



We are a Rights Respecting School

Article 28 - every child has the right to an education.

Article 29 - education should develop each child's personality and talents to the full.

Mathematics Curriculum Framework KS1 and KS2

Lawdale Junior School

National Curriculum Coverage

	Number and place value			Fractions				Geometry				
	Number and place value	Addition and subtraction	Multiplication and division	Fractions	Fractions including decimals	Fractions, decimal and percentages	Measurement	Properties of shape	Position and direction	Statistics	Algebra	Ratio and proportion
Year 3												
Year 4												
Year 5												
Year 6												

The following tables show National Curriculum objectives for each strand of mathematics. **Ready to progress criteria** shows the skills and knowledge required at the **start** of each academic year. Each strand is followed by examples of cross-curricular opportunities and real life applications of the relevant skills and knowledge.

Number and place value		
In year 1, Pupils should be taught to: - count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens - given a number, identify one more and one less - identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least - read and write numbers from 1 to 20 in numerals and words.	Pupils are ready to progress from Year 1 to Year 2 if they: - Can count to 100 forwards and backwards - Can link number names to numerals - Can reason about the location of numbers to 20 on a number line - Know and can use $< > =$ - Can recall all addition and subtraction facts within 10 e.g. $5+3=8$ - Can count forwards and backwards in multiples of 2, 5 and 10 (skip counting) - Can identify and recite odd numbers forwards and backwards within 20 - Can make and partition numbers to 10 using different models e.g. part-part-whole model, dice, pictures, fingers, tally marks etc. In year 2, pupils should be taught to: - count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward - recognise the place value of each digit in a two-digit number (tens, ones)	Pupils are ready to progress from Year 2 to Year 3 if they: - Can identify the value of each digit in a 2-digit number - Partition 2-digit numbers in standard and non-standard ways - Represent partitioned numbers using diagrams, part-whole models and fact families. - Can reason about the location of a 2-digit number on a number line - Find the previous and next multiple of 10 - Can recall (without counting on/back) addition and subtraction facts within 10 e.g. $5+3=8$ In year 3, pupils should be taught to: - count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number - recognise the place value of each digit in a three-digit number (hundreds, tens, ones) - compare and order numbers up to 1000 - identify, represent and estimate numbers using different representations

	- identify, represent and estimate numbers using different representations, including the number line - compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs - read and write numbers to at least 100 in numerals and in words - use place value and number facts to solve problems.	- read and write numbers up to 1000 in numerals and in words - solve number problems and practical problems involving these ideas.
Pupils are ready to progress from Year 3 to Year 4 if they: - Know that 10 tens make 100 - Can calculate how many tens are in 3-digit multiples of 10 - Can identify the value of each digit in a 3 digit number - Can reason about the location of a 3-digit number on a number line - Can identify previous and next multiples of 10 and 100 - Can divide 100 into 2, 4, 5 and 10 equal parts - Can read scales marked in multiples of 100 with 2, 4, 5 and 10 equal parts. - Can recall addition and subtraction facts that bridge 10 - Can recall multiplication and division facts for the 2, 3, 4, 5, 8 and 10 times tables. In year 4, pupils should be taught to: - count in multiples of 6, 7, 9, 25 and 1000 - find 1000 more or less than a given number	Pupils are ready to progress from Year 4 to Year 5 if they: - Know that 10 hundreds make 1000 - Can calculate how many hundreds there are in 4-digit multiples of 100 - Know that 1000 is ten times bigger than 100, and that 100 is ten times bigger than 10. - Can identify the value of each digit in a 4-digit number - Can partition 4-digit numbers in a variety of ways - Can reason about the location of a 4-digit number on a number line - Can identify the previous and next multiple of 1000 or 100 - Can round a 4-digit number to the nearest 1000 and 100 - Can find 1, 10 and 100 more or less than any given 4-digit number - Can divide 1000 into 2, 4, 5 and 10 equal parts - Can read scales marked in multiples of 1000 with 2, 4, 5 or 10 equal parts	Pupils are ready to progress from Year 5 to Year 6 if they: - Know that 10 tenths make 1 whole - Know that 1 is ten times bigger than 0.1 - Know that 100 hundredths make 1 whole - Know that 1 is 100 times bigger than 0.01 - Know that 10 hundredths make 1 tenth - Know that 0.1 is 10 times bigger than 0.01 - Can recognise the place value of each digit in a number with up to 2 decimal places - Can partition numbers with up to 2 decimal places in standard and non-standard ways - Can reason about the location of numbers with up to 2 decimal places on a number line - Can identify the previous and next multiple of 1 and 0.1 - Can divide 1 into 2, 4, 5 and 10 equal parts - Can read scales marked in units of 1 with 2, 4, 5 and 10 equal parts

