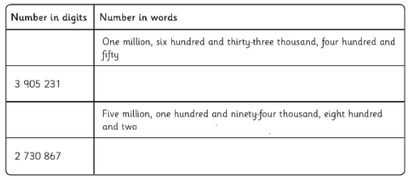
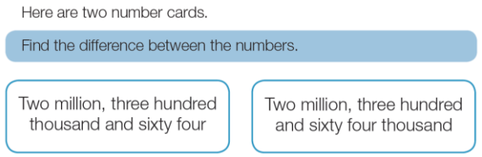
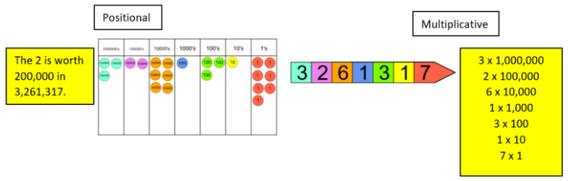
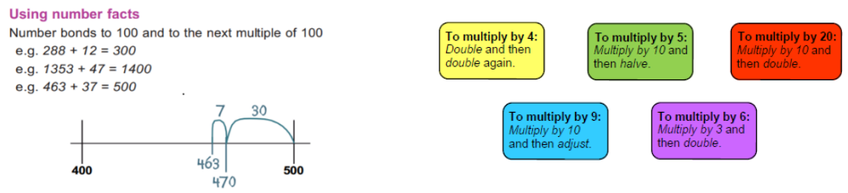
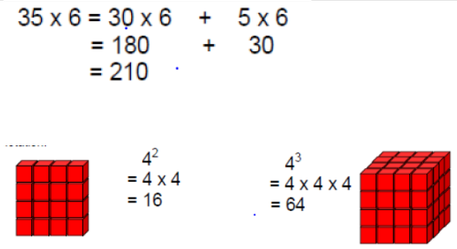
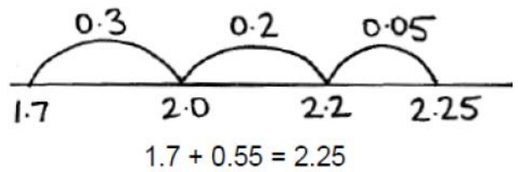
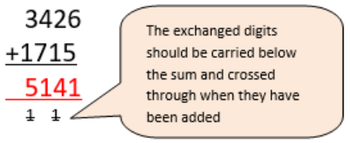
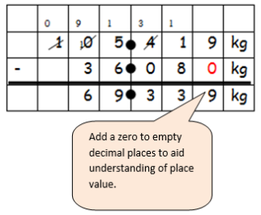
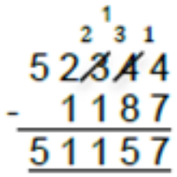
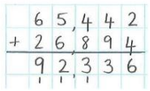
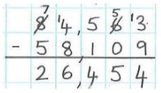
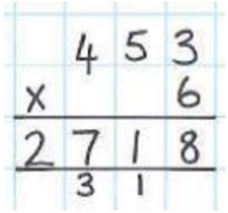
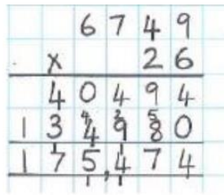
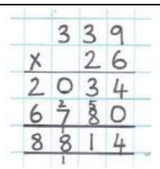
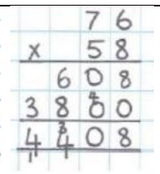
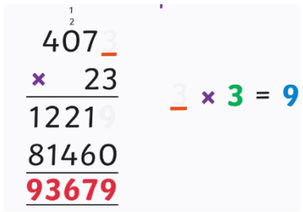
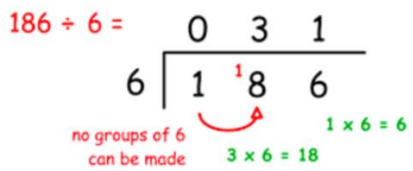
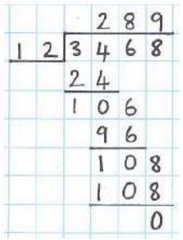
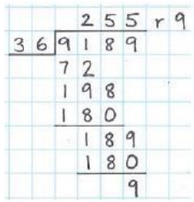
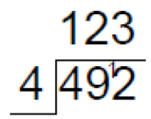
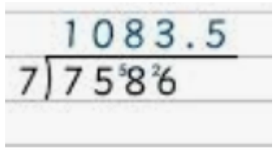
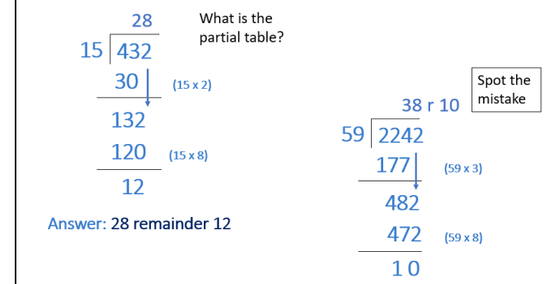
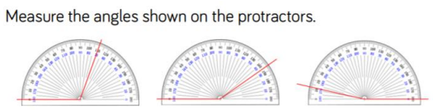
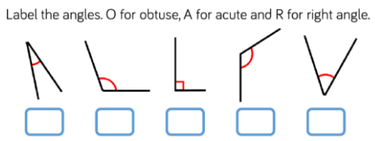
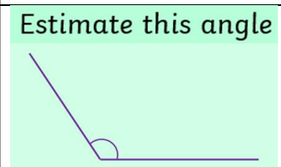
Medium Term Planning: Autumn term – Y5/6.

