

Black – Main content to be taught

Italic – Daily fluency objectives

Purple – Challenge objectives

Learning objectives are not listed in a specific order and may be taught more than once to support learning progression.



Autumn Term 1				Autumn Term 2				Spring Term 1			
Week 1 01/09/25 3-day week	Place Value	Conduct a baseline assessment for Y6 cohort	To read, write and identify the values of each digit in numbers up to 10,000,000. To compare and order large numbers up to 10,000,000 and determine the value of each digit. To round any whole number to a required degree of accuracy. To identify the value of each digit when exploring decimal numbers. To compare and order decimal numbers up to 3dp. To round decimal numbers accurately up to 3dp. To explore negative numbers and calculate intervals across zero. <i>To identify Roman Numerals up to 1000 (M) and recognise specific dates written in Roman Numerals.</i> <i>To count forwards or backwards in steps of 10 for any given number up to 10,000,000.</i> <i>To count fluently in 6s</i>	Week 1 09/11/25	Fractions, Decimals and Percentages	To use common factors to simplify fractions. To recognise unit and non unit fractions on a number line. To use common multiples to express fractions in the same denomination including missing numbers. To compare and order fractions with different denominators. To add and subtract fractions with different denominators. To add and subtract mixed numbers using the concept of equivalent fractions. To multiply fractions (by fractions, by whole numbers) To compare and order fractions including mixed numbers. To divide proper fractions by whole numbers. To associate a fraction with division and calculate decimal fraction equivalents (0.375 is 3/8 as a fraction) To find a % of an amount using common multiples and non-common multiples of 10 and 100 (17% if £240) <i>To understand the relationship between unit fractions and division (if ¼ is a length is 36cm – then the whole length is 36 x 4 etc)</i> <i>To recall and use equivalences between simple fractions, decimals and percentages.</i> <i>To round recurring decimals to 3 decimal places.</i> <i>To count fluently in 9s</i>		Week 1 05/01/26	Place Value	To use and interpret negative numbers in context To identify Roman Numerals up to 1000 (M) and recognise specific dates written in Roman Numerals To use place value knowledge to identify missing numbers including decimals. To recognise and describe linear number sequences including fractions, decimals and percentages. To solve number and practical problems that involves the four operations. To round any number including decimals. <i>To explore problems linked with Roman Numerals.</i> <i>To make links to basic skills mentally (doubles, halves, number bonds/ decimals)</i> <i>Rapid mental recall of multiplication facts.</i>	
Week 2 08/09/25			Week 2 10/11/25	Week 2 12/01/26		Addition & Subtraction		To select the most efficient method to solve addition and subtraction multi-step problems in context. To use estimation to check answers to calculations to an appropriate degree of accuracy. To use addition and subtraction knowledge to answer missing number problems. To use a formal written method to add and subtract units of measure. To perform mental calculations including with mixed operations and large numbers. To find the difference between positive and negative numbers. <i>To use mental addition and subtraction to inform estimations.</i> <i>To explore a range of open-ended addition and subtraction problems and justify answers.</i> <i>Rapid mental recall of multiplication facts.</i>			
Week 3 15/09/25			Week 3 17/11/25	Autumn Assessment Week				Multiplication and Division		To explore prime numbers in context. To undertake mental calculations with increasingly large numbers and more complex calculations. To use estimations to check answers to calculations in the context of a problem with an appropriate degree of accuracy. To solve problems including scaling by fractions. To explore the order of operations using brackets. To solve multi step problems involving all four operations. To recall square and cube numbers rapidly when faced with different problems. To multiply and divide whole numbers and decimals by 10, 100 and 1000. To multiply up to 4 digits by a 2-digit whole number using long multiplication. To divide up to 4 digits by a 2-digit whole number using long division – interpret remainders as whole number remainders, fractions or by rounding as appropriate for the context. To multiply decimals and whole numbers in context. <i>To apply multiplication and division knowledge to open ended investigations.</i> <i>Rapid mental recall of multiplication facts.</i>	
