

Cranbrook Primary School- Progression in Maths- Measurement

Purpose of study –Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history’s most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils’ understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

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Intent								
<p>We want our children to become confident and articulate communicators by enriching their mathematical vocabulary. We aim to enrich our pupils learning with a deep and confident understanding in fluency and reasoning. We aspire for our children to appreciate the power of mathematics and build a life-long passion for maths by exploring their curiosity through memorable learning experiences. As the children progress we aim to build confidence, widen their horizons and attain a positive growth mind set. Through our enterprise scheme we will provide children with an opportunity to develop their global identity through working with the local community. We want them to know that mathematics is essential to succeed in life and necessary for financial responsibilities and most forms of employment.</p>								
Measurement								
Area of Study	N	Rec	1	2	3	4	5	6
COMPARING AND ESTIMATING	Compare two items to decide which is the longer/shorter or heavier/lighter, when there is an obvious difference. Pour from one container to another	Use direct comparison to find the longer/shorter and heavier/lighter of two items, recognising when they are the same. Fill a container using a	Compare, describe and solve practical problems for: lengths and heights, e.g. long/short, longer/shorter, tall/short, double/half mass/weight [e.g. heavy/light, heavier than, lighter than]	Compare and order lengths, mass, volume/capacity and record the results using >, < and =		Estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm ²) and square metres (m ²)	Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm ³) and cubic metres (m ³), and extending

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	<p>to compare how much they hold.</p> <p>Sequence a small number of familiar events.</p>	<p>smaller container or spoon to see how much it holds.</p> <p>Use a ruler, stick, paper strip or length of string as a measurer to measure the length of two objects and find which is the longer/shorter.</p>	<p>capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]</p> <p>time [e.g. quicker, slower, earlier, later]</p>	<p>Sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</p>	<p>Compare and sequence intervals of time</p> <p>Compare durations of events, for example to calculate the time taken by particular events or tasks</p>		<p>and estimate the area of irregular shapes (also included in measuring)</p> <p>estimate volume (e.g. using 1 cm³ blocks to build cubes and cuboids) and capacity (e.g. using water)</p>	<p>to other units such as mm³ and km³.</p>
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					Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)			
Area of Study	N	R	1	2	3	4	5	6
MEASURING AND CALCULATING			Measure and begin to record the following: * lengths and heights * mass/weight	Choose and use appropriate standard units to estimate and measure length/height	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g);	Estimate, compare and calculate different measures, including money in	Use all four operations to solve problems involving measure (e.g. length,	Solve problems involving the calculation and conversion of units of

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			<p>* capacity and volume</p> <p>* time (hours, minutes, seconds)</p>	<p>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</p>	<p>volume/capacity (l/ml)</p>	<p>pounds and pence (appears also in Comparing)</p>	<p>mass, volume, money) using decimal notation including scaling.</p>	<p>measure, using decimal notation up to three decimal places where appropriate (appears also in Converting)</p>
					<p>Measure the perimeter of simple 2-D shapes</p>	<p>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p>	<p>Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p>	<p>Recognise that shapes with the same areas can have different perimeters and vice versa</p>
Area of Study			1	2	3	4	5	6
MEASURING AND CALCULATING			<p>Recognise and know the value of different denominations of coins and notes</p>	<p>Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p>	<p>Add and subtract amounts of money to give change, using both £ and p in practical contexts</p>			

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				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	Find the area of rectilinear shapes by counting squares	Calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm ²) and square metres (m ²) and estimate the area of	Calculate the area of parallelograms and triangles	Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres

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							irregular shapes <i>recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</i> (copied from Multiplication and Division)	(cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3]. Recognise when it is possible to use formulae for area and volume of shapes
Area of Study	N	R	1	2	3	4	5	6
TELLING THE TIME		Use time words such as yesterday, tomorrow or the days of the week.	Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	Read, write and convert time between analogue and digital 12 and 24-hour clocks		

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				show these times.		(appears also in Converting)		
			Recognise and use language relating to dates, including days of the week, weeks, months and years	Know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)	Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	Solve problems involving converting between units of time	
Area of Study		EYFS	1	2	3	4	5	6