• count backwards through zero to include negative numbers • recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) • order and compare numbers beyond 1000 • identify, represent and estimate numbers using different representations • round any number to the nearest 10, 100 or 1000 • solve number and practical problems that involve all of the above and with increasingly large positive numbers • read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	• Can recall complements to 1000 e.g. $250+750$ • Can recall multiplication and division facts for all times tables up to 12×12 • Can apply place value knowledge to scale number facts by 100 e.g. $3 \times 4 = 12$ so $300 \times 4 = 1,200$ In year 5, pupils should be taught to: • read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • solve number problems and practical problems that involve all of the above • read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	• Can apply place value knowledge to scale number facts by 1 tenth or 1 hundredth e.g. $8+6=14$ so $0.8+0.6=1.4$ • Are secure with multiplication and division facts up to 12×12 In year 6, pupils should be taught to: • read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • use negative numbers in context, and calculate intervals across zero • solve number and practical problems that involve all of the above.
Cross-curricular opportunities • Ordering key dates on a timeline - history • Accurately reading a thermometer, including negative numbers – science • Identifying scales on measuring equipment – DT (food) • Explore and interpret number systems from other cultures such as Ancient Egypt and the Ancient Maya - history		
Maths in the world around us		

- Counting goods, money and living things – retailers, bankers, zookeepers.
- Estimating – construction workers
- Keeping score – referees, sportswomen/sportsmen.

Number: addition and subtraction

In year 1, pupils should be taught to:

- read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs
- represent and use number bonds and related subtraction facts within 20
- add and subtract one-digit and two-digit numbers to 20, including zero
- solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$

Pupils are ready to progress from Year 1 to Year 2 if they:

- Can compose and partition numbers to 10
- Understand odd and even
- Understand and can use the (+) (−) and (=) symbols
- Can relate (+) and (−) to real life contexts
- Can recognise and write equations in different ways e.g. $3+4=7$ $7=4+3$

In year 2, pupils should be taught to:

- solve problems with addition and subtraction using concrete objects and pictorial representations, including those involving numbers, quantities and measures applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers

Pupils are ready to progress from Year 2 to Year 3 if they:

- Can add and subtract across 10 without using fingers, equipment or number lines
- Understand the concept of difference e.g. 'how many more...?'
- Can solve missing number problems
- Can add and subtract within 100
- Can add and subtract ones or tens from a 2-digit number
- Can add or subtract any 2 digit numbers by partitioning

In year 3, pupils should be taught to:

- add and subtract numbers mentally, including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

	- show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot - recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	
Pupils are ready to progress from Year 3 to Year 4 if they: - Can calculate complements to 100 - Know that addition is commutative - Add and subtract up to 3 digit numbers using the column method - Understand the inverse relationship between addition and subtraction - Can use the part-part-whole model to understand and visualise missing number problems In year 4, pupils should be taught to: - add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate - 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	Pupils are ready to progress from Year 4 to Year 5 if they: - Can add and subtract up to 4-digit numbers - Know how to use the column method to add and subtract - Use the inverse to check calculations - Solve 2-step addition and subtraction problems In year 5, pupils should be taught to: - add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - add and subtract numbers mentally with increasingly large numbers - use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Pupils are ready to progress from Year 5 to Year 6 if they: - Can scale known addition and subtraction facts e.g. $8+6=14$ so $0.8+0.6=1.4$ so $0.08+0.06=0.14$ - Add and subtract numbers with more than 4 digits using formal written methods - Can use rounding to estimate - Can solve multi-step problems - Can choose appropriate methods In year 6, pupils should be taught to: - perform mental calculations, including with mixed operations and large 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, an appropriate degree of accuracy.
Cross-curricular opportunities • Calculate and compare distances between locations on a map – geography • Make purchasing decisions e.g. ration books WWII – history • Find the difference between times e.g. in a race – PE • Comparing distance between planets – geography and science		
Maths in the world around us • Buying and selling goods – retailers, consumers • Calculating costs and profits – charities, market stall holders, travel agents • Calculating distances and choosing routes – lorry drivers, pilots, racing drivers		