Week 4 22/09/25	Addition & Subtraction	To use a formal written method to add and subtract whole numbers with more than 4 digits, involving carrying and exchanging (see calculation policy). To use a formal written method to add and subtract decimals (up to 3 dp) with more than 4 digits, involving carrying and exchanging (see calculation policy). To use a formal written method to add whole numbers and decimals. To use a formal written method to subtract decimals from whole numbers. To solve addition and subtraction multi- step problems. To use the inverse operation to check accuracy. <i>To add and subtract increasingly larger numbers mentally.</i> <i>To use estimation to check answers to calculations to an appropriate degree of accuracy.</i> <i>To count fluently in 8s</i>	Week 4 24/11/25	Geometry: Properties of shape	To find unknown angles in any triangles, quadrilaterals and regular polygons. To recognise angles where they meet at a point, straight line or vertically opposite. To find missing angles in context. To find the area of a triangle. To draw 2d shapes using given dimensions and angles. To recognise, describe and build simple 3D shapes, including making nets. To compare and classify 2d and 3d shapes based on their properties and sizes. To explore parallel and perpendicular lines within 2d and 3d shapes. To illustrate and name parts of a circle including radius, diameter and circumference To describe 3d shapes in different orientations. <i>To describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements.</i> <i>Rapid mental recall of multiplication facts.</i>		Week 3 19/01/26		Measure	To use, read, write and convert between standard units, converting measurements of length, To use, read, write and convert between standard units, converting measurements of mass and volume To use, read, write and convert between standard units, converting measurements of time (from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places)	
Week 5 29/10/25		Week 5 01/12/25	Measure		To find the area of composite shapes with missing lengths. To calculate the area of parallelograms (recap triangles). To calculate, estimate and compare volumes of cubes and cuboids using standard units. To relate the area of rectangles to parallelograms and triangles (in words or symbols). <i>To solve problems and identify mistakes involving measure.</i> <i>Rapid mental recall of multiplication facts.</i>	Week 4 26/01/26	Algebra			To use simple formulae. To generate and describe linear number sequences . To express missing number problems algebraically (11 – u = 9 so u = 2) To find pairs of numbers that satisfy an equation with 2 unknowns (<i>2a + b =15 find all possible variations</i>) To find enumerate possibilities of combinations of 2 variables. <i>To find the different between numbers mentally.</i> <i>To use the inverse to find answers to calculations.</i>	
Week 6 06/10/25		Multiplication & Division			To identify common factors and common multiples. To use and understand prime numbers. To use knowledge of the order of operations to carry out calculations involving the four operations (BIDMAS). To multiply multi-digit numbers up to 4 digits by a 2-digit whole number using the formal written method (long multiplication – see calculation policy). To multiply decimals by whole numbers. To multiply two decimals together using an efficient method. To divide numbers up to four digits by one-digit number using a formal written method (see calculation policy). To divide numbers up to four digits by two-digit whole number using a formal method (long division). To multiply and divide whole numbers and decimals by 10, 100 and 1000. <i>To draw upon multiplication facts to multiply and divide mentally (0.9 x 8 or 0.4 x 0.6)</i> <i>To recall squared and cube numbers.</i> <i>To interpret remainders according to the context (fractions and decimals)</i> <i>To count fluently in 9s</i>	Week 6 08/12/25		Statistics		To draw, construct and read timetables, To calculate and interpret the mean as an average. To know when it is appropriate to find the mean of a data set– across a range of graphs and tables. <i>To know the facts about time (seconds, minutes, hours etc)</i> <i>To know the intervals on scales.</i>	Week 5 02/02/26
Week 7 13/10/25	Co-ordinates			To describe and plot positions on the full co ordinate grid (all 4 quadrants). To draw and translate simple shapes on the co ordinate plane. To reflect simple shapes in the axis (X & Y). To solve problems involving co ordinates, reflection and translation. To predict missing co ordinates using the properties of shapes. <i>To extend knowledge of one quadrant to all 4-quadrant including the use of negative numbers.</i> <i>To count fluently in 7s</i>	Week 7 15/12/25	Week 6 09/02/26					
Week 8 20/10/24 3-day week			October Half Term		Christmas End of Term		February Half Term				