Week.	Mathematical aspect	Non-negotiable end points Year 5.	Non-negotiable end points Year 6	Curriculum statements – Year 5.	Curriculum Statements. Year 6.
1.	Number and place value: properties of place value, decimals.	Knows how to read and write numbers with up to 7 digits using the comma separator. Knows decimal notation and the language associated with it for up to three decimal places.	Knows how to read and write numbers with up to 8 digits using the comma separator. Knows how to round decimals and use the correct notation for recurring decimal places.	● To read, write, order and compare numbers at least to 1,000,000 and determine the value of each digit. ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ●To read, write, order and compare numbers with up to three decimal places. ● To round decimals with two decimal places to the nearest whole numbers and to one decimal place. ● To recognise and use thousandths and relate them to tenths, hundredths and decimals equivalents. ● To solve problems involving number up to three decimal places.	● To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100, 1000 where the answers are up to three decimal places. ● To solve problems which require answers to be rounded to specified degrees of accuracy.
Links to resources and policy documents:   Write the number **three million, twenty five thousand and seventeen** in figures.				 	
2.	All four operations: mental methods	Knows efficient mental methods for addition and subtraction.	Knows efficient mental methods applying knowledge of properties of number.	●To add and subtract whole numbers with more than 4 digits ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To **multiply and divide numbers mentally drawing upon known facts;** ● To **multiply and divide whole numbers and those involving decimals by 10, 100 and 1000;** ● To **solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes;**	● To perform mental calculations, including with mixed operations and large numbers. ● To identify common factors, common multiples and prime numbers. ● To solve problems involving addition, subtraction, multiplication and division. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Links to resources and policy documents:  				 	