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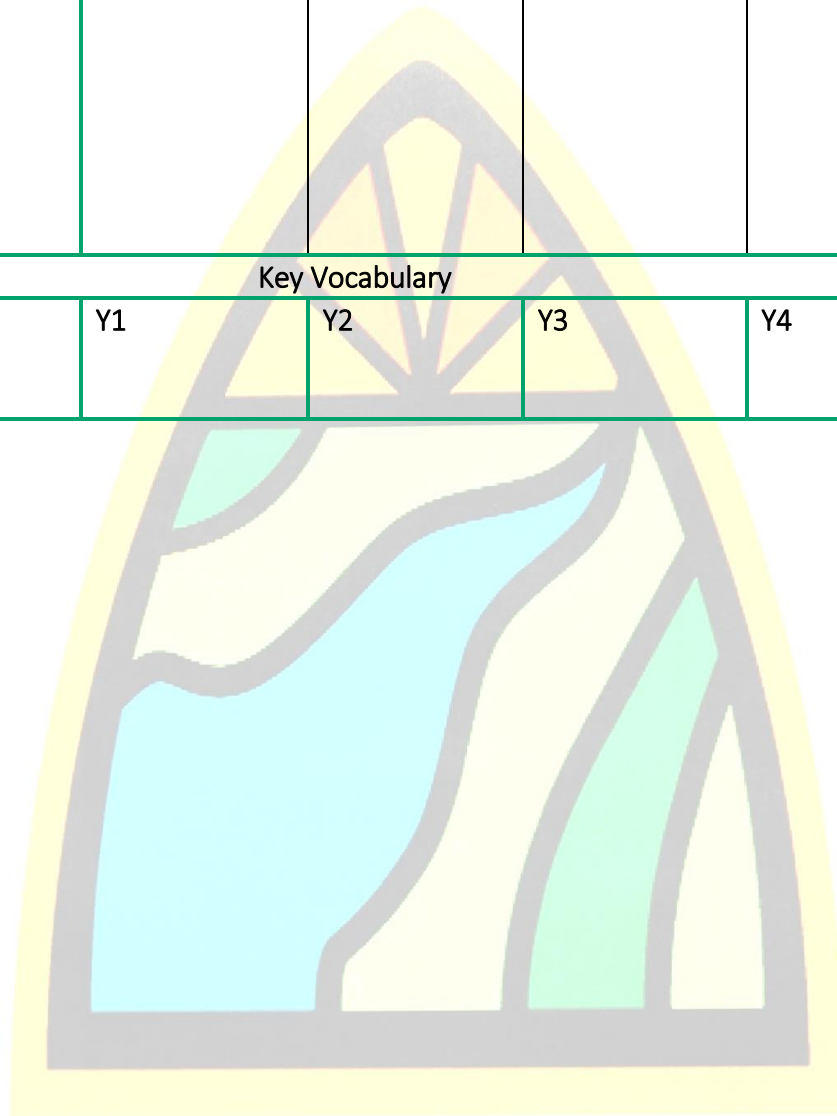
CONVERTING				Know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	Know the number of seconds in a minute and the number of days in each month, year and leap year	Convert between different units of measure (e.g. kilometre to metre; hour to minute) read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	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
						Solve problems involving converting from hours to minutes; minutes to seconds; years to	Solve problems involving converting between units of time	

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						months; weeks to days (appears also in Telling the Time)	equivalence s between metric units and common imperial units such as inches, pounds and pints	involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
								Convert between miles and kilometres

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	Key Vocabulary							
Areas		R	Y1	Y2	Y3	Y4	Y5	Y6



