

Mathematics – Formal Curriculum Summary and Overview (2022-23)

Intent:

The mathematics curriculum offers a creative, personalised and differentiated program which is tailored to the needs and abilities of each student. We intend to combine the teaching of numeracy skills in an adaptable way while providing opportunities to use these skills and knowledge in practical situations, encouraging the development of fluency, problem solving and mathematical reasoning skills. We intend that all our students will:

- Develop their ability to explore, understand and adapt to the world around them.
- Develop the potential to apply skills of comparing, identifying differences, and make connections.
- Use mathematical skills at their own level and be able to use these skills in day-to-day life.

At Sir Tom Finney Community High School we intend to provide an academic pathway for all those capable of completing Entry level and Functional skill accreditation. Alongside this, as a means of providing achievements for all, students within the formal math's curriculum who are unable to achieve entry level accreditation, will be able to gain unit awards through our awarding body AQA at a pre-entry level.

Implementation:

The curriculum delivery is planned and implemented across broad ability-based teaching and learning groups throughout each key stage. This allows work to be adapted to meet ability ranges and resources to be tailored to suit the preferred learning styles of all learners. Amongst this, the levels of support vary with staffing ratios that offer small group and individual 1:1 intervention support when needed. Support staff are experienced and follow appropriate professional development opportunities to support delivery models. Each subject follows a curriculum map that highlights content and progression and sequencing. Assessment is both formative and summative to inform next steps in learning and summarising attainment and progress. Some students will also access enhanced personalised timetables to meet specific additional needs if appropriate.

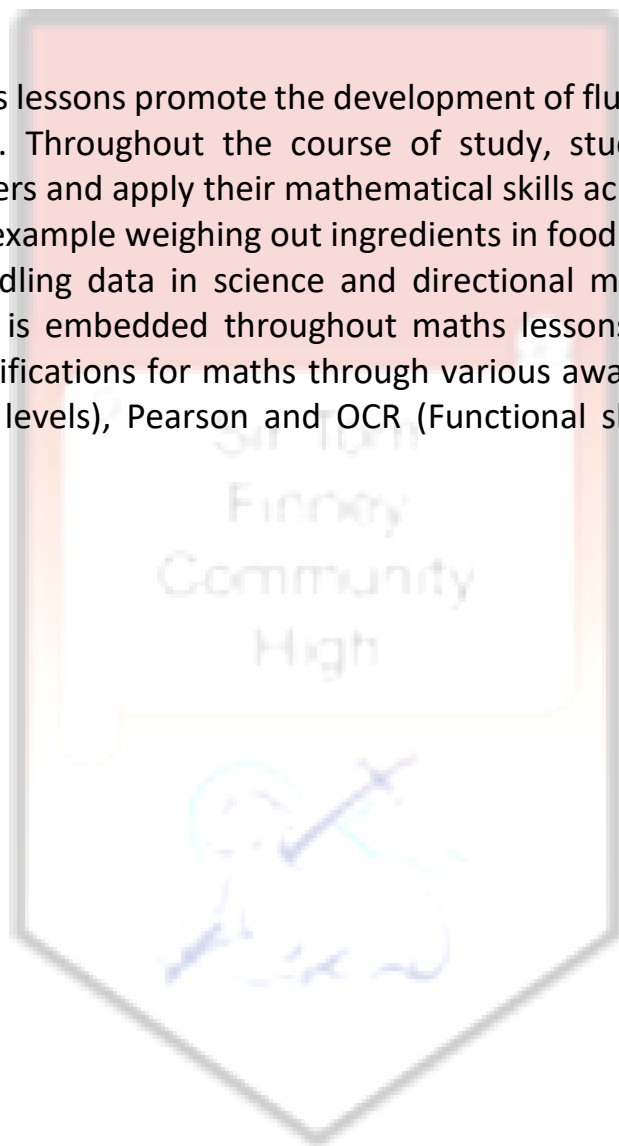
Within the eight AQA components of maths (see appendix 1.0), students will be subject to a baseline assessment through various means e.g. teacher observations, online formative assessments, individual / group tasks, targeted worksheets or practical math lessons. These baseline assessments will highlight strengths and areas for improvement. From identifying strengths, work can be targeted to stretch and challenge students' existing knowledge, and from the areas of improvement, students have the opportunity to engage in our intervention scheme, aimed at bridging their gaps in understanding.

