



Maths Medium Term Plan Gryffindor Class  
Autumn Term 2018

**Time Traveller**



Teaching focus	Y4/5	Y6	SEN (As appropriate)
Numbers and the number system	<p>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</p> <p>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>establish whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</p>	<ul style="list-style-type: none"> <li>• 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</li> <li>• read, write, order and compare numbers up to 10 000 000 and determine the value of each digit</li> <li>• use negative numbers in context, and calculate intervals across zero</li> <li>• identify common factors, common multiples and prime numbers</li> </ul>	<ul style="list-style-type: none"> <li>• recognise the place value of each digit in a two-digit number (tens, ones)</li> <li>• read and write numbers to at least 100 in numerals and in words</li> <li>• use place value and number facts to solve problems</li> <li>• identify, represent and estimate numbers using different representations, including the number line</li> </ul>

<p style="text-align: center;"><b>Counting and comparing; checking, approximating and estimating</b></p>	<ul style="list-style-type: none"> <li>• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</li> <li>• read Roman numerals to 1000 (M) and recognise years written in Roman numerals</li> <li>• interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</li> <li>• round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000</li> <li>• round decimals with two decimal places to the nearest whole number and to one decimal place</li> <li>• use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> </ul>	<ul style="list-style-type: none"> <li>• solve problems which require answers to be rounded to specified degrees of accuracy</li> <li>• use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</li> <li>• round any whole number to a required degree of accuracy</li> </ul>	<ul style="list-style-type: none"> <li>• compare and order numbers from 0 up to 100; use &lt;, &gt; and = signs</li> <li>• count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</li> </ul>
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Calculating: addition and subtraction

- add and subtract numbers mentally with increasingly large numbers
- add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

- perform mental calculations, including with mixed operations and large numbers
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
- solve problems involving addition, subtraction and multiplication
- use their knowledge of the order of operations to carry out calculations

- 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
- 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

<p style="text-align: center;"><b>Calculating: multiplication and division</b></p>	<ul style="list-style-type: none"> <li>• multiply and divide numbers mentally drawing upon known facts</li> <li>• multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> <li>• 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</li> <li>• 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</li> <li>• solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</li> <li>• solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</li> <li>• solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> </ul>	<ul style="list-style-type: none"> <li>• divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division; interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</li> <li>• 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</li> <li>• use written division methods in cases where the answer has up to two decimal places</li> <li>• solve problems involving division</li> <li>• use their knowledge of the order of operations to carry out calculations involving the four operations</li> </ul>	<ul style="list-style-type: none"> <li>• recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> <li>• calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs</li> <li>• show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li> <li>• solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</li> </ul>
<p style="text-align: center;"><b>Exploring fractions</b></p>	<ul style="list-style-type: none"> <li>• compare and order fractions whose denominators are all multiples of the same number</li> <li>• identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>• recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</li> <li>• read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>]</li> <li>• read, write, order and compare numbers with up to three decimal places</li> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• use common factors to simplify fractions; use common multiples to express fractions in the same denomination</li> <li>• compare and order fractions, including fractions <math>&gt; 1</math></li> <li>• associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, <math>\frac{3}{8}</math>]</li> <li>• recall and use equivalences between simple fractions, decimals and percentages, including in different contexts</li> </ul>	<ul style="list-style-type: none"> <li>• recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li> <li>• write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li> </ul>

<p><b>Calculating fractions, decimals and percentages</b></p>	<ul style="list-style-type: none"> <li>• recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number [for example, <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}</math>]</li> <li>• add and subtract fractions with the same denominator and denominators that are multiples of the same number</li> <li>• multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> <li>• solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25</li> <li>• solve problems involving number up to three decimal places</li> </ul>	<ul style="list-style-type: none"> <li>• add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</li> <li>• multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>]</li> <li>• divide proper fractions by whole numbers [for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>]</li> <li>• multiply one-digit numbers with up to two decimal places by whole numbers</li> <li>• solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<p><b>Measuring and calculating space</b></p>	<ul style="list-style-type: none"> <li>• convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)</li> <li>• understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</li> <li>• use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</li> </ul>	<ul style="list-style-type: none"> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (<math>^{\circ}\text{C}</math>); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels</li> <li>• compare and order lengths, mass, volume/capacity and record the results using <math>&gt;</math>, <math>&lt;</math> and <math>=</math></li> </ul>
<p><b>Mathematical movement: Investigating angles</b></p>	<ul style="list-style-type: none"> <li>• know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</li> <li>• draw given angles, and measure them in degrees (<math>^{\circ}</math>)</li> <li>• identify: angles at a point and one whole turn (total <math>360^{\circ}</math>); angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (total <math>180^{\circ}</math>); other multiples of <math>90^{\circ}</math></li> </ul>	<ul style="list-style-type: none"> <li>• recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>

<p><b>Exploring money</b></p>	<ul style="list-style-type: none"> <li>• Revision and consolidation of previous years' objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Revision and consolidation of previous years' objectives</li> </ul>	<ul style="list-style-type: none"> <li>• recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</li> <li>• find different combinations of coins that equal the same amounts of money</li> <li>• solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</li> </ul>
<p><b>Presentation of data</b></p>	<ul style="list-style-type: none"> <li>• solve comparison, sum and difference problems using information presented in a line graph</li> </ul>	<ul style="list-style-type: none"> <li>• interpret and construct pie charts and line graphs and use these to solve problems</li> <li>• calculate and interpret the mean as an average</li> </ul>	<ul style="list-style-type: none"> <li>• interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>• ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>• ask and answer questions about totalling and comparing categorical data</li> </ul>
<p><b>Investigating, visualising and constructing (shape)</b></p>	<ul style="list-style-type: none"> <li>• use the properties of rectangles to deduce related facts and find missing lengths and angles</li> <li>• distinguish between regular and irregular polygons based on reasoning about equal sides and angles</li> <li>• identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> </ul>	<ul style="list-style-type: none"> <li>• compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</li> <li>• illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</li> </ul>	<ul style="list-style-type: none"> <li>• identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</li> <li>• identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>• compare and sort common 2-D and 3-D shapes and everyday objects</li> <li>• identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> </ul>

<p><b>Exploring time</b></p>	<ul style="list-style-type: none"> <li>• solve problems involving converting between units of time</li> <li>• complete, read and interpret information in tables, including timetables</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• know the number of minutes in an hour and the number of hours in a day.</li> <li>• compare and sequence intervals of time</li> <li>• 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</li> </ul>
<p><b>Mathematical movement</b></p>	<ul style="list-style-type: none"> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• describe positions on the full coordinate grid (all four quadrants)</li> <li>• draw and translate simple shapes on the coordinate plane, and reflect them in the axes</li> </ul>	<ul style="list-style-type: none"> <li>• 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)</li> <li>• order and arrange combinations of mathematical objects in patterns and sequences</li> </ul>