Intent:

Mathematics makes a significant contribution to modern society as it helps us to understand science, technology, engineering and economics. Children who are confident and fluent mathematicians are well equipped to calculate, reason and solve problems in a range of real-life contexts. Our aim is for pupils to leave KTS fluent in facts and strategies. We want our pupils to be able to apply these to a wide range of problem-solving scenarios. We aim for them to be able to talk about maths and reason competently, pattern-spotting, questioning and challenging the maths they encounter in a variety of real-life situations.

Mathematics at

Kentish Town C of E

At Kentish Town C of E, we develop children's knowledge and understanding of mathematical concepts from the Early Years through to the end of Y6. Through our teaching strategies, and school values, our aim is for all pupils to:

- develop high levels of confidence, enthusiasm, enjoyment and resilience in earning maths;

- be engaged and motivated, showing active participation;

- be able to work independently and collaboratively, demonstrating a high-level of mathematical communication

- confidently understand the place value of whole numbers and decimals;

- learn, recall and apply number facts in multiplication tables, doubles, halves and bonds in order to be fluent mathematicians;

- know and use a range of mental and written strategies to calculate confidently and efficiently;

- make reasoned decisions about how to approach, record and justify their mathematics;

- engage with enrichment opportunities in other areas of the curriculum and outside the classroom;

- develop a curiosity to question and generalise, responding to challenges with understanding;

- respond regularly to marking and feedback in order to make rapid progress

Enrichment:

- NSPCC Number Day

- Maths Week London

- Maths Week England

- TimesTable Rockstars competitions

- NumBots

- Camden Primary Maths Challenge

- Camden Spring Slam

- KTS Maths and Timestable Challenges

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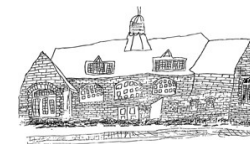
Mathematics at

Kentish Town C of E

Acorns (Nursery)

Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').

Recite numbers past 5.

Say one number for each item in order: 1,2,3,4,5. Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').

Show 'finger numbers' up to 5.

Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.

Experiment with their own symbols and marks as well as numerals. Solve real world mathematical problems with numbers up to 5.

Compare quantities using language: 'more than', 'fewer than'.

Talk about and explore 2D and 3D shapes using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.

Understand position through words alone – for example, "The bag is under the table," – with no pointing.

Describe a familiar route. Discuss routes and locations, using words like 'in front of' and 'behind'.

Make comparisons between objects relating to size, length, weight and capacity

Select shapes appropriately and combine shapes to make new ones

Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc. Extend and create ABAB patterns – stick, leaf, stick, leaf. Notice and correct an error in a repeating pattern. Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

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Mathematics at

Kentish Town C of E

Oak (Reception)

Count objects, actions and sounds

Subitise.

Link the number symbol (numeral) with its cardinal number value.

Count beyond ten.

Compare numbers.

Understand the 'one more than/one less than' relationship between consecutive numbers.

Explore the composition of numbers to 10.

Automatically recall number bonds for numbers 0–5 and some to 10

Select, rotate and manipulate shapes to develop spatial reasoning skills.

Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.

Continue, copy and create repeating patterns.

Compare length, weight and capacity.

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Ash (Year 1):

Number- Place Value

count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number

count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens

given a number, identify one more and one less

identify and represent numbers using objects and pictorial representations including the number line,

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.

Number– Addition and Subtraction

read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs

represent and use number bonds and related subtraction facts within 20

add and subtract one-digit and two-digit numbers to 20, including zero

solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.

Number– Multiplication and Division

solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher

Number– Fractions

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

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

Mathematics at

Kentish Town C of E

Ash (Year 1) ctd:

Measurement

compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] mass/weight [for example, heavy/light, heavier than, lighter than] capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] ime [for example, quicker, slower, earlier, later]

measure and begin to record the following: lengths and heights, mass/weight , capacity and volume, time (hours, minutes, seconds)

recognise and know the value of different denominations of coins and notes

sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]

recognise and use language relating to dates, including days of the week, weeks, months and years

tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Geometry– Properties of Shapes

recognise and name common 2-D and 3-D shapes, including:2-D shapes [for example, rectangles (including squares), circles and triangles] , 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].

