



# CASTLETOWN PRIMARY SCHOOL



## Numeracy - Year 6

Children will work towards achieving the following outcomes.

### NUMBER: NUMBER & PLACE VALUE

Counting	Comparing Numbers	Reading	Understanding Place Value	Rounding
1. use negative numbers in context and calculate intervals across zero (KPI)	2. Compare and order numbers up to 10 000 000.	4. Read numbers up to 10 000 000	6. Determine the value of each digit in numbers up to 10 000 000.  7. Identify the value of each digit to three decimal places.	8. Round any whole number to a required degree of accuracy (KPI) 9. Round any number, including decimals to a required degree of accuracy.
	<b>Identifying, representing &amp; estimating</b>	<b>Writing</b>		<b>Problem Solving</b>
	3. Identify, represent and estimate numbers using different representations.	5. Write numbers up to 10 000 000		10. Solve number and practical problems that involve all of the Y6 number criteria. 11. Solve problems which require answers to be rounded to specified degrees of accuracy (KPI)

### NUMBER: ADDITION & SUBTRACTION

Number Bonds & Rapid Recall Skills	Mental calculation	Inverse operations, estimating and checking answers	Problem Solving
1. Derive and recall addition and subtraction facts for multiples of 10 to 1000. 2. Derive and recall addition and subtraction facts for decimal numbers with one decimal place. 3. Derive what must be added to a decimal with 2 decimal places to make the next whole number.	4. Perform mental calculations, including with mixed operations and large numbers. 5. Use their knowledge of the order of operations to carry out calculations involving the four operations. 6. Add pairs of decimals up to two decimal places. 7. Subtract pairs of decimals up to two decimal places.	8. Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	9. Solve addition and subtraction multi-step problems in contexts, deciding which operations and method to use and why (KPI) 10. Solve problems involving addition, subtraction, multiplication and division.

<b>NUMBER: MULTIPLICATION &amp; DIVISION</b>			
<b>Rapid recall and mental calculation</b>	<b>Written Calculation</b>	<b>Properties of numbers, multiples, factors</b>	<b>Problem Solving</b>
<ol style="list-style-type: none"> <li>1. Double decimals to one decimal place and find corresponding halves.</li> <li>2. Divide by 25 and 50.</li> <li>3. Multiply pairs of multiples of 10 and 100.</li> <li>4. Multiply one digit numbers with up to two decimal places by whole numbers.</li> <li>5. Divide one digit numbers with up to two decimal places by whole numbers.</li> <li>6. Perform mental calculations including with mixed operations and large numbers.</li> <li>7. Multiply numbers by 10, 100 and 1000 where the answers are up to 3 decimal places.</li> <li>8. Divide numbers by 10 100 and 1000 where the answers are up to 3 decimal places.</li> </ol>	<ol style="list-style-type: none"> <li>10. Multiply multi digit numbers up to four digits by a two digit whole number using the formal written method of long multiplication (KPI)</li> <li>11. Divide numbers up to four digits by a two digit whole number using the formal written method of short division and interpret remainders and whole number remainders, fractions or by rounding, as appropriate for the context (KPI).</li> <li>12. Where appropriate for the context divide numbers up to four digits by a two digit whole number using the formal written method of long division and interpret remainders and whole number remainders, fractions or by rounding as appropriate for the context.</li> <li>13. Use written division methods in cases where the answer has up to two decimal places (KPI)</li> </ol>	<ol style="list-style-type: none"> <li>14. Identify common factors, common multiples and prime numbers.</li> </ol>	<ol style="list-style-type: none"> <li>26. Solve problems involving addition, subtraction, multiplication and division.</li> <li>16. Use their knowledge of the order of operations to carry out calculations involving the four operations.</li> </ol>
<b>Inverse operations, estimating &amp; checking</b>			
<ol style="list-style-type: none"> <li>9. Use estimation to check answers to multiplication and division calculations and determine, in the context of a problems levels of accuracy.</li> </ol>			

<b>NUMBER: FRACTIONS</b>			<b>ALGEBRA</b>
<b>Comparing Fractions</b>	<b>Equivalence</b>	<b>Addition and subtraction of fractions</b>	<b>Equations, formulae and sequences</b>
<ol style="list-style-type: none"> <li>1. Compare and order fractions including fractions <math>&gt;1</math>.</li> </ol>	<ol style="list-style-type: none"> <li>2. Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</li> <li>3. Associate a fraction with division and calculate decimal fraction equivalents.</li> <li>4. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts (KPI)</li> </ol>	<ol style="list-style-type: none"> <li>5. Add fractions with different denominations and mixed numbers, using the concepts of equivalent fractions.</li> <li>6. Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Express missing number problems algebraically.</li> <li>2. Find pairs of numbers that satisfy number sentences involving two unknowns.</li> <li>3. Enumerate all possibilities of combinations of two variables.</li> <li>4. Generate and describe linear number sequences.</li> </ol>