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Year 6 – 2025/2026



Spring Term 2			
Week 1 23/02/26	Fractions, Decimals and Percentages	To recall and use equivalences between fractions, decimals and percentages. To find a fraction of an amount in context. To find a percentage of an amount in context (wider than common multiples) To solve problems involving fractions, decimals and percentages. To multiply fractions by mixed numbers. Rapid recall of equivalent fractions, decimals and percentages. To round and estimate as a means of predicting and checking answers.	
Week 2 02/03/26	Geometry: Position & direction	To describe positions on the full co ordinate grid (4 quadrants) To draw and translate simple shapes on the coordinate plane. To reflect simple shapes in the axis (X & Y) To solve problems involving co ordinates, reflection and translation. To predict missing co ordinates using the properties of shapes. To extend knowledge of one quadrant to all 4-quadrant including the use of negative numbers. Rapid mental recall of multiplication facts.	
Week 3 09/03/26	Geometry: Properties of shape	To draw shapes accurately using measuring tools to the nearest degree. To draw nets accurately using measuring tools to the nearest mm. To measure angles accurately to the nearest degree (angles in different orientations) To draw more complex shapes from given lengths, perimeters or angles. To apply knowledge of angles to answer multi-step problems. Rapid mental recall of multiplication facts.	
Week 4 16/03/26	Ratio & Proportion	To use the language of ratio to describe unequal quantities. To calculate ratio in a range of ways including fractions and percentages. To calculate ratio when comparing quantities, sizes and scaled drawings. To solve problems involving unequal quantities (for every egg you need three spoonful of flour, 3/5 of the class are boys) To use percentages for comparison. To know 1% and 10% of an amount fluently.	
Week 5 23/03/26	Statistics	To interpret and construct pie charts and use these to solve problems. To interpret and construct line graphs and use these to solve problems. To connect learning on angles, fractions and percentages when answering pie chart questions. To calculate the average of a set of data in context. To know the intervals on scales.	
Easter End of Term			

Summer Term 1				
Week 1 13/04/26	Measures	To explore imperial measures (inch to cm, foot to inches, pounds to ounces, stones to pounds, gallon to pint) To solve problems involving the calculation and conversions of units of measure using decimal notation up to 3 decimal places . <i>Rapid mental recall of multiplication facts.</i>		
Week 2 20/04/26	Four Operations	To use knowledge of the order of operations to carry out calculations involving the 4 operations. To solve addition and subtraction multi step problems in context, deciding which operations and methods to use and why. To solve problems involving the four operations. To use estimation to check answers to calculations and determine in the context of a problem an appropriate degree of accuracy. <i>To use mental methods to solve simple problems involving positive and negative numbers.</i>		
Week 3 27/04/26		To revise efficient methods when faced with mathematical problems in context. <i>Use the above objective and apply to all areas of math and common misconceptions as appropriate to the needs of the cohort.</i> <i>Arithmetic focus: fluent recall of taught strategies being adaptable to need / groupings.</i>		
Week 4 04/05/26 4 day week				
SATS Week 5 11/05/26	SATS Week			
Week 6 18/05/26	Fractions, Decimals and Percentages	To consolidate efficient methods when adding and subtracting fractions ($1 + 2/7 + 5/7$) ($1 - ? = 7/10$) To consolidate efficient methods when multiplying and dividing fractions ($1/3 \div 6$) ($2/3 \times 900$) To revise efficient methods when adding and subtracting decimals (with whole numbers) To revise efficient methods when multiplying and dividing decimals.		
Spring Bank Half Term				

Summer Term 2			
Week 1 & 2 01/06/26 08/06/26	Combining Concepts	To apply knowledge of the four operation to solve multi step problems involving money and percentages in real life contexts. (<i>such as budgeting and profit/loss calculations</i>) To interpret and solve problems involving % increases and % decreases (calculating discounts in a sale or interest earned on savings). To convert between fractions, decimals and percentages fluently and use this knowledge to compare offers and solve best-value problems. To use algebraic reasoning where appropriate to form and solve equations related to money and percentages (finding the original price after a percentage change).	
Week 3 15/06/26	Combining Concepts	To find missing numbers in time and distance sequences and explain patterns using reasoning using the four operations (race start times or increasing lap distances) To solve multi-step problems involving time and measurement (calculate the total duration of events or the amount of water needed for participants) To convert between different units of measure selecting the most efficient method and explaining why e.g. Km to m for race distances, l to ml for refreshments) To use reasoning to solve scheduling problems (fitting a sequence of events into a set time frame and identifying missing durations) To interpret data in tables or timetables using the information to solve multi step problems and check for errors (event schedule, equipment checklist). To estimate and compare measurements and timings assessing where results are reasonable.	
Week 4 22/06/26			
Week 5 29/06/26	Combining Concepts	To compare and order fractions, decimals and whole numbers on a number line including real life contexts (prices, measures time and justify placements) To convert between fractions and decimals to compare quantities in real world scenarios (comparing sale prices, lengths of wood or amounts of ingredients). To interpret and solve real life problems involving sharing and grouping using fractions and division (e.g. if $\frac{3}{4}$ of a recipe serves 6 people – how many does the full recipe serve?) To explain and justify their thinking when comparing fractional quantities (comparing portions of money saves, food shared or distances travelled)	
Week 6 06/07/26	Addressing Misconceptions following recent assessments	<i>Use of trackers and QLA and teacher assessment of pupils within your class to address gaps in learning. Relevant learning objectives need to be taken from this document depending on what your pupils need and used each lesson.</i> <i>Use of time to ensure that pupils have the fundamentals for the next academic year.</i>	
Week 7 13/07/26			
Summer Holidays End of Term			