Number: multiplication and division

In year 1, pupils should be taught to: • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Pupils are ready to progress from Year 1 to Year 2 if they: • Can use concrete objects to solve repeated addition problems • Can make equal groups • Can share in real life contexts In year 2, pupils should be taught to: • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative)	Pupils are ready to progress from Year 2 to Year 3 if they: • Can recognise repeated addition within the 2, 5 and 10 times tables • Can skip count in 2s, 5s and 10s • Can make and describe equal groups • Can divide by making equal groups • Can solve missing factor problems e.g. $? \times 5 = 15$ • Know that multiplication is the inverse of division In year 3, pupils should be taught to: • recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • write and calculate mathematical statements for multiplication and division using the multiplication tables that they
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	and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	know, including for two-digit numbers times one-digit numbers, using mental methods and progressing to formal written methods • solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects e.g. $2 \times 3 = 6$ so $20 \times 3 = 60$.
Pupils are ready to progress from Year 3 to Year 4 if they: • Can fluently recall multiplication and division facts for the 2, 5, 10, 3, 4 and 8 times tables • Can use arrays to show commutativity • Can divide by grouping and sharing • Can solve problems using known facts rather than skip counting In year 4, pupils should be taught to: • recall multiplication and division facts for multiplication tables up to 12×12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations • multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Pupils are ready to progress from Year 4 to Year 5 if they: • Can multiply and divide by 10 and 100 • Can use a place value grid to explain scaling by 10 and 100 • Know that multiplication is commutative • Can use known facts to solve multiplication problems e.g. if $12 \times 8 = 96$, then $13 \times 8 = 12 \times 8 + 8$ • Can partition factors e.g. 14×3 is double 7×3 • Know all multiplication and division facts up to 12×12 In year 5, pupils should be taught to: • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19	Pupils are ready to progress from Year 5 to Year 6 if they: • Can multiply and divide by 10 and 100 • Know how to make a number 10 or 100 times the size, or a tenth or a hundredth times the size • Can find factors and multiples of whole numbers • Can find common multiples • Can find multiples and factors of scaled numbers e.g. 21 is a multiple of 3 so 2100 is a multiple of 300 • Can show some numbers as products of 3 factors e.g. $48 = 2 \times 3 \times 8$ or $7 \times 3 = 21$ so $7 \times 3 \times 10 = 210$ • Can multiply using a formal method e.g. short multiplication • Can divide using a formal method e.g. short division In year 6, pupils should be taught to: • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the

solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.	- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - multiply and divide numbers mentally drawing upon known facts - divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context - multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 - recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) - solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign - solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	formal written method of long multiplication - divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context - divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context - perform mental calculations, including with mixed operations and large numbers - identify common factors, common multiples and prime numbers - use their knowledge of the order of operations to carry out calculations involving the four operations - use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Cross-curricular opportunities - Rights Respecting School fundraising – bulk buying, calculating profit, setting prices - DT – measuring and scaling		
Maths in the world around us - Area and perimeter – builders, carpet fitters, farmers, decorators. - Calculating recipes and portions – chef, nutritionist, baker.		