Pupils will explore and develop math's skills through:

- Individual, group and whole class work
- Direct teaching of skills and opportunities to use these skills functionally and practically, including real-life problem solving
- Oral and written work, ICT activities, cross-curricular activities and themed activities
- Multi- sensory activities, including use of real objects, manipulatives and visualisations.

Impact:

At every key stage, maths lessons promote the development of fluency, problem solving and mathematical reasoning. Throughout the course of study, students are encouraged to become successful learners and apply their mathematical skills across the curriculum and to everyday situations, for example weighing out ingredients in food technology, matching and recognising shapes, Handling data in science and directional movements in PE. Ongoing assessment for learning is embedded throughout maths lessons. Students work towards recognised external qualifications for maths through various awarding bodies such as AQA (Unit awards and Entry levels), Pearson and OCR (Functional skills level 1,2) and where appropriate, GCSEs.



KS3 Mathematics Curriculum Mapping – (Long-Term Overview)

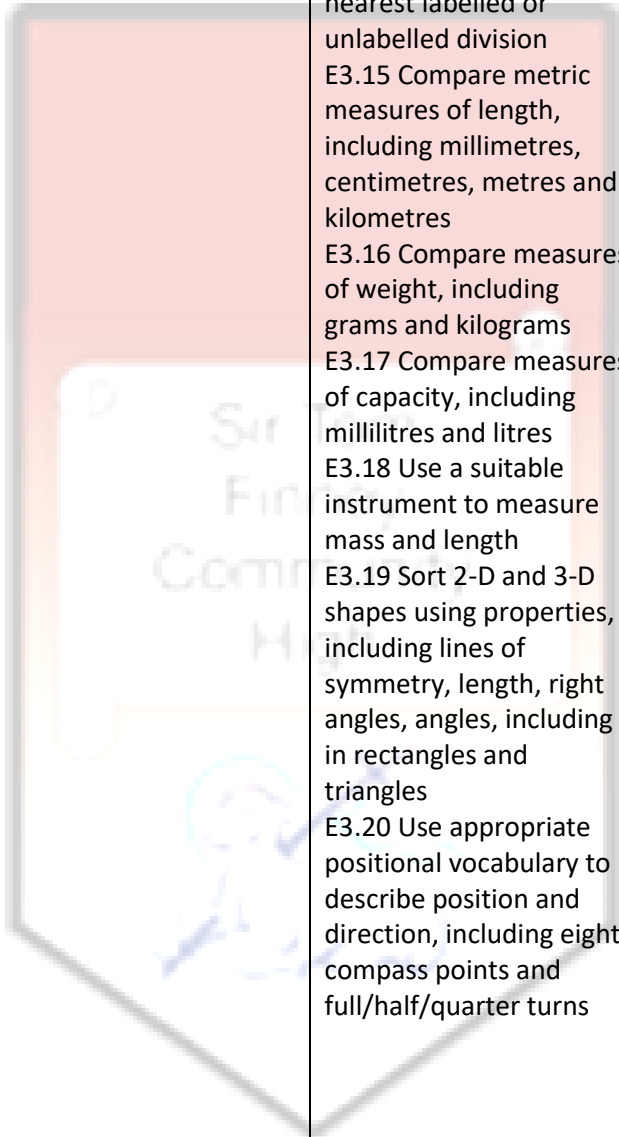
Throughout KS3, students are taught maths from the White Rose scheme of work, to consolidate prior learning and to prepare them for the accreditation opportunities of the KS4 and FE Departments. Each class will have a similar curriculum mapping to the one seen here which is differentiated based on ability level and altered slightly to aid resource allocation throughout the school year.

