simple problems involving negative numbers in context. • Solve simple reasoning problems using all of the above. • Write multiplication correctly in algebraic expressions. • Substitute numbers into an equation. • List all possible answers to a combination problem using a systematic approach. • Identify whether a sequence of numbers is increasing or decreasing. • Draw representations of algebraic expressions. • Write algebraic expressions using standard notation. • Break down complex problems into smaller steps. • Use a ruler to draw a 2D shape to a given measurement • Construct a 3D shape from a given shape net • Compare and classify geometric shapes • Recognise different types of angle • Draw circle using a pair of compasses • Describe coordinate positions in the first quadrant • Translate shapes on a 2D grid using the correct vocabulary • Reflect and draw shapes over mirror lines	• Multiply numbers by a one-digit number using long multiplication • Solve reasoning questions using long multiplication • Divide numbers by a two-digit number using long division • Solve one-step division problems, rounding the answer depending on the context • Divide four-digit numbers by a two-digit number using short division without remainders • Perform one-step mental calculations with increasingly large numbers • Solve reasoning questions involving mental addition, subtraction, multiplication and division • Add/subtract whole numbers using a formal written method • Correctly use the order of operations to carry out calculations • Explore the order of operations using brackets • Find missing numbers using the inverse • Select the correct operation(s) to use and solve a problem, checking the answer using estimation • Solve one-step problems and check their answer using estimation • Round numbers to a specified degree of accuracy • Use rounding to check answers to problems • Sort one-step problems in a sorting diagram • Solve two-step problems involving addition and subtraction • Enlarge a simple shape by a given whole number scale factor • Solve simple fraction problems either with fractions in the problem or using fractions to solve the problem, where the numerators of fractions are 1 • Write a ratio statement to compare two values • Solve simple problems involving calculating ratio • Solve simple problems involving calculating proportion • Calculate 5%, 10% and multiples of 10% of quantities • Answer questions about data presented in a line graph. • Read data represented in line graphs. • Describe how data is presented in a pie chart. • Interpret data presented in a pie chart. • Use knowledge of angles/degrees to construct pie charts. • Use preferred methods for addition and division.	• Compare and order fractions using a fraction wall to support • Add and subtract fractions with unlike denominators using resources to support them • Multiply proper fractions or mixed numbers by whole numbers using resources to support • Divide a fraction by a whole number that is a divisor of the numerator • Round a number with three decimal places to a specified degree of accuracy using a number line to support • Understand percent and give percentage and decimal equivalents for half, quarters, fifths, tenths, twentieths, twenty-fifths, fiftieths and hundredths fractions • Convert from larger to smaller metric units of length, mass and volume, up to two decimal places • Convert from smaller to larger metric units of length, mass and volume, up to two decimal places • Convert units of time – whole and half units • Solve simple problems involving conversion and calculation of metric units of length, mass and volume • Calculate the difference between negative and positive temperatures within a range of 15˚ • Convert between miles and kilometres (whole units) • Use conversion graphs to convert between miles and kilometres (multiple of five units) • Find all possible rectangles and squares with a given area by counting squares, using cm • Find all possible rectangles and squares with a given perimeter, using cm • Use a formula to calculate the area of triangles up to 75cm • Use a formula to calculate the area of parallelograms up to 150cm squared • Identify shapes which have enough information to use a formula to calculate the area of squares, rectangles and composite shapes • Calculate the volume of cubes and cuboids, using measurements of cubic cm and cubic metres (whole units) • Estimate the volume of cuboids • Identify shapes and nets of shapes which have enough information to use a formula to calculate the volume.

	Most	• Read and write numbers up to 10,000,000. • Identify the value of each digit in a number up to 10,000,000. • Identify the value of a digit in numbers with 3 decimal places. • Order numbers up to 10,000,000. • Compare numbers by working out calculations. • Round numbers to a required degree of accuracy. • Calculate intervals across zero. • Solve problems involving negative numbers in context. • Solve reasoning problems using all of the above. • Use concrete and pictorial methods to solve 1-step and 2-step equations. • Find pairs of numbers to solve an equation based on given criteria. • Identify when it is appropriate to use multiplication as a strategy. • Find the term to term rule for a linear sequence of numbers. • Create sequences using a given rule. • Order sequences of whole numbers, fractions and decimals. • Write algebraic expressions using standard notation. • Write a formula to solve a problem. • Use mathematical language to explain solutions to problems. • Draw 2D shapes to given dimensions of length and angle • Draw their own net of a simple 3D shape including construction tabs • Measure and calculate unknown angles in 2D shapes and around a point or on a straight line • Label the parts of a circle including radius and diameter • Describe coordinate positions in all four quadrants • Translate shapes on coordinate axes using coordinate translation • Reflect and draw shapes on coordinate axes	• Multiply numbers by a two-digit number using long multiplication • Divide using a formal written method and use rounding depending on the context • Solve two-step division problems, rounding the answer depending on the context • Divide four-digit numbers (with decimals) by a two-digit number using short division • Practice mental calculations with increasingly large numbers using all four operations • Perform mental calculations with mixed operations • Perform two-step mental calculations with increasingly large numbers • Add and subtract numbers, including decimals, using a formal written method • Identify missing brackets within a calculation • Solve two-step problems and check their answer using estimation • Round a number considering the context • Sort one and two-step problems in a Venn diagram • Solve multi-step problems involving addition and subtraction • Enlarge a simple shape by a given whole and fractional number scale factor • Calculate the length of missing sides after enlargement on simple shapes • Enlarge a cuboid to a given scale factor • Solve fraction problems either with fractions in the problem or using fractions to solve the problem, where there are several steps required to answer the problem • Solve two-step problems involving calculating ratio • Solve two-step problems involving calculating proportion • Write a ratio in its simplest form • Recognise and write equivalent ratios • Calculate percentage of numbers including money up to 10,000 • Convert percentages to numbers in a pie chart • Interpret and answer questions about a line graph showing the relationship between two variables. • Construct a line graph. • Answer questions using data from line graphs. • Use fractions to answer questions about data presented in a pie chart. • Use percentages to answer questions about data presented in a pie chart. • Convert data to degrees in order to represent it in a pie chart. • Use a formula to calculate the mean of a set of data.	• Compare and order fractions using the method of finding a common denominator • Add and subtract fractions with unlike denominators using the method of finding a common denominator • Multiply pairs of proper fractions using resources to support • Divide a fraction by any whole number • Round a number with three decimal places to a specified degree of accuracy • Use fraction, percentage and decimal equivalents to solve problems • Convert from larger to smaller metric units of length, mass and volume, up to three decimal places • Convert from smaller to larger metric units of length, mass and volume, up to three decimal places • Convert units of time – whole, half, quarter and three-quarter units • Solve reasoning style problems involving conversion and calculation of metric units of length, mass and volume • Calculate the difference between negative and positive temperatures within a range of 40˚ • Create and use conversion graphs to convert between miles and kilometres (multiples of five units) • Find all possible rectangles and squares with a given area using mm • Find all possible rectangles and squares with a given perimeter, using cm and mm • Use a formula to calculate the area of triangles up to 200 cm • Use a formula to calculate the area of parallelograms up to 600 cm squared. • Sub-divide two composite rectilinear shapes to calculate area, some with unknown side measurements • Calculate the volume of a composite shape made up of two cuboids • Find the measurement of an unknown dimension of a cuboid, given the surface area of one face and the volume

	Some	• Solve calculations to read and write numbers up to 10,000,000 • Compare and order numbers, explaining the difference between numbers. • Solve trickier reasoning problems involving place value, rounding and negative numbers. • Solve equations by using inverse operations on each side. • Use a systematic approach to find all pairs of numbers. • List all possible answers to a combination problem that involves finding multiples of two different variables. • Extend linear sequences by adding missing terms. • Identify terms that will appear in a sequence with a given rule. • Place missing whole numbers, fractions and decimals on number lines. • Begin to substitute values into algebraic expressions. • Recognise and use formulae in geometry. • Use a formula to calculate an answer by substituting in known variables. • Apply my understanding of simple formulae. • Confidently use a protractor to accurately draw 2D shapes to within 1° of the given dimensions • Draw their own net of more complex 3D shapes including construction tabs • Use more complex reasoning to work out missing angles in 2D shapes and around a point or on a straight line • Understand the relationship between radius and diameter using algebraic representation • Describe coordinate positions in all four quadrants, including using decimal half coordinates • Translate shapes on coordinate axes using coordinate translation, and identify missing vertices • Reflect and draw shapes on coordinate axes, and identify missing vertices	• Solve missing digit problems involving long multiplication • Divide using a formal written method and use rounding depending on the context in multi-step calculations • Solve missing digit problems involving long division • Create comparison sentences involving long division calculations • Create their own word problems involving addition, subtraction, multiplication and division • Solve multi-step problems and check their answer using estimation • Sort and solve one, two and multi-step problems in a Venn diagram • Solve complex multi-step problems • Calculate the length of missing sides after enlargement on simple and composite shapes • Calculate the surface area of an enlarged cuboid • Solve fraction problems either with fractions in the problem or using fractions to solve the problem, using a higher level of reasoning to answer the problem • Solve multi-step problems involving calculating ratio • Solve multi-step problems involving calculating proportion • Compare sets of data on two pie charts • Calculate any percentage of a numbers including money over 1,000,000 • Interpret and answer questions about line graphs representing more than one set of data. • Describe how to add missing information to a line graph. • Solve problems using line graphs. • Reason about data represented in pie charts. • Solve problems using data represented in pie charts. • Represent percentages in a pie chart. • Use the mean to find missing data.	• Compare and order fractions using the method of finding a common numerator • Subtract fractions with unlike denominators using regrouping • Divide a proper fraction by another proper fraction • Use written methods of division to calculate decimal equivalents of fractions • Solve more complex problems involving conversion and calculation of metric units of length, mass and volume • Calculate the difference between negative and positive temperatures within a range of 60˚ • Use conversion graphs to convert between miles and km • Find all possible rectangles and squares with a given perimeter, using m and mm • Use a formula to calculate the area of triangles over 200 cm squared, including half units • Use a formula to calculate the area of parallelograms up to 3,000 cm squared, including half units • Calculate the volume of cubes and cuboids, using measurements of cubic cm and cubic m (up to 1 decimal place)