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Year 6 – Curriculum Guide – Place Value



National Curriculum Objectives:

- Read, Write, order numbers up to 10 million and determine the value of each digit.
- Round any whole number to a required degree of accuracy.
- Use negative numbers in context and calculate intervals across zero.
- Solve number and practical problems that involve all of the above.

Misconceptions:

- Identifying the value of number through location of the decimal.
- Rounding by looking at wrong values.
- Rounding by looking at wrong values.
- Difference when involving negative numbers than the difference is a size of a gap

Mathematical Language:

Equal, equation, order, greater than, less then, value, digit, partition, hundredths, tenths, thousandths, millionths, millions, tens of millions, round

Development steps:

NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point.

- Read and write numbers from decimals to tens of millions
- Identify the value of any digit within a number.
- Order and compare numbers of different value and constructs (e.g. 3.521, 12.35, 35.21, 21.35 ect.)
- Round any whole number and decimal numbers up to three decimal places (e.g. nearest tenth, nearest whole numbers)
- Compare and understand the value of negative numbers
- Balancing equations using $<$ $>$ $=$

Other links:

- Addition and subtraction
- Multiplying and dividing by 10, 100, 1000
- Converting between metric units of measure
- Mental strategies for multiplication and division by 10, 100 and 1000
- Alignment of place value for column methods
- Using rounding to estimate and check whole numbers

Contexts/resources:

- Temperature
- Money: cheques, rounding
- Space, ordering distances



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Year 6 – Curriculum Guide – Addition & Subtraction



<u>National Curriculum Objectives:</u> • Perform mental calculations, including mixed operations and large numbers. • Use knowledge of the order of operations to carry out calculations involving four operations. • Solve addition and subtraction multistep problems in context, deciding which operations and methods to use and why. • Solve Problems – 4 operations • Use estimation in order to calculate	<u>Misconceptions:</u> • +/- time • Alignment of place value within unequal numbers • Misunderstanding the impact of place value (3000/3.097) • Formal methods of carrying or exchanging.	<u>Mathematical Language:</u> Exchanging, sum, total, increased by, altogether, decrease, reduce
<u>Development steps:</u> NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point. • Revise using formal methods for written + & - • Understanding mental calculations with increasingly larger or complex calculations • Addition and subtraction of large numbers up to 10s of millions • Expanding the application to solving increasingly complex + and – decimal problems to 3 decimal places. • Able to justify which operations and methods to use. • Solving + and – multistep problems in contexts • Solve problems involving + and – alongside x and $\div$ • Understanding the place + and – take in the order of operations. • Use estimation to predict and self check calculations and use of	<u>Other links:</u> • Using negative numbers • Calculating intervals and across zero • Rounding numbers • Approximation • Measures- metric, mm/cm/m/km, time, weight, capacity • Statistics: data • Perimeter • Inverse operation • Algebra & unknown values • Balancing equations • Angles/missing angles	<u>Contexts/resources:</u> • Temperature • Shop/money- buying/selling • Timetables- duration, length • Large numbers- Population, space • Decimal numbers-Weight, height



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Year 6 – Curriculum Guide – Multiplication & Division