Geometry– Position and Direction

describe position, direction and movement, including whole, half, quarter and three quarter turns.

Mathematics at
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Willow (Year 2):

Number- Place Value

Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

recognise the place value of each digit in a two-digit number (tens, ones)

identify, represent and estimate numbers using different representations, including the number line

compare and order numbers from 0 up to 100; use and = signs

read and write numbers to at least 100 in numerals and in words

use place value and number facts to solve problems.

Number– Addition and Subtraction

solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures, applying their increasing knowledge of mental and written methods

recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100

add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one-digit numbers

show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot

recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Mathematics at

Kentish Town C of E

Willow (Year 2) ctd:

Number– Multiplication and Division

recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs

show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot

solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Number– Fractions

recognise, find, name and write fractions 1/3 , 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity

write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2

Measurement

choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels

compare and order lengths, mass, volume/capacity and record the results using >, < and =

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.

Mathematics at

Kentish Town C of E

Willow (Year 2) ctd.:

Geometry– Properties of Shapes

identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line

identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]

compare and sort common 2-D and 3-D shapes and everyday objects

Geometry– Position and Direction

order and arrange combinations of mathematical objects in patterns and sequences

use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).

Statistics

interpret and construct simple pictograms, tally charts, block diagrams and simple tables

ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity

ask and answer questions about totalling and comparing categorical data.

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Cedar (Year 3):

Number- Place Value

count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number

recognise the place value of each digit in a three-digit number (hundreds, tens, ones)

compare and order numbers up to 1000

identify, represent and estimate numbers using different representations

read and write numbers up to 1000 in numerals and in words

solve number problems and practical problems involving these ideas.

Number– Addition and Subtraction

add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds,

add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

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.

Number– Multiplication and Division

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 know, including for two-digit numbers times one-digit numbers, using mental 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.

Mathematics at
Kentish Town C of E

Cedar (Year 3) ctd:

Number– Fractions

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

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

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, 5/7 + 1/7 = 6/7]

compare and order unit fractions, and fractions with the same denominators

solve problems that involve all of the above.

Measurement

measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

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].

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Mathematics at
Kentish Town C of E

Cedar (Year 3) ctd.:

Geometry– Properties of Shapes

draw 2-D shapes and make 3-D shapes using modelling materials

recognise 3-D shapes in different orientations and describe them

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.

Statistics

interpret and present data using bar charts, pictograms and tables

solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.

Mathematics at

Kentish Town C of E

Sycamore (Year 4):

Number- Place Value

count in multiples of 6, 7, 9, 25 and 1000

find 1000 more or less than a given number

count backwards through zero to include negative numbers

recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)

order and compare numbers beyond 1000

identify, represent and estimate numbers using different representations

round any number to the nearest 10, 100 or 1000

solve number and practical problems that involve all of the above and with increasingly large positive numbers

read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.

Number– Addition and Subtraction

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.

Number– Multiplication and Division

recall multiplication and division facts for multiplication tables up to 12 × 12

use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers ◻ recognise and use factor

Mathematics at

Kentish Town C of E

Sycamore (Year 4) ctd:

Number– Multiplication and Division

multiply two-digit and three-digit numbers by a one-digit number using formal written layout

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.

Number– Fractions (including decimals)

recognise and show, using diagrams, families of common equivalent fractions

count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.

solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number

add and subtract fractions with the same denominator

recognise and write decimal equivalents of any number of tenths or hundredths

recognise and write decimal equivalents to 1/4, 1/2, 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.