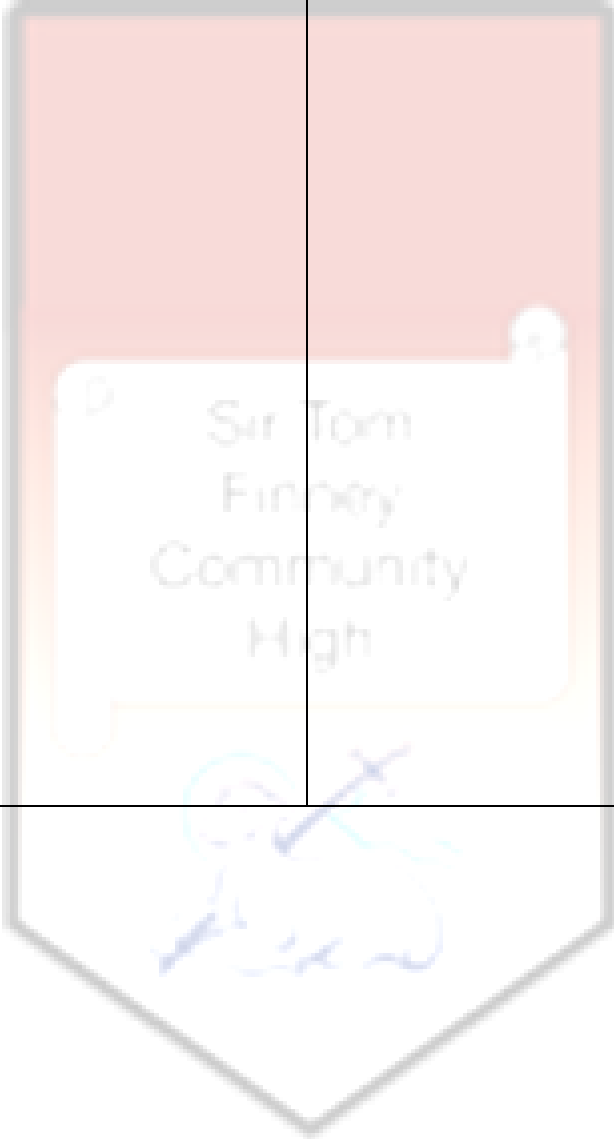
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Addition, Subtraction, Multiplication and Division				Number: Fractions				Geometry: Position and Direction	Consolidation
Spring	Number: Decimals		Number: Percentages		Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Number: Ratio		Consolidation
Summer	Geometry: Properties of Shape		Problem Solving			Statistics		Investigations				Consolidation

14 – 19 Department Mathematics Curriculum Mapping – (Long-Term Overview)

AQA Entry Level 1 Accreditation	AQA Entry Level 2 Accreditation	AQA Entry Level 3 Accreditation	Pearson Entry Level 3 Accreditation	Pearson FS Level 1 Accreditation	Pearson FS Level 2 Accreditation
<p>Number: 1.1 Count reliably up to 20 items 1.2 Read, write, order and compare numbers up to 20, including zero 1.3 Complete a number line up to 20</p>	<p>Number: 2.1 Read, write, order and compare numbers up to 100 2.2 Recognise place value in two digit numbers 2.3 Count from 0 in steps of two, three and five 2.4 Round numbers less than 100 to the nearest 10 2.5 Understand and identify odd and even numbers</p>	<p>Number: 3.1 Read and write numbers up to 1,000 3.2 Order and compare numbers up to 1,00 3.3 Recognise place value in three digit number 3.4 Round numbers less than 1,000 to the nearest 10 3.5 Round numbers less than 1,000 to the nearest 100 3.6 Find 10 or 100 more or less than a given number 3.7 Recognise and use multiples of 2, 3, 4, 5, 8, 10, 50 and 100</p>	<p>E3.1 Count, read, write, order and compare numbers up to 1000 E3.2 Add and subtract using three-digit whole numbers E3.3 Divide three-digit whole numbers by single- and double-digit whole numbers and express remainders E3.4 Multiply two-digit whole numbers by single- and double-digit whole numbers E3.5 Approximate by rounding numbers less than 1000 to the nearest 10 or 100 and use this</p>	<p>1 Read, write, order and compare large numbers (up to one million) 2 Recognise and use positive and negative numbers 3 Multiply and divide whole numbers and decimals by 10, 100, 1000 4 Use multiplication facts and make connections with division facts 5 Use simple formulae expressed in words for one or two-step operations 6 Calculate the squares of one-digit and two-digit numbers</p>	<p>1 Read, write, order and compare positive and negative numbers of any size 2 Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation 3 Evaluate expressions and make substitutions in given formulae in words and symbols 4 Identify and know the equivalence between fractions, decimals and percentages 5 Work out percentages of</p>