Number: fractions

In year 1, pupils should be taught to:

- recognise, find and name a half as one of two equal parts of an object, shape or quantity
- recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

Pupils are ready to progress from Year 1 to Year 2 if they:

- know that a half is one of 2 parts
- can split a shape into 2 equal parts
- can find half of a quantity by sharing
- know that a quarter is one of 4 parts
- can split a shape into 4 equal parts
- can find a quarter of a small quantity by sharing
- can distinguish between equal parts and non-equal parts

In year 2, pupils should be taught to:

- recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$ of a length, shape, set of objects or quantity
- write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Pupils are ready to progress from Year 2 to Year 3 if they:

- can make equal parts
- can recognise half, quarters and thirds
- know that unit fractions are one equal part of a whole
- know how to find $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ of a shape, object or quantity
- know that $\frac{1}{2}$ is larger than $\frac{1}{4}$
- can count in fractions
- know that $\frac{1}{2}$ is equivalent to $\frac{2}{4}$
- can find and show non-unit fractions of $\frac{2}{3}$ and $\frac{3}{4}$

In year 3, pupils should be taught to:

- count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10
- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- recognise and show, using diagrams, equivalent fractions with small denominators

		• add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ • compare and order unit fractions, and fractions with the same denominators • solve problems that involve all of the above.
Pupils are ready to progress from Year 3 to Year 4 if they: • know that fractions represent equal parts of a whole • can describe unit fractions of shapes and sets using 'part' and 'whole' • can find unit and non-unit fractions of a shape, object or quantity • know what the denominator and numerator represent • know that $\frac{4}{4}$, $\frac{5}{5}$ etc represents one whole • can find unit fractions of quantities using division facts • can represent fractions on a bar model • can count in tenths • can locate any fraction on a 0-1 number line • can count forwards and backwards in fractions • know that $\frac{1}{4}$ is smaller than $\frac{1}{3}$ by comparing fractions • can add and subtract fractions within 1 In year 4, pupils should be taught to:	Pupils are ready to progress from Year 4 to Year 5 if they: • can locate mixed number fractions on a number line • can count backwards and forwards in fractions • can estimate the position of a fraction on an unmarked number line • can round to the nearest whole number • recognise common equivalent fractions • have started to convert between mixed number and improper fractions (not yet embedded – Y5 expectation) • can add and subtract mixed and improper fractions • can recognise and represent fractions as decimals In year 5, pupils should be taught to: • compare and order fractions whose denominators are all multiples of the same number • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	Pupils are ready to progress from Year 5 to Year 6 if they: • can find non-unit fractions of quantities • can convert between mixed number and improper fractions • can find and show equivalent fractions on a number line • can find equivalent fractions using the multiplicative relationship between the numerators and denominators • know how to represent half, quarters, fifths and tenths as decimals • can convert some decimals and fractions into percentages In year 6, pupils should be taught to: • use common factors to simplify fractions; use common multiples to express fractions in the same denomination • compare and order fractions, including fractions > 1 • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$.
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- round decimals with one decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to two decimal places
- solve simple measure and money problems involving fractions and decimals to two decimal places.

- recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5}$ or $1 \frac{1}{5}$]
- add and subtract fractions with the same denominator and denominators that are multiples of the same number
- multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
- read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]
- recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- round decimals with two decimal places to the nearest whole number and to one decimal place
- read, write, order and compare numbers with up to three decimal places
- solve problems involving number up to three decimal places
- recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
- solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

- multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
- associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]
- identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
- multiply one-digit numbers with up to two decimal places by whole numbers
- use written division methods in cases where the answer has up to two decimal places
- solve problems which require answers to be rounded to specified degrees of accuracy
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Cross-curricular opportunities

- Following recipes – DT (food)

- Sharing equipment equally

Maths in the world around us

- Trade/retail – calculating and comparing prices during sales
- Sharing resources, materials, money and food equally
- Cooking and baking – scaling recipes
- Food/nutrition – understanding food labels, calculating recommended amounts of fat, sugar, fibre etc.