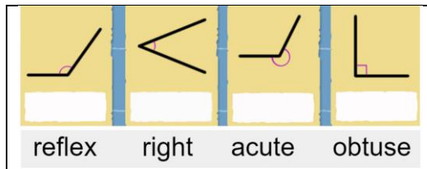
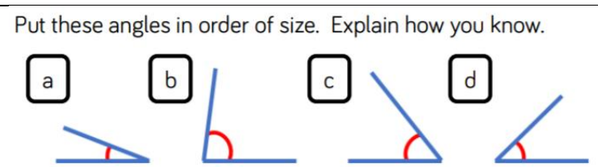
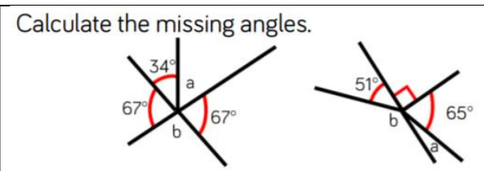
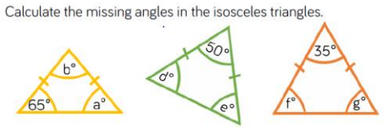
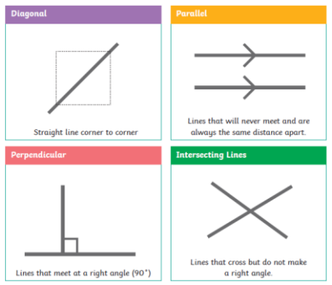
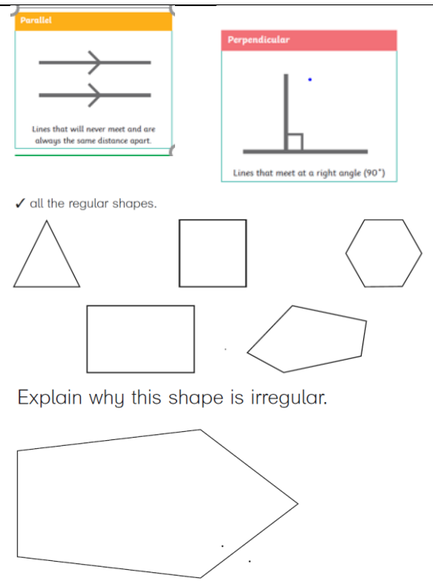
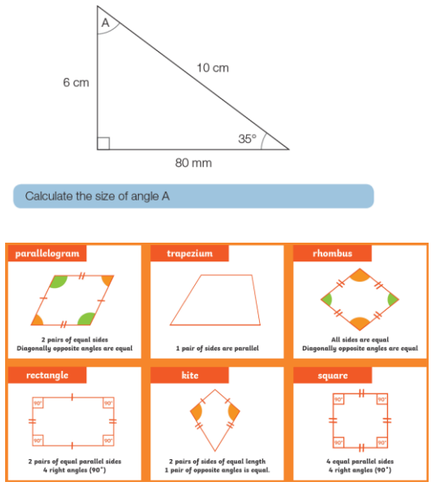
Medium Term Planning: Autumn term – Y5/6.

3.	Addition and Subtraction: Written methods.	Knows efficient written algorithms for addition and subtraction dependent on the numbers in the question.	Knows efficient written algorithms for addition and subtraction dependent on the numbers in the question.	● To solve problems involving addition, subtraction, multiplication and division. ●Add whole numbers and decimals using formal written methods (columnar addition). ●Subtract whole numbers and decimals using formal written methods (columnar subtraction). ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	● To solve problems involving addition, subtraction, multiplication and division. ●Add whole numbers and decimals using formal written methods (columnar addition). ●Subtract whole numbers and decimals using formal written methods (columnar subtraction). ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
Links to resources and policy documents:   				  	3,565 + 2,250 = 5,815 Use this calculation to decide if the following calculations are true or false. **True or False?** 4,565 + 1,250 = 5,815 5,815 – 2,250 = 3,565 4,815 – 2,565 = 2,250 3,595 + 2,220 = 5,845
4.	Multiplication: written methods – short and long, estimation and remainders	Knows the efficient written algorithms for long and short multiplication.	Knows the efficient written algorithms for long/short multiplication.	● To solve problems involving multiplication and division where larger numbers are used by decomposing them into factors. ●To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers.	● To multiply multi-digit numbers up to 4 digits by a one-digit whole number using the efficient written method of short multiplication. ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. ● To solve problems involving addition, subtraction, multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Links to resources and policy documents:  28 x 27 196 560 756 				 	78 Place the carried digits correctly. x42 156 3120 3 276 418 x 4■ What are the missing digits? 2508 16■20 19228 

Medium Term Planning: Autumn term – Y5/6.