<u>National Curriculum Objectives:</u> • Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication • Divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • Perform mental calculations, including with mixed operations and large numbers • Identify common factors, common multiples and prime numbers • Use their knowledge of the order of operations to carry out calculations involving the four operations • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Solve problems involving addition, subtraction, multiplication and division • Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy	<u>Misconceptions:</u> • Multiplying and dividing inverses aren't always the alternate operation ($10 \times 2 = 5$ becomes $10 \div 5 = 2$) ($10 \div ? = 2$ becomes $10 \div 2 = 50$ not $10 \times 2 = 20$) • Don't rely on written methods when less efficient	<u>Mathematical Language:</u> Multiplied, divided, divide, product, quotient, share, double, remainder, average, triple, factor, power, multiple, mean, indices, order of
<u>Development steps:</u> NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point. • Recall and apply all x facts up to 12×12 • Adapt use of x facts up to 12×12 to solve x and $\div$ involving $\times 10, 100, 1000 / \div 10, 100, 1000$ (8×700) ($3600 \div 60$) • Mental calculations of multiplication and division with increasingly large numbers • Identify common factors, common multiples • Explore prime numbers • Multiply with use of decimals up too 2dp • Divide numbers using bus shelter (interpret remainders correctly) (4 digits by 2 digits) • Division with use of decimals – up to 2 dp • Use knowledge of orders of operation to calculate using all four operations – including brackets • Solve multi-step problems involving all operations • Use estimation to check and predict answers • Inverse of $x/\div$	<u>Other links:</u> • Measure – money, time, length • Converting units of measure (mm, cm, m, km etc.) • Area/perimeter, volume • Algebra – $2a = axa$/using simple formulae • Squaring, cubing etc. • BODMAS • Multiplying fractions • Scaling • Ratio and proportion • Statistics/data • Mean - average	<u>Contexts/resources:</u> • Gardening/building – area, volume • Shopping, budgets • Sharing costs • Travel – distances in a certain time and speed • Classroom averages



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Year 6 – Curriculum Guide – Fractions, Decimals and Percentages



<u>National Curriculum Objectives:</u> •Use common factors to simplify fractions; use common multiples to express fractions in the same denomination •Compare and order fractions, including fractions >1 •Associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8) •Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions •Multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$) •Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$). •Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication •Divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context •Perform mental calculations, including with mixed operations and large numbers •Identify common factors, common multiples and prime numbers •Use their knowledge of the order of operations to carry out calculations involving the four operations •Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why •Solve problems involving addition, subtraction, multiplication and division •Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. •Solve problems involving the calculation of percentages of whole numbers or measures such as 15% of 360 and the use of percentages for comparison •Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.	<u>Misconceptions:</u> •Operations on fractions/preparing fractions incorrectly •Not manipulating both numerator and denominator •When converting decimals to percentages 0.007 -> 0.7% •X 10,100, 1000, adding a 0 on to decimals (vice versa with $\div$)	<u>Mathematical Language:</u> Common factors; Largest common factor; Mixed number; Improper/top heavy; Percentage; Fraction; Decimal; Numerator; Denominator; Equivalent; Simply
<u>Development steps:</u> NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point. •Finding and applying common factors to simplify fractions (largest common factor to fully simplify) •Using a common multiple to manipulate and express equivalent fractions (finding common denominators) •Converting between mixed number and in proper fractions •Compare and order fractions/decimals/ percentages and mixtures •Multiply fractions – by other proper fractions, whole numbers, mixed number •Divide fractions – proper fraction by whole number •Add and subtract fractions – proper, in proper, mixed and varying denominators •Fraction, decimal and percentage equivalent’s, finding and calculating these •Identifying all place values and associate x10,100, 1000 and $\div$ 10, 100, 1000 as manipulation of this •Multiply with up to 2 decimals involved •Division where answer has up to 2 decimal places •Rounding answers to a required accuracy •Find fractions and percentages of an amount •Creating representative fraction and percentages	<u>Other links:</u> •Measures, length, time •Scaling •Geometry: shape •Reasonableness of their answers •Links to division and multiplication •Number line ordering •Area/perimeter •Comparisons •Interpreting/evaluating data and statistics •Ratio and proportion •Converting units of measure (mm, cm, m, km etc.) •Rotation/angles (link to 90° being a $\frac{1}{4}$)	<u>Contexts/resources:</u> •Shopping (money) •Sales, taking off fractions an percentages •Sharing •Compare price •Journey times •Consumption



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Year 6 – Curriculum Guide – Geometry



National Curriculum Objectives:

- Recognise, describe and build simple 3-D shapes, including making nets
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- Illustrate and name parts of circles, including radius, diameter and circumference
- Find unknown angles where they meet at a point, are on a straight line, and are vertically opposite.
- Describe positions on the full coordinate grid (all four quadrants)
- Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

Misconceptions:

- That filling in charts about shapes teaches pupils about their properties.
- Not understanding that a square is a form of a rectangle where all the sides are the same length rather than just opposite sides. These are also both a version of quadrilaterals where all angles are 90° and there are two sets of parallel lines.
- A rhombus is a version of a parallelogram where all the sides are the same length.
- Misuse of co-ordinates instruction. X-axis first, followed by y-axis.