<p>Four Operations: Add two whole numbers with a total up to 20 Subtract one number up to 20 from another 1.3 Understand and use the + and – signs to solve simple number problems</p>	<p>Four Operations: 2.1 Add whole numbers with a total up to 100 2.2 Subtract one number up to 100 from another 2.3 Multiply using single digit whole numbers 2.4 Use and interpret +, -, × and = in real-life situations for solving problems 2.5 Recall and use multiplication facts for the 2, 5 and 10 multiplication tables</p>	<p>Four Operations: 3.1 Add and subtract using three digit numbers 3.2 Multiply a two digit whole number by a single digit whole number 3.3 Divide a two digit whole number by a single digit whole number 3.4 Use and interpret +, -, ×, ÷ and = in real-life situations for solving problems 3.5 Use inverse operations to find missing number 3.6 Estimate the answer to a calculation 3.7 Recall and use multiplication facts for the 3, 4 and 8 multiplication tables</p>	<p>rounded answer to check results E3.6 Recognise and continue linear sequences of numbers up to 100 E3.7 Read, write and understand thirds, quarters, fifths and tenths, including equivalent forms E3.8 Read, write and use decimals up to two decimal places E3.9 Recognise and continue sequences that involve decimals E3.10 Calculate with money using decimal notation and express money correctly in writing in pounds and pence E3.11 Round amounts of money to the nearest £1 or 10p E3.12 Read, measure and record time using am and pm E3.13 Read time from analogue and 24-hour digital clocks in hours and minutes E3.14 Use and compare measures of length, capacity, weight and</p>	<p>7 Follow the order of precedence of operators 8 Read, write, order and compare common fractions and mixed numbers 9 Find fractions of whole number quantities or measurements 10 Read, write, order and compare decimals up to three decimal places 11 Add, subtract, multiply and divide decimals up to two decimal places 12 Approximate by rounding to a whole number or to one or two decimal places 13 Read, write, order and compare percentages in whole numbers 14 Calculate percentages of quantities, including simple percentage increases and decreases by 5% and multiples thereof 15 Estimate answers to calculations using fractions and decimals 16 Recognise and calculate equivalences between common fractions, percentages and decimals</p>	<p>amounts and express one amount as a percentage of another 6 Calculate percentage change (any size increase and decrease), and original value after percentage change 7 Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers 8 Express one number as a fraction of another 9 Order, approximate and compare decimals 10 Add, subtract, multiply and divide decimals up to three decimal places 11 Understand and calculate using ratios, direct proportion and inverse proportion 12 Follow the order of precedence of operators, including indices 13 Calculate amounts of money, compound interest, percentage increases, decreases and discounts including tax and simple budgeting 14 Convert between metric and imperial units of length, weight and capacity</p>
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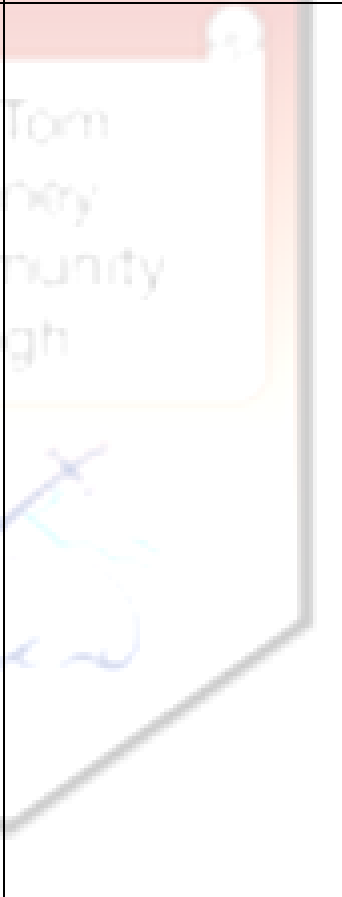
			<p>temperature using metric or imperial units to the nearest labelled or unlabelled division</p> <p>E3.15 Compare metric measures of length, including millimetres, centimetres, metres and kilometres</p> <p>E3.16 Compare measures of weight, including grams and kilograms</p> <p>E3.17 Compare measures of capacity, including millilitres and litres</p> <p>E3.18 Use a suitable instrument to measure mass and length</p> <p>E3.19 Sort 2-D and 3-D shapes using properties, including lines of symmetry, length, right angles, angles, including in rectangles and triangles</p> <p>E3.20 Use appropriate positional vocabulary to describe position and direction, including eight compass points and full/half/quarter turns</p>	<p>17 Work with simple ratio and direct proportions</p> <p>18 Calculate simple interest in multiples of 5% on amounts of money</p> <p>19 Calculate discounts in multiples of 5% on amounts of money</p> <p>20 Convert between units of length, weight, capacity, money and time, in the same system</p> <p>21 Recognise and make use of simple scales on maps and drawings</p> <p>22 Calculate the area and perimeter of simple shapes including those that are made up of a combination of rectangles</p> <p>23 Calculate the volumes of cubes and cuboids</p> <p>24 Draw 2-D shapes and demonstrate an understanding of line symmetry and knowledge of the relative size of angles</p> <p>25 Interpret plans, elevations and nets of simple 3-D shapes</p> <p>26 Use angles when describing position and direction, and measure angles in degrees</p> <p>27 Represent discrete</p>	<p>using a) a conversion factor and b) a conversion graph</p> <p>15 Calculate using compound measures including speed, density and rates of pay</p> <p>16 Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles)</p> <p>17 Use formulae to find volumes and surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders)</p> <p>18 Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements</p> <p>19 Use coordinates in 2-D, positive and negative, to specify the positions of points</p> <p>20 Understand and use common 2-D representations of 3-D objects</p> <p>21 Draw 3-D shapes to include plans and elevations</p>
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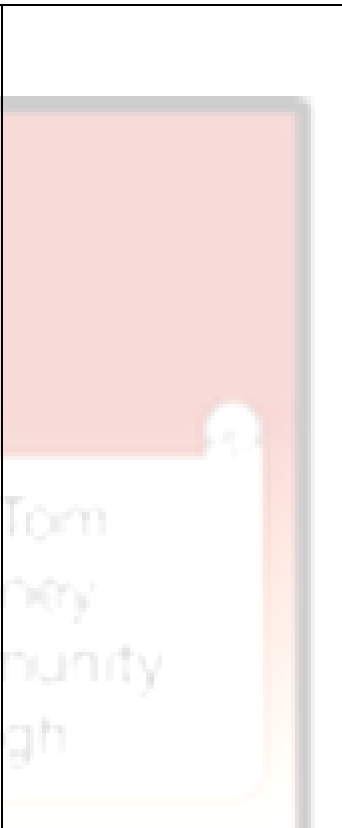
				<p>data in tables, diagrams and charts including pie charts, bar charts and line graphs</p> <p>28 Group discrete data and represent grouped data graphically</p> <p>29 Find the mean and range of a set of quantities</p> <p>30 Understand probability on a scale from 0 (impossible) to 1 (certain) and use probabilities to compare the likelihood of events</p> <p>31 Use equally likely outcomes to find the probabilities of simple events and express them as fractions</p>	<p>22 Calculate values of angles and/or coordinates with 2-D and 3-D shapes</p> <p>23 Calculate the median and mode of a set of quantities</p> <p>24 Estimate the mean of a grouped frequency distribution from discrete data</p> <p>25 Use the mean, median, mode and range to compare two sets of data</p> <p>26 Work out the probability of combined events including the use of diagrams and tables, including two-way tables</p> <p>27 Express probabilities as fractions, decimals and percentages</p> <p>28 Draw and interpret scatter diagrams and recognise positive and negative correlation</p>
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<p>Ratio: Understand equality Identify or show one half of a quantity up to 20 1.3 Work out half of an even number up to 20</p>	<p>Ratio: 2.1 Identify or show one third or one quarter of a quantity up to 24 2.2 Work out one third or one quarter of a number up to 24 2.3 Count in fractions of one half or one third or one quarter 2.4 Work out amounts two, three or four times the size of a given amount 2.5 Recognise the equivalence of 12 and 24</p>	<p>Ratio: 3.1 Identify or show unit fractions up to one tenth of a quantity up to 100 3.2 Work out unit fractions to one tenth of a number up to 100 3.3 Identify or show any number of thirds, quarters, fifths or tenths of a quantity 3.4 Work out any number of thirds, quarters, fifths or tenths of an amount 3.5 Recognise and identify equivalent fractions 3.6 Add and subtract fractions with the same denominator within one whole 3.7 Work out amounts 5, 8 or 10 times the size of a given amount</p>	<p>E3.21 Extract information from lists, tables, diagrams and charts and create frequency tables E3.22 Interpret information, to make comparisons and record changes, from different formats, including bar charts and simple line graphs E3.23 Organise and represent information in appropriate ways, including tables, diagrams, simple line graphs and bar charts</p>		
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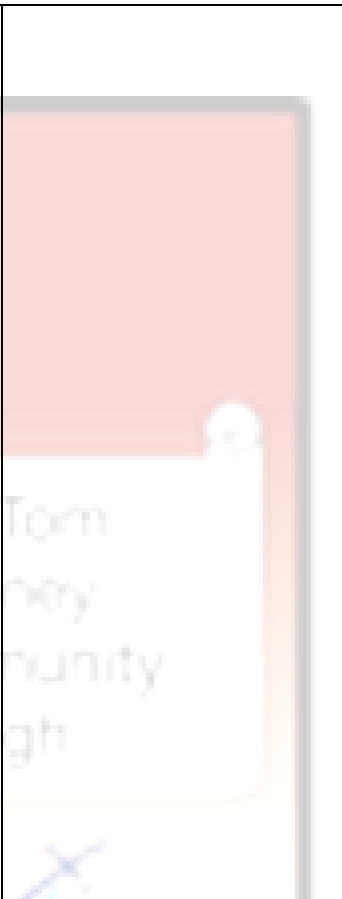