MEASUREMENT			
Comparing & Estimating	Measuring & Calculating	Telling the Time	Converting
1. Estimate and compare volume of cubs and cuboids using standard units, including centimetres cubed and cubic metres and extending to other units such as mm cubed and km cubed.	2. Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 dp where appropriate. 3. Recognise that shapes with the same area can have different perimeters and vice versa. 4. Calculate the area of parallelograms and triangles. 5. Calculate the volume of cubes and cuboids using standard units, including cubic metres and extending to other units (mm cubed and km cubed). 6. Recognise when it is possible to use formulae for area and volume of shapes.		7. Use, read and write and convert between standard units, converting measurements of <b>length</b> from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to 3 dp. 8. Use, read and write and convert between standard units, converting measurements of <b>mass</b> from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to 3 dp. 9. Use, read and write and convert between standard units, converting measurements of <b>capacity</b> from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to 3 dp. 10. Use, read and write and convert between standard units, converting measurements of <b>time</b> from a smaller unit of measure to a larger unit and vice versa, using decimal notation to up to 3 dp. 11. Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 dp where appropriate. 12. Convert between miles and kilometres.

GEOMETRY: PROPERTIES OF SHAPE	GEOMETRY: POSITION & DIRECTION	STATISTICS
<b>Identifying their shapes and properties.</b>	<b>Position, direction and movement</b>	<b>Interpreting, constructing &amp; representing data.</b>
1. Recognise and describe simple 3D shapes, including nets. 2. Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.	1. Describe positions on the full co-ordinate grid (all 4 quadrants).  2. Draw and translate simple shapes on the co-ordinate plane and reflect them in the axes.	1. Interpret pie charts and use these to solve problems. 2. Interpret line graphs and use these to solve problems. 3. Construct pie charts and use these to solve problems. 4. Construct line graphs and use these to solve problems.
<b>Comparing and Classifying</b>		<b>Problem Solving</b>
3. Compare and classify geometric shapes based on their properties and sizes. 4. Find unknown angles in any triangles, quadrilaterals and regular polygons.		5. Calculate and interpret the mean as an average.
<b>Drawing and constructing</b>		
5. Draw 2D shapes using given dimensions and angles. 6. Build simple shapes, including making nets.		
<b>Angles</b>		
7. Recognise angles where they meet at a point, are on a straight line or are vertically opposite. 8. Find missing angles.		

trial and improvement		working systematically	pattern spotting	visualising	working backwards	conjecturing	generalising and proving	reasoning: step 1: describing, step 2: explaining, step 3: convincing, step 4: justifying step 5: proving
Stage	Year Group	Problem Solving			Communicating		Reasoning	
Stage 3	Y5 into Y6	<ul style="list-style-type: none"> <li>• use classroom discussion as support to break into a problem and make connections to previous work               <ul style="list-style-type: none"> <li>- put the problem into their own words</li> <li>- use mathematical content from previous year groups and their own year group to solve problems and investigate</li> </ul> </li> <li>• work systematically from the beginning</li> <li>• choose concrete and visual equipment appropriate to the task</li> <li>• pattern spot in results and use patterns to then find other possibilities</li> </ul>			<ul style="list-style-type: none"> <li>• organise and represent work using pictorial and abstract representations               <ul style="list-style-type: none"> <li>- working systematically</li> </ul> </li> <li>• independently check results               <ul style="list-style-type: none"> <li>- look for repeats, errors and ways to improve</li> <li>- make reference to recording system used</li> </ul> </li> <li>• use and interpret diagrams (pictorial representations) and mathematical symbols (abstract)</li> <li>• discuss mathematical work and begin to explain thinking <i>(REASONING STEP 1 &amp; STEP 2)</i> <ul style="list-style-type: none"> <li>- use appropriate mathematical vocabulary</li> <li>- talk about their findings by referring to their work</li> </ul> </li> <li>• reflect on others' explanations/methods/strategies and use this to improve their own</li> </ul>		<ul style="list-style-type: none"> <li>• provide a convinced argument for methods/solutions <i>(REASONING STEP 3)</i> <ul style="list-style-type: none"> <li>- confident that their chain of reasoning is right and may use words such as: 'I reckon' or 'without doubt'</li> <li>- the underlying mathematical argument may or may not be accurate</li> <li>- the argument is likely to have more coherence and completeness than the explaining stage</li> </ul> </li> <li>• respond to 'What if?' questions</li> <li>• when they have solved a problem, pose a similar problem for a partner</li> <li>• with support understand a general statement by finding particular examples that match it               <ul style="list-style-type: none"> <li>- with assistance of probing questions and prompts</li> </ul> </li> </ul>	