Mathematical Language:

Polygon, regular, irregular, parallel, perpendicular, translate, scale, reflect, axis, origin, vertices, opposite, adjacent, corresponding, geometry, geometric, derive, radius, diameter, circumference, quadrant

Development steps:

NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point.

- Build on recognition and understanding of the more complex 2d/3d geometric shapes and their properties.
- Full selection of polygons (straight sided 2d shapes) and the regular/irregular variations
- Break down understanding of vertices, sides/edges and faces related to each shape, total internal angles, types of angle, relationships between (e.g isosceles triangle, given one angle is 110° , how do we know its other two must both be 35° ?) Parallel and perpendicular lines.
- Circles – radius, diameter, circumference. Relationships and calculating them.
- Angles – angles meeting at a point, intersecting angles, straight lines, intersecting line across parallel lines.
- Construction...
- Accurate construction of a wide selection of polygons. Able to construct these from not to scale diagrams or written descriptions. Build these using construction lines and marks. Starting from a base line. Making accurate use of rules and protractors.
- Build simple 3D shapes using nets.
- Position, direction, motion...
- Full use of the four quadrants of a co-ordinates grid. Including identification of missing co-ordinates on grids not to scale and without grid lines. Based on understanding of co-ordinates and shape.
- Draw, translate, scale and reflect shapes on a co-or-dinates grid.

Other links:

- Fractions, percentages, decimals. – relationships between angles of the vertices
- Four operations – calculation of missing angles, area, diameter etc.

Contexts/resources:

- Construction of shapes – architecture, designs, gardening, DIY
- Properties
- Coordinates – battleships, map reading, maps,



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Year 6 – Curriculum Guide – Measures



National Curriculum Objectives:

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- Convert between miles and kilometres
- Recognise that shapes with the same areas can have different perimeters and vice versa
- Recognise when it is possible to use formulae for area and volume of shapes
- Calculate the area of parallelograms and triangles
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units

[for example, mm³ and km³].

Misconceptions:

- Mixing up conversions of measure
- Knowing the differences between standard measure
- Not knowing that shapes can have the same perimeter and different area and vice versa
- Thinking that to find the area of a triangle you use the length of the side of the triangle and not the perpendicular height
- Not understanding that a parallelogram is the same formula for area as a rectangle
- Misunderstanding that volume is the space inside a 3d shape

Mathematical Language:

Measure; measurement; size; compare; unit, standard unit; metric unit, imperial unit; measuring scale, division, centimetre, metre, millimetre, kilometre, mile, yard, foot, feet, inch, inches; length, height, width, depth, breadth, tonne, kilogram, half kilogram, gram, pound, ounce, perpensicular height,

Development steps:

NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point.

- Read, write and recognise all metric measures for length, mass and capacity. Difference between capacity (the amount the object can contain) and Volume (the amount actually in an object).
- Use skills of multiplying and dividing by 10, 100, 1000 when converting between units of length, mass and capacity.
- Convert in both directions eg- m to cm and cm to m. Use and apply conversion skills to solve measurements. problems in context. Children need to know that 5 miles in approx. equal to 8Km. Need to know the following facts:
 - 1 foot is equal to 12 inches
- 1 pound is equal to 16 ounces
- 1 stone is equal to 14 pounds
- 1 gallon is equal to 8 pints
- 1 inch is approximately 2.5 cm
- Find and draw rectilinear shapes that have the same area. Use knowledge of factors to draw rectangles with different areas, Connections between side length and factors.
- Calculate area and perimeter of rectilinear shapes- link their understanding of area to counting squares. Explore shapes that have the same area or different perimeters. Approximating and estimating to work out the area of different triangles by counting.
- Find the area of a rectangle to find the area of a right angled triangle Use the formula to calculate the area of a triangle - extend knowledge by using the perpendicular height of a triangle to work out the area of any triangle. Use knowledge of finding the area of a rectangular to find the area of a parallelogram.
- Volume is the space occupied by a 3D object - counting 1cm cubed units to find the volume of shapes
- Move onto using the formula $l \times h \times w$

Other links:

- Using estimation to link with addition and subtraction, multiplication and division
- Estimating lengths, weight - rounding to 1dp, 2dp.
- Bake off using units of measure knowledge
- Multiplication linked with area investigation

Contexts/resources:

Maths Hub

<https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/>



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Year 6 – Curriculum Guide – Statistics



National Curriculum Objectives:

- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average.