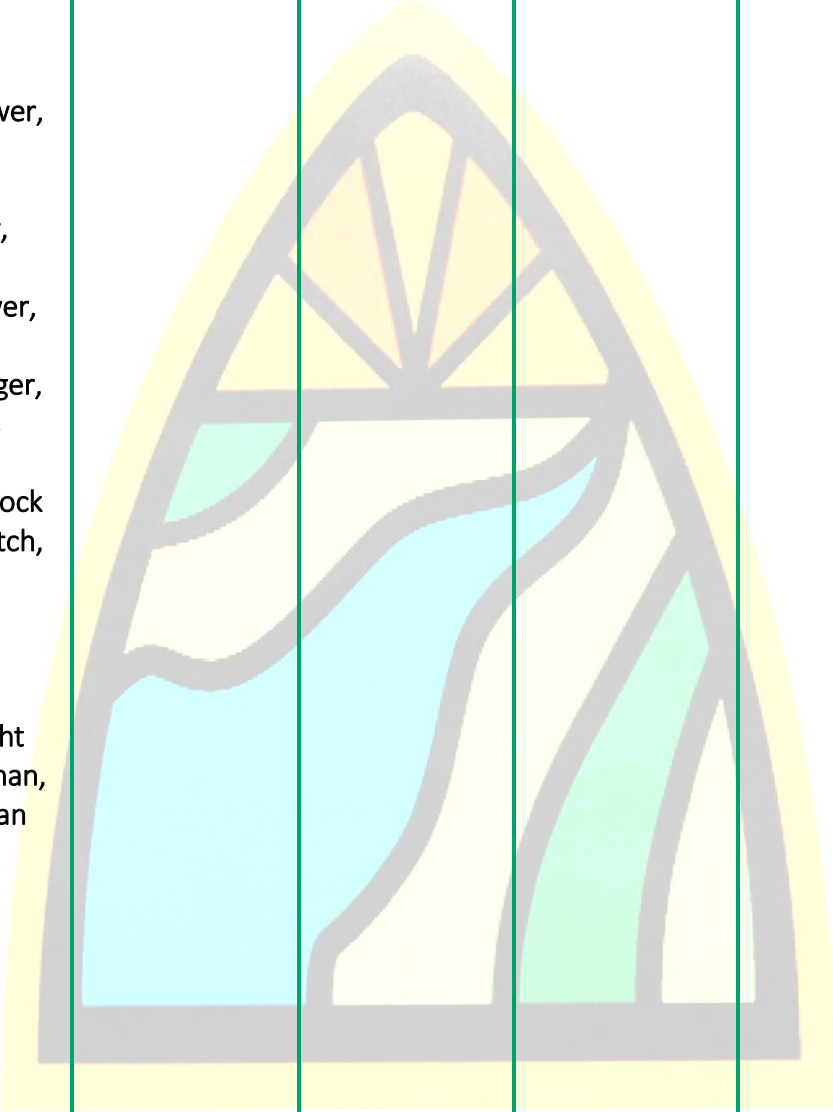
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Measure	measure size compare guess, estimate enough, not enough too much, too little too many, too few nearly, close to, about the same as just over, just under metre length, height, width, depth long, short, tall high, low wide, narrow thick, thin longer, shorter, taller, higher ... and so on	Length Height Taller Shorter Longer Non-standard unit cm Centimetre(s) Ruler Heavier Lighter Full Empty Almost full Almost empty More Less Before After Morning Afternoon Evening First Next Finally Days of the week Months of the year	Metre Longer Longest Shorter Shortest Mass Grams Kilograms Millilitres (ml) Litres (l) Temperature Degrees Celsius (oC) Increase Decrease Colder Warmer Past To Quarter to Quarter past Duration Change Buy/ bought Sell/ sold Compare Comparison More/ less More than Less than	Millimetre(s) Perimeter Estimate Leap year School/ work week a.m. p.m. 24-hour	Kilometre Convert Equivalent Kilo- (prefix) Right angle Rectilinear shape Area Digital Analogue Estimate Rounded Approximate Approximately	Kilograms Milligrams Millilitres Metric Imperial Timetable	Miles Foot Pound Ounces Stone Gallon Pint
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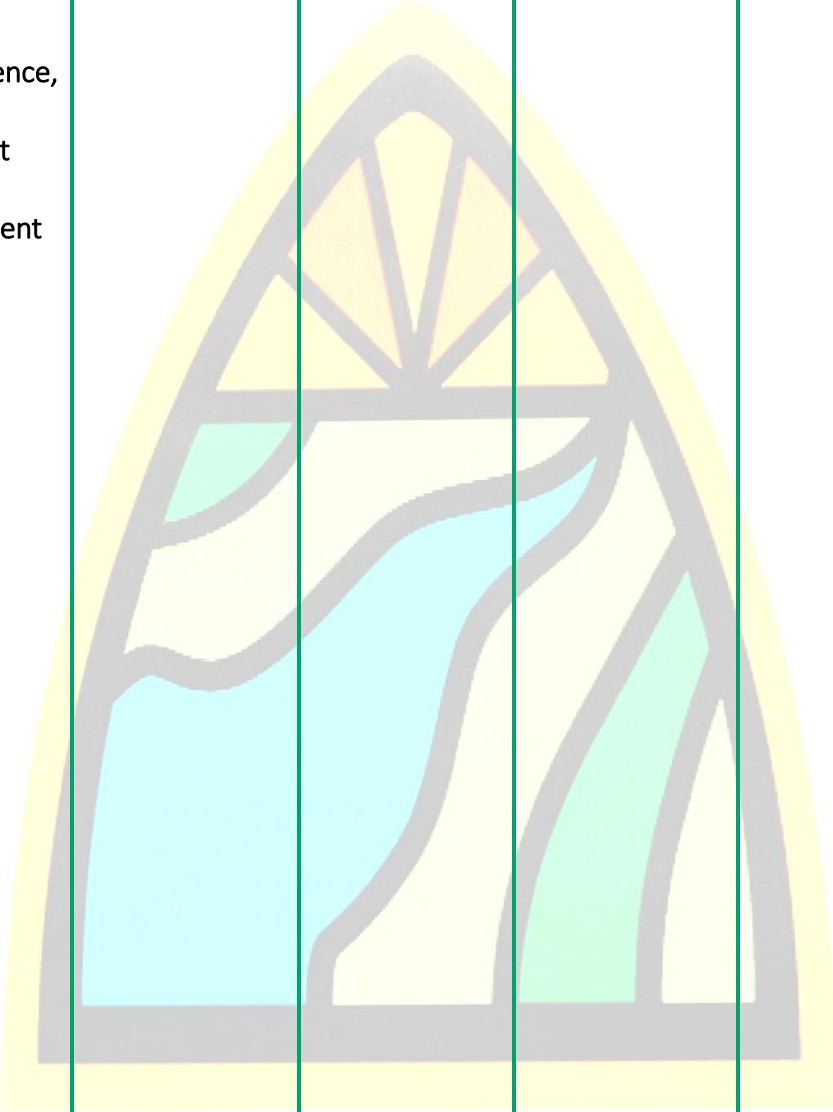