<p>Money: Recognise coins and notes up to £20 Exchange money up to 20p for an equivalent amount in other denominations 1.3 Add up to 20 coins</p>	<p>Money: 2.1 Appreciate the purchasing power of amounts of money (coins) 2.2 Convert from pence to pounds and vice versa 2.3 Make amounts of money up to £2 from given coins 2.4 Make amounts of money in multiples of £5 from £5, £10 and £20 notes 2.5 Calculate with amounts of money in pence up to £1 and whole pounds up to £100 and give change</p>	<p>Money: 3.1 Appreciate the purchasing power of amounts of money (notes) 3.2 Exchange notes for an equivalent value in coins 3.3 Use decimal notation for money 3.4 Interpret a calculator display 3.5 Solve real life problems involving what to buy and how to pay 3.6 Add amounts of money and give change 3.7 Carry out investigations involving money</p>			
<p>Time & Calendar: 1.1 Know the days of the week and their order 1.2 Read the time to the hour or half hour on an analogue clock and draw the hands on a clock to show these times 1.3 Order familiar events</p>	<p>Time & Calendar: 2.1 Know the seasons and months and their order 2.2 Know that 1 week = 7 days; 1 day = 24 hours; 1 hour = 60 minutes; 1 minute = 60 seconds 2.3 Read the time displayed on an analogue or 12 hour digital clock in hours, half hours and quarter hours and draw the hands on a clock or the digital display to represent these times 2.4 Read the time to the nearest five minutes on</p>	<p>Time & Calendar: 3.1 Solve problems involving time 3.2 Know that there are 365 days in a year, 366 days in a leap year, 12 months in a year and 52 full weeks in a year 3.3 Use a calendar and write the date correctly (day/month/year) 3.4 Tell and write the time from an analogue clock, including using Roman numerals from I to XII</p>			