Measurement

In year 1, pupils should be taught to:

- compare, describe and solve practical problems for:
- lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- mass/weight [for example, heavy/light, heavier than, lighter than]
- capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
- time [for example, quicker, slower, earlier, later]
- measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time (hours, minutes, seconds)
- recognise and know the value of different denominations of coins and notes
- sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]

Pupils are ready to progress from Year 1 to Year 2 if they:

- can compare length and height using 'taller/longer' and 'shorter'
- use non-standard units to measure length
- can use a ruler to measure in cm, starting at 0cm
- can compare mass using 'lighter' and 'heavier'
- use non-standard units to measure mass on scales
- can compare volume using 'full', 'empty' or 'nearly full/empty'
- use non-standard units to measure capacity
- compare capacity using 'more', 'less' and 'equal'
- can recognise notes and coins
- can sequence events
- know the difference between morning, afternoon and evening
- know days of the week and months of the year in order
- use an analogue clock to read and show the time to the nearest hour and half hour

Pupils are ready to progress from Year 2 to Year 3 if they:

- recognise coins and notes
- can make amounts of money in different ways
- can count and compare money using $\leq$ and $\geq$
- can show money in pounds (£) and pence (p)
- can calculate totals and find change
- know that £1 = 100p
- can solve money problems
- can measure length in cm and m
- can compare lengths using $\leq$ and $\geq$
- can tell time to the nearest 5 minutes on an analogue clock
- calculate duration
- measure mass in grams and kilograms
- compare mass using $\leq$ and $\geq$
- measure volume in ml and litres
- compare volume using $\leq$ and $\geq$
- know that temperature is measured in degrees Centigrade
- can read a thermometer with scales of 1, 2, 5 or 10

- recognise and use language relating to dates, including days of the week, weeks, months and years - tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	In year 2, pupils should be taught to: - choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels - compare and order lengths, mass, volume/capacity and record the results using >, < and = - recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value - find different combinations of coins that equal the same amounts of money - solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change - compare and sequence intervals of time - tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times - know the number of minutes in an hour and the number of hours in a day.	- can calculate the difference between temperatures and describe it in terms of getting warmer or colder In year 3, pupils should be taught to: - measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) - measure the perimeter of simple 2-D shapes - add and subtract amounts of money to give change, using both £ and p in practical contexts - tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks - estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight - know the number of seconds in a minute and the number of days in each month, year and leap year - compare durations of events [for example to calculate the time taken by particular events or tasks].
Pupils are ready to progress from Year 3 to Year 4 if they: can convert between pounds (£) and pence	Pupils are ready to progress from Year 4 to Year 5 if they: can multiply and divide by 1000 to convert between kilometres and metres	Pupils are ready to progress from Year 5 to Year 6 if they: can measure the perimeter of rectilinear shapes using a ruler

• can calculate change • measure length in mm, cm and m • can compare mixed lengths • can measure and calculate the perimeter of 2D shapes • can use and read scales to measure mass in grams and kilograms • can compare the mass of objects in mixed measurements • can measure volume and capacity in millilitres and litres • can compare and convert between ml and l. • can tell the time on an analogue clock to the nearest minute • can use AM and PM • can read a 24hour clock • know how many days are in each month of the year • can estimate the duration of an activity • can read digital clocks to the nearest minute • can calculate and compare durations • can calculate start and end times • can use a calendar • can measure time in seconds In year 4, pupils should be taught to: • Convert between different units of measure [for example, kilometre to metre; hour to minute]	• can calculate the perimeter of rectilinear shapes (where all sides meet at right angles) on a grid • can calculate the perimeter of rectangles after finding missing lengths • have started to calculate the perimeter of rectilinear shapes without using a grid by labelling each side • can calculate area by counting squares • can make rectilinear shapes with a given area • can compare area using $<>=$ • understand decimal notation for money • can compare amounts of money in different formats e.g. 1234p or £12.34 • can estimate amounts of money by rounding • can convert between hours, minutes and seconds • can convert between days, weeks, months and years • can convert between analogue and digital times on both 12 and 24 hour clocks In year 5, pupils should be taught to: • convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • understand and use approximate equivalences between metric units and	• can calculate unknown side lengths using their knowledge of perimeter • use a formula to find the area of a rectangle • can calculate the area of compound shapes • can estimate the area of irregular shapes on a grid • can multiply and divide by 1000 to convert between kg/g and km/m • can multiply and divide by 1000 to convert between metres/millimetres and litres/millilitres • can recognise and use both metric and imperial measurements • can compare and convert between years, months, weeks, days, hours, minutes and seconds • know how to read a timetable • can find the difference between times using an appropriate method such as a number line • can compare the volume of solids made from cubes • can estimate the volume of solid objects • can estimate capacity using practical equipment • know that different shaped containers may have the same capacity In year 6, pupils should be taught to: • solve problems involving the calculation and conversion of units of measure, using
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• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares • estimate, compare and calculate different measures, including money in pounds and pence • read, write and convert time between analogue and digital 12- and 24-hour clocks • solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	common imperial units such as inches, pounds and pints • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes • estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] • solve problems involving converting between units of time • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.	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].
Cross-curricular opportunities • Measuring accurately to build/create – DT • Measuring ingredients and reading scales – DT (food) • Recording and comparing temperatures at different times/places – geography and science • Using a stopwatch to measure time – PE • Measuring length and distance in a variety of sports - PE		
Maths in the world around us • Time and distance used in professional sports • Calculating area and perimeter of outdoor spaces, rooms and buildings – landscape gardeners, decorators and architects • Measurements used in the building industry – builders, merchants, architects, engineers • Calculating journey times for holiday travels and commutes • Baking, cooking, preparing food and drink – catering, restaurants • Designing and making furniture - carpenters		