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		<p>longest, shortest, tallest, highest ... and so on</p> <p>far, near, close</p> <p>time</p> <p>days of the week, Monday, Tuesday ...</p> <p>day, week</p> <p>birthday, holiday</p> <p>morning, afternoon, evening, night</p> <p>bedtime, dinner time, playtime</p> <p>today, yesterday, tomorrow</p> <p>before, after</p> <p>next, last</p> <p>now, soon, early, late</p>	<p>O'clock</p> <p>Half past</p> <p>Seconds</p> <p>Minutes</p> <p>Hours</p> <p>Faster</p> <p>Slower</p> <p>Earlier</p> <p>Later</p> <p>Money</p> <p>Coin</p> <p>Note</p> <p>Penny/ pence</p> <p>Pound</p> <p>Price/ cost</p> <p>Spend/ spent</p> <p>Buy/ cost</p> <p>Pay</p> <p>Total</p>	<p>Greater than</p> <p>Less than</p> <p>Greatest/ least</p>				
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		<p>quick, quicker, quickest, quickly slow, slower, slowest, slowly old, older, oldest new, newer, newest takes longer, takes less time hour, o'clock clock, watch, hands weigh, weighs, balances heavy, light heavier than, lighter than heaviest, lightest scales full empty half full holds</p>					
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		<p>container money coin penny, pence, pound price, cost buy, sell spend, spent pay</p>					
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