Measurement

Convert between different units of measure [for example, kilometre to metre; hour to minute]

measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

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Mathematics at
Kentish Town C of E

Sycamore (Year 4) ctd:

Measurement

estimate, compare and calculate different measures, including money in pounds and pence

read, write and convert time between analogue and digital 12- and 24-hour clocks

solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

Geometry– Properties of Shapes

compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

identify acute and obtuse angles and compare and order angles up to two right angles by size

identify lines of symmetry in 2-D shapes presented in different orientations

complete a simple symmetric figure with respect to a specific line of symmetry.

Geometry– Position and Direction

describe positions on a 2-D grid as coordinates in the first quadrant

describe movements between positions as translations of a given unit to the left/right and up/down

plot specified points and draw sides to complete a given polygon

Statistics

interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.

solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

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Chestnut (Year 5):

Number- Place Value

read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit

count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000

interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero

round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000

solve number problems and practical problems that involve all of the above

read Roman numerals to 1000 (M) and recognise years written in Roman numerals

Number– Addition and Subtraction

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.

Number– Multiplication and Division

identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers

establish whether a number up to 100 is prime and recall prime numbers up to 19

multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Mathematics at

Kentish Town C of E

Chestnut (Year 5) ctd.:

Number– Multiplication and Division

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.

Number– Fractions (including decimals and percentages)

compare and order fractions whose denominators are all multiples of the same number

identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]

add and subtract fractions with the same denominator and denominators that are multiples of the same number

multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

read and write decimal numbers as fractions [for example, 0.71 = 71/100]

recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents

Mathematics at

Kentish Town C of E

Chestnut (Year 5) ctd.:

Number– Fractions (including decimals and percentages)

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 1/2, 1/4, 1/5, 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25.

Measurement

convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)

understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes

estimate volume [for example, using 1 cm^3 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.

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Chestnut (Year 5) ctd.:

Geometry– Properties of Shapes

identify 3-D shapes, including cubes and other cuboids, from 2-D representations

know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles

draw given angles, and measure them in degrees (^{o})

identify:

-angles at a point and one whole turn (total 360°)

-angles at a point on a straight line and half a 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

Geometry– Position and Direction

identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.

Statistics

solve comparison, sum and difference problems using information presented in a line graph

complete, read and interpret information in tables, including timetables.

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Beech (Year 6):

Number- Place Value

read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

round any whole number to a required degree of accuracy

use negative numbers in context, and calculate intervals across zero

solve number and practical problems that involve all of the above.

Number– Addition, Subtraction, Multiplication and Division

multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context

perform mental calculations, including with mixed operations and large numbers

identify common factors, common multiples and prime numbers

use their knowledge of the order of operations to carry out calculations involving the four operations

solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and 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.

Mathematics at

Kentish Town C of E

Beech (Year 6)ctd.:

Number– Fractions (including Decimals and Percentages)

use common factors to simplify fractions; use common multiples to express fractions in the same denomination

compare and order fractions, including fractions > 1

add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8]

divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]

associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]

identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places

multiply one-digit numbers with up to two decimal places by whole numbers

use written division methods in cases where the answer has up to two decimal places

solve problems which require answers to be rounded to specified degrees of accuracy

recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

Ratio and Proportion

solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

olve 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.

Mathematics at

Kentish Town C of E

Beech (Year 6)ctd.:

Ratio and Proportion

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.

Algebra

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.

Measurement

solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

convert between miles and kilometres

recognise that shapes with the same areas can have different perimeters and vice versa

recognise when it is possible to use formulae for area and volume of shapes

Mathematics at

Kentish Town C of E

Beech (Year 6)ctd.:

Measurement

calculate the area of parallelograms and triangles

calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3].

Geometry– Properties of Shapes

draw 2-D shapes using given dimensions and angles

recognise, describe and build simple 3-D shapes, including making nets

compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons

illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.

Geometry– Position and Direction

describe positions on the full coordinate grid (all four quadrants)

draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

Statistics

interpret and construct pie charts and line graphs and use these to solve problems

calculate and interpret the mean as an average.