5.	Division: written methods – short and long, estimation and remainders	Knows the efficient written algorithms for long and short division.	Knows the efficient written algorithms for long/short division.	● To solve problems involving multiplication and division where larger numbers are used by decomposing them into factors. To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ●To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context.	● To divide numbers up to 4 digits by a one-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. ● To solve problems involving addition, subtraction, multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Links to resources and policy documents:   				 943 ÷ 7 = 134 and 6/7s 906 ÷ 8 = 113 and 2/8s = 113.25	 
6.	Geometry: angles	Knows that angles are measured using a protractor. Knows right, acute, obtuse, straight and reflex angles.	Knows how unknown angles and lengths can be derived from known measurements.	●To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles ●To draw given angles and measure them in degrees (º). ●To identify: ● angles at a point and one whole turn (total 360º) ● angles at a point on a straight line and 1/2 a turn (total 180º) ● other multiples of 90º.	● To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
Links to resources and policy documents:  				A right angle is ____ degrees. Acute angles are ____ than a right angle. Obtuse angles are ____ than a right angle.  	 Draw an angle of 70˚.

Medium Term Planning: Autumn term – Y5/6.

					
7.	Geometry: properties of shape, 2D and 3D	Knows the conventional markings for parallel lines and right angles.	Knows the conventional markings for parallel lines, sides of equal length, angles and right angles.	● To distinguish between regular and irregular polygons based on reasoning about equal sides and angles. ● To use the properties of rectangles to deduce related facts and find missing lengths and angles. ● To identify 3D shapes including cubes and cuboids from 2D representations.	● To draw 2-D shapes using given dimensions and angles ● To recognise, describe and build simple 3-D shapes, including making nets ● To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
Links to resources and policy documents:  Complete the table. Angle / Fraction of a full turn / Degrees Right angle / $\frac{1}{4}$ / 90° Straight line / / Three right angles / / Full turn / / 					
8.	Fractions: proper fractions, improper fractions and mixed numbers	Knows that when the numerator is larger than the denominator it is an improper fraction. Knows that an improper fraction is converted to a mixed number.	Knows how to add and subtract fractions with different denominators by identifying equivalent fractions with the same denominator. Knows how to convert improper fractions and mixed numbers.	● To compare and order fractions whose denominators are all multiples of the same number. ● To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. ● To recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number	● To use common factors to simplify fractions; use common multiples to express fractions in the same denomination ● To compare and order fractions, including fractions > 1 ● To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

Medium Term Planning: Autumn term – Y5/6.