Geometry – properties of shape

In year 1, pupils should be taught to: - recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	Pupils are ready to progress from Year 1 to Year 2 if they: - Can recognise common 2D and 3D shapes in different orientations - Can name: circles, squares, rectangles, triangles, cubes, cuboids, spheres, cylinders and pyramids - Can spot common shapes outside the classroom - Can compose and arrange 2D and 3D shapes to match a picture In year 2, pupils should be taught to: - identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line - identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces - identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] - compare and sort common 2-D and 3-D shapes and everyday objects.	Pupils are ready to progress from Year 2 to Year 3 if they: - know that a polygon is a 2D shape with straight sides - can count and describe sides and vertices - can name irregular 2D shapes based on the number of sides - can use edges, vertices and faces to describe 3D shapes In year 3, pupils should be taught to: - draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them - recognise angles as a property of shape or a description of a turn - identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle - identify horizontal and vertical lines and pairs of perpendicular and parallel lines.
Pupils are ready to progress from Year 3 to Year 4 if they: - Know that a right angle is a quarter turn - Can recognise right angles in 2D shapes - Can draw polygons on a grid using a ruler	Pupils are ready to progress from Year 4 to Year 5 if they: - Can draw polygons from coordinates - Can translate a polygon within a quadrant - Can identify regular and irregular polygons - Can calculate the perimeter of polygons	Pupils are ready to progress from Year 5 to Year 6 if they: Can compare, estimate and measure angles in degrees using a protractor

- Can identify horizontal, vertical, parallel and perpendicular lines
- Can describe and sort 2D and 3D shapes

In year 4, pupils should be taught to:

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to two right angles by size
- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry.

- Can find the perimeter of rectilinear shapes
- Know the different properties of triangles and quadrilaterals
- Can identify lines of symmetry in 2D shapes
- Can compare and order angles including acute and obtuse angles

In year 5, pupils should be taught to:

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees ($^{\circ}$)
- identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and a $\frac{1}{2}$ turn (total 180°); other multiples of 90°
- use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

- Can calculate and compare the area of rectangles by multiplying length by width and using cm^2
- Measure angles in degrees using a protractor
- Can calculate missing angles on a straight line
- Know that there are 360 degrees in a full turn

In year 6, pupils should be taught to:

- draw 2-D shapes using given dimensions and angles
- recognise, describe and build simple 3-D shapes, including making nets
- compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
- illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
- recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Cross-curricular opportunities

- Explore symmetry and lines in works of art e.g. Mondrian – art
- Testing the strength of 2D and 3D shapes in construction e.g. bridge building – DT
- Shape in architecture – DT and history
- Shape and symmetry in religious buildings – RE
- Patterns in nature – science and art