	<p>an analogue clock, draw the hands on a clock to show the time, and read any time on a digital clock</p> <p>2.5 Find the difference between two times given in hours, half hours and quarter hours.</p>	<p>3.5 Understand and use the 12-hour and 24-hour clock systems and convert from one system to the other</p> <p>3.6 Convert between hours, minutes and seconds</p> <p>3.7 Add up to three lengths of time given in minutes and hours</p>			
<p>Measures</p> <p>1.1 Compare lengths, heights, weights and capacities</p> <p>1.2 Give the length of a line drawn on a centimetre grid</p> <p>1.3 Describe capacity in fractions</p>	<p>Measures</p> <p>2.1 Choose appropriate standard units of length, capacity and weight</p> <p>2.2 Compare and order lengths, capacities and weights in the same units</p> <p>2.3 Select a possible length, capacity or weight for a given item</p> <p>2.4 Measure or draw a length using a ruler</p> <p>2.5 Estimate the weight, capacity or length of given items</p>	<p>Measures</p> <p>3.1 Add lengths, capacities and weights and compare the total to another total or a requirement</p> <p>3.2 Convert standard units of length, capacity and weight</p> <p>3.3 Compare and order lengths, capacities and weights in different standard units</p> <p>3.4 Measure the perimeter of a simple shape</p> <p>3.5 Choose an appropriate measuring instrument</p> <p>3.6 Read values from an appropriate scale</p> <p>3.7 Read and compare temperature including temperature with negative values</p>			