Misconceptions:

- Values for data stream can incorrectly be inputted directly as an angle. (15 people represented by 15° , where as if it was 15 out of 30, it would be half of $360^\circ = 180^\circ$)
- Misreading of scales/intervals for line graphs and other charts. Not ensuring the chosen interval adds up to the correct amount.

Mathematical Language:

Difference, pie chart, line graph, pictogram, scatter diagram, scale, axis, angle, distribution, mean, average, construct, interpret, relationship, variable,

Development steps:

NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point.

- Identification of intervals on the given scales on graphs and charts. (decimals to 3 places, 0.001 per mark. Larger numbers, 10s millions. Main interval values then broken up into half, quarters, fifths, tenths etc.)
- Interpretation of data presented in graph and charts form. (values, comparisons etc)
- Application of data from charts and graphs to solve varying problems. (differences, trends, collections)
- Construction of charts and graphs. Accurate scales and intervals. Labelling (not pie charts)
- Construction of pie charts.
- Understanding and calculation of mean.
- Interpreting the mean as an average and using it to solve problems.

Other links:

- Geometry - Angles - 360° in a full circle, 180° straight line, 90° right angle
- FDP – relationships to angles and their fractions out of 360. $180/360 = \frac{1}{2}$, $45/360 = \frac{1}{8}$ etc.
- Equivalent fractions, simplifying fractions
- Operations with fraction
- Links to percentages and decimal equivalents
- Construction – measuring and creating accurate angles, use of protractor.
- Four operations – differences and collection of data requires addition and subtraction, calculation of mean requires accurate multiplication and division

Contexts/resources:

- Pupils given the opportunity to collect their own data, allowing for up to two variables to then be represented in various forms.
- Classroom pupil data -Handspans, heights.
- Surveys – traffic, staff.



HCAT Maths Year on a Page

Year 6 – Curriculum Guide – Ratio, Proportion & Algebra



National Curriculum Objectives:

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Solve problems involving similar shapes where the scale factor is known or can be found
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
- use simple formulae
- Generate and describe linear number sequences
- Express missing number problems algebraically
- Find pairs of numbers that satisfy an equation with two unknowns
- Enumerate possibilities of combinations of two variables.

Misconceptions:

- The understanding of what ratio represents
- Dividing by each ratio. Eg: 2:3 = dividing by 2 and then by 3
- Understand the : in ratio
- The use of bar models
- Knowing what enlargement means and what it looks like depending on the scale factor
- Understanding that multiplication can help find answers to scale factors
- Not knowing what a function machine is or what it does
- Misunderstanding why we use letters in algebra and what they represent

Mathematical Language:

Ratio, scale factor, three times as big, percentages, grouping, unequal, function machines, formula, volume, area, one step equations

Development steps:

NOTE: these steps are not necessarily listed in order, nor are they the focus for a whole lesson in some cases. They are listed to support elements that need to be explored at some point.

- Understand that ratio shows the relationship between two values and can describe how one is related to another.
- Introduced to the colon notation as the ratio symbol and use the language 'for ever... there are...'
- Read ratios 3:5 'three to five'
- Begin to calculate ratios - answer worded questions in the form of 'for every.. there are...'(bar models can support this really well)
- Enlarge shapes to make them 2 or 3 times as big 'scale factor of 2'
- Draw 2D shapes on a grid to given scale factor.
- Find scale factor when given similar shapes.
- Use multiplication and division facts to calculate missing information and scale factors.
- Explore simple one step function machines
- Build on knowledge to look at two-step function machines
- Use simple algebraic inputs eg- y . eg- $y + 4$
- Substitute simple expressions to find values
- Substitute into familiar formulae such as those for area and volume
- One step equations building on forming expressions
- Solve simple one step equations involving the four operations
- Solve two step equations

Other links:

- Scale factor of real-life buildings
- Multiplication and division
- Fractions
- Multiples
- Shapes- 2D and 3D
- Area and perimeter

Contexts/resources:

Maths Hub

<https://whiterosemaths.com/resources/schemes-of-learning/primary-sols/>