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 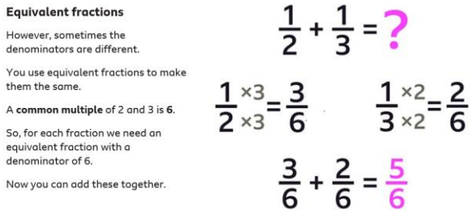
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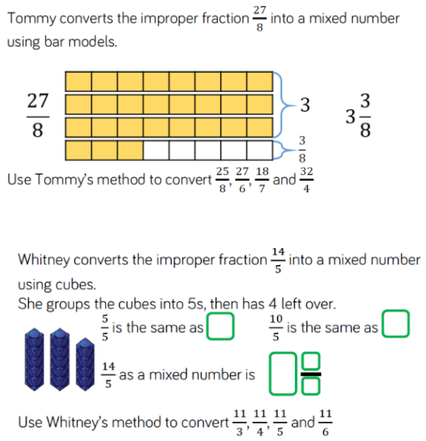
<td> 
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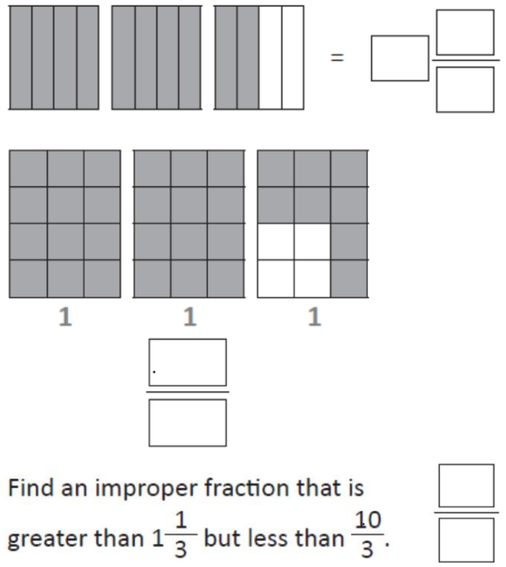
<td> 
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<td>9.</td>
<td>Percentages: Equivalence Finding % of amounts and quantities.</td>
<td>Knows how to find 10% and 1% of an amount using division by 10 and 100.</td>
<td>Knows how to calculate a range of %.
Knows how to find common equivalences between fractions, decimals and percentages.</td>
<td>• To 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.</td>
<td>• Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