<p>Geometry:</p> <p>1.1 Recognise and name squares, rectangles, triangles, circles, and cubes</p> <p>1.2 Compare and order a group of shapes or pictures or similar shapes of different size and recognise congruent shapes</p> <p>1.3 Use and understand positional vocabulary</p>	<p>Geometry:</p> <p>2.1 Recognise and name shapes including pentagons, hexagons and octagons and identify a right-angled triangle from a set of triangles</p> <p>2.2 Recognise and name cuboids, pyramids and spheres</p> <p>2.3 Describe the properties of 2D shapes, including straight and curved edges</p> <p>2.4 Describe the properties of solids</p> <p>2.5 Understand angle as a measure of turn</p>	<p>Geometry:</p> <p>3.1 Recognise and name prisms, cylinders and cones</p> <p>3.2 Draw lines of symmetry on shapes or pictures</p> <p>3.3 Recognise and draw nets of cubes and cuboids</p> <p>3.4 Identify whether an angle is less or more than a right angle</p> <p>3.5 Identify horizontal, vertical and parallel lines</p> <p>3.6 Denote the position of a point on a grid by its coordinates or identify a point or item given its coordinates</p> <p>3.7 Use North (N), East (E), South (S) and West (W) to give directions or position from a map</p>			
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<p>Statistics:</p> <p>1.1 Sort and classify objects using a single criterion</p> <p>1.2 Interpret and draw conclusions from a list or group of objects</p> <p>1.3 Construct and interpret simple line graphs</p>	<p>Statistics:</p> <p>2.1 Sort and classify objects using more than one criterion</p> <p>2.2 Collect information by survey</p> <p>2.3 Record results in lists, tally charts and tables</p> <p>2.4 Construct and interpret pictograms where one picture represents one item</p> <p>2.5 Interpret simple tables, diagrams, lists and graphs</p>	<p>Statistics:</p> <p>3.1 Construct and interpret bar charts with the vertical axis scaled in ones or twos</p> <p>3.2 Construct and interpret pictograms where one picture represents more than one item</p> <p>3.3 Extract numerical information from lists, tables, diagrams and charts</p> <p>3.4 Complete a frequency table given the original list of results</p> <p>3.5 Complete a tally chart and the resulting frequency table</p> <p>3.6 Compare two or more diagrams</p> <p>3.7 Solve one-step and two-step problems based on statistical information</p>			
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