Maths in the world around us

- Geometry in art – Kandinsky, Mondrian etc.
- Angles of turn – navigation for pilots
- Design – gardeners, decorators, architects, builders.
- Construction of roads, bridges and other structures – engineers

Geometry – position and direction

In year 1, pupils should be taught to: • describe position, direction and movement, including whole, half, quarter and three-quarter turns.	Pupils are ready to progress from Year 1 to Year 2 if they: • Can describe full, half and quarter turns • Know left, right, forwards and backwards, top, bottom, above and below In year 2, pupils should be taught to: • order and arrange combinations of mathematical objects in patterns and sequences • use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).	Pupils are ready to progress from Year 2 to Year 3 if they: • Can describe the movement of an object on a grid • Can describe full, half and quarters of a turn clockwise and anti-clockwise • Follow and give directions accurately In year 3, pupils should be taught to: • Recognise a quarter turn as 90 degrees and a half turn as 180 degrees
Pupils are ready to progress from Year 3 to Year 4 if they: • Know that a quarter turn is 90 degrees • Know that a half turn is 180 degrees • Can follow and give directions, including turns, using positional language such as clockwise and anti-clockwise	Pupils are ready to progress from Year 4 to Year 5 if they: • Can read, write and use coordinates in the first quadrant • Can translate a shape up/down and left/right on a grid • Can describe the movement of a shape using specific language	Pupils are ready to progress from Year 5 to Year 6 if they: • Can read and plot coordinates in the first quadrant and know that (0,0) is the origin • Can translate shapes on a grid • Can translate coordinates and describe their movement

In year 4, pupils should be taught to: - describe positions on a 2-D grid as coordinates in the first quadrant - describe movements between positions as translations of a given unit to the left/right and up/down - plot specified points and draw sides to complete a given polygon.	In year 5, pupils should be taught to: identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	- Can reflect objects across a vertical or horizontal line within the first quadrant - Can reflect using coordinates In year 6, pupils should be taught to: - 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.
Cross-curricular opportunities - Reading map coordinates – geography - Giving directions – geography - Coding/programming robots e.g. Beebots - ICT		
Maths in the world around us - Giving directions – travel - Using a map – navigators, pilots, explorers, sailors - Reflecting shapes and patterns – designer, artist, choreographer		

Statistics

	In year 2, pupils should be taught to: - interpret and construct simple pictograms, tally charts, block diagrams and simple tables - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity - ask and answer questions about totalling and comparing categorical data.	Pupils are ready to progress from Year 2 to Year 3 if they: - Can make tally charts - Can draw pictograms where each symbol represents 1, 2, 5 or 10 - Can interpret pictograms including 'how many more' questions - Can build and draw block diagrams In year 3, pupils should be taught to:
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		• interpret and present data using bar charts, pictograms and tables • solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.
Pupils are ready to progress from Year 3 to Year 4 if they: • Can make and interpret pictograms • Can make and interpret bar charts with scales of 1, 2, 5 or 10 • Can use tables to answer 1 and 2 step questions about the data In year 4, pupils should be taught to: • interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Pupils are ready to progress from Year 4 to Year 5 if they: • Can solve comparison, sum and difference problems based on tables, bar charts and pictograms • Can represent continuous data (e.g. time and temperature) on a line graph • Can interpret line graphs • Ask and answer questions about data on a line graph In year 5, pupils should be taught to: • solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables.	Pupils are ready to progress from Year 5 to Year 6 if they: • Can read and interpret line graphs • Can draw line graphs accurately • Ask and answer comparison, sum and difference questions about line graphs • Read and interpret two-way tables • Can read and interpret timetables In year 6, pupils should be taught to: • interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average.
Cross-curricular opportunities • Represent data on a graph – science and ICT • Compare population change over time – geography and history • Create surveys and count votes - PSHE		
Maths in the world around us • Graphs showing profits/losses – business • Climate change/global warming – science, environment • COVID numbers – journalists, scientists, politicians, healthcare		

Algebra

In year 6, pupils should be taught to:

- 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.

Ratio and proportion

In year 6, pupils should be taught to:

- solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
- solve problems involving similar shapes where the scale factor is known or can be found
- solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.