• Find simple percentages of amounts.
• Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison.</td>
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 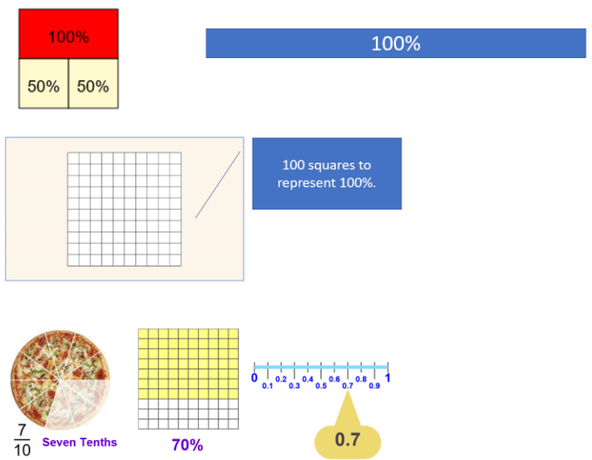
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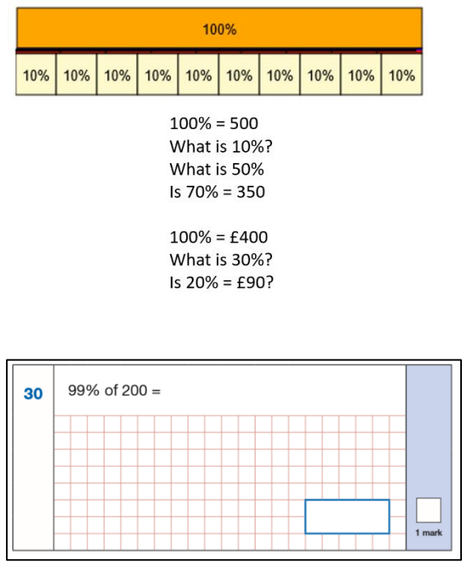
<td> 
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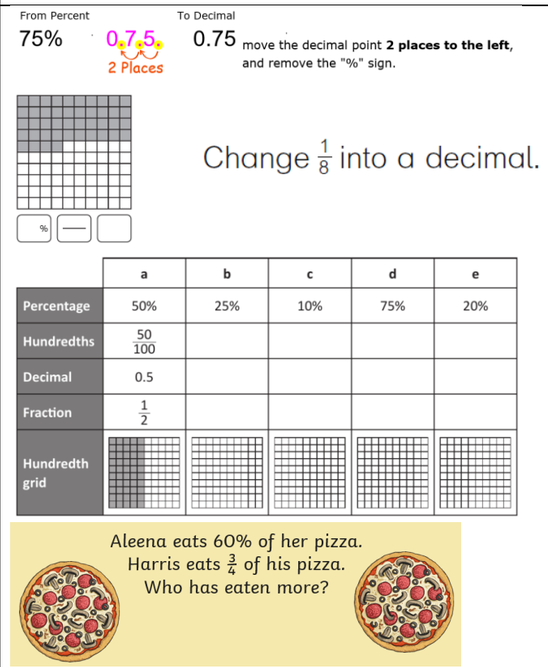
<td> 
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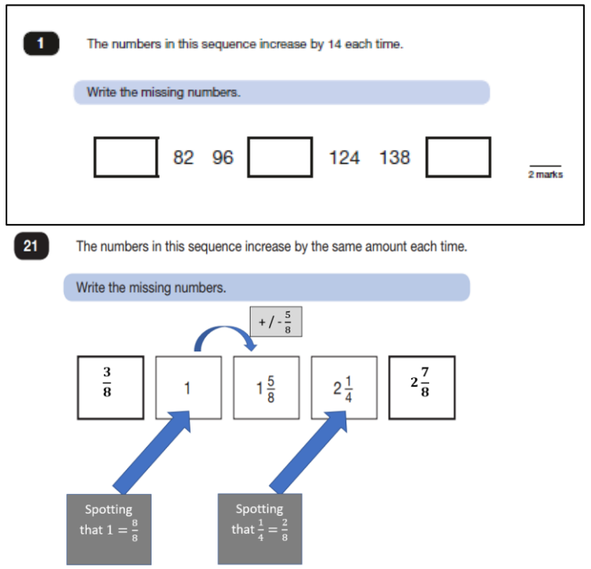
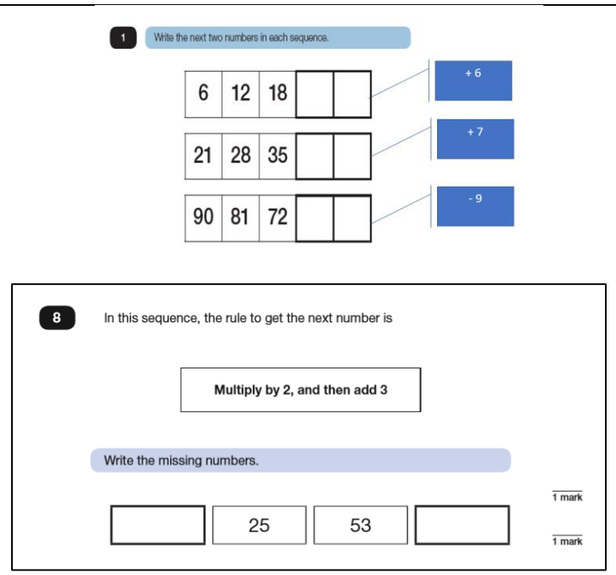
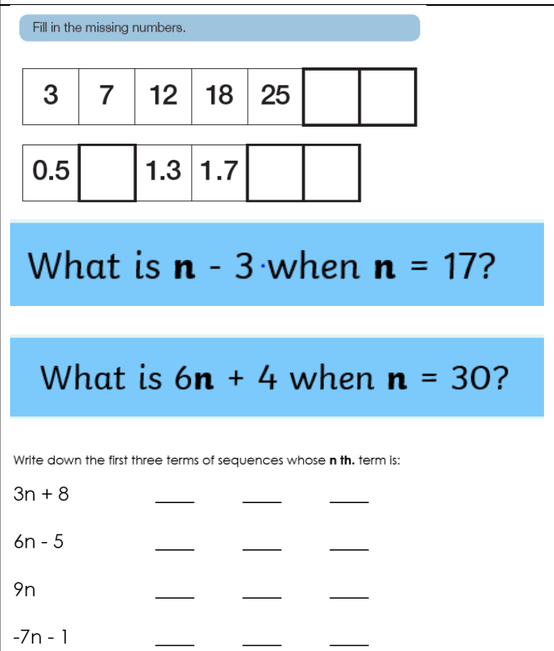
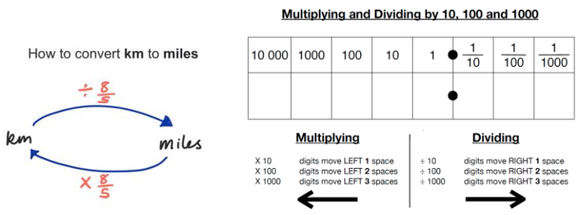
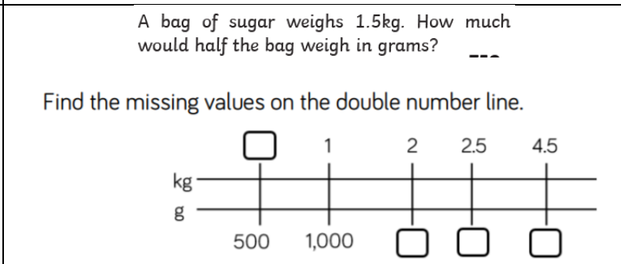
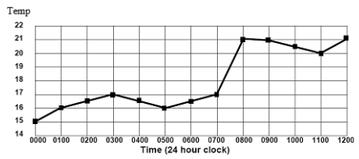
Medium Term Planning: Autumn term – Y5/6.

10.	Algebra: linear sequences Ratio and proportion: FDP to represent the whole, *a:b* ratio	Knows how to describe a sequence using mathematical notation.	Knows how to find the common difference for the nth term. Knows that proportions relate to the whole and ratios are part to part.	● To generate and describe linear number sequences	● To generate and describe linear number sequences ● To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. ● To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
Links to resources and policy documents:  				 	
11.	Measurement: conversion of units	Knows how to use place value, multiplication and division to convert between standard units.	Knows that approximately 5 miles = 8 kilometres. Knows the approximate conversions and are able to tell if an answer is sensible.	● To convert between different units of measure (for example, kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre).	● To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate. ● To 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 three decimal places. ● To convert between miles and kilometres.
Links to resources and policy documents:  				 	Complete the missing information. 1/10 kilogram = ☐ grams 3/10 km = ☐ metres 7 kg + 1/4 kg = ☐ g 12 km + ☐ km = 12,500 m

Medium Term Planning: Autumn term – Y5/6.

<table>
<tr>
<td>12.</td>
<td>Statistics:
reading tables
Line graphs
Pie charts.</td>
<td>Knows which representations of data are most appropriate and why.</td>
<td>Knows which representations of data are most appropriate and why.</td>
<td>● To complete, read and interpret information in tables, including timetables.
● To solve comparison, sum and difference problems using information presented in a line graph.</td>
<td>● To complete, read and interpret information in tables, including timetables.
● Interpret and construct pie charts and line graphs and use these to solve problems.
● Solve comparison, sum and difference problems using information presented in all types of graph.</td>
</tr>
<tr>
<td colspan="4">Links to resources and policy documents:

<table>
<tr><td>J</td><td>F</td><td>M</td><td>A</td><td>M</td><td>J</td><td>J</td><td>A</td><td>S</td><td>O</td><td>N</td><td>D</td></tr>
<tr><td>102</td><td>118</td><td>130</td><td>126</td><td>121</td><td>131</td><td>98</td><td>82</td><td>69</td><td>77</td><td>84</td><td>78</td></tr>
</table>
The table shows the usual rainfall in each month in mm for Sydney, Australia.

The table shows the seasons and months. Write some statements to match the information in both tables.
<table>
<tr><td>Summer</td><td>Dec, Jan, Feb</td></tr>
<tr><td>Autumn</td><td>Mar, Apr, May</td></tr>
<tr><td>Winter</td><td>June, July, Aug</td></tr>
<tr><td>Spring</td><td>Sep, Oct, Nov</td></tr>
</table>


This graph shows the temperature in a room over a twelve hours. Answer the questions below.
1) What was the lowest temperature recorded on the chart.
2) What was the temperature at 3 o'clock am?
3) What was the temperature at 11.00?
4) Which hour shows the biggest rise in temperature?
5) For how long was the temperature between 16 and 17 degrees?
6) Can you estimate the temperature at 07.30?
7) Can you estimate the temperature at 10.00?
8) Complete the table below using the line graph.
<table>
<tr><td>Time</td><td>Temperature</td></tr>
<tr><td>00.00</td><td></td></tr>
<tr><td>01.00</td><td></td></tr>
<tr><td>02.00</td><td></td></tr>
<tr><td>03.00</td><td></td></tr>
<tr><td>04.00</td><td></td></tr>
<tr><td>05.00</td><td></td></tr>
<tr><td>06.00</td><td></td></tr>
<tr><td>07.00</td><td></td></tr>
<tr><td>08.00</td><td></td></tr>
</table>
</td>
<td>This table shows the height a rocket reached between 0 and 60 seconds.

Create a line graph to represent the information.
<table>
<tr><td>Time (seconds)</td><td>Height (metres)</td></tr>
<tr><td>0</td><td>0</td></tr>
<tr><td>10</td><td>8</td></tr>
<tr><td>20</td><td>15</td></tr>
<tr><td>30</td><td>25</td></tr>
<tr><td>40</td><td>37</td></tr>
<tr><td>50</td><td>50</td></tr>
<tr><td>60</td><td>70</td></tr>
</table>
</td>
<td>This table shows the distance a lorry travelled during the day.
<table>
<tr><td>Time</td><td>Distance in miles</td></tr>
<tr><td>7.00 a.m.</td><td>10</td></tr>
<tr><td>8.00 a.m.</td><td>28</td></tr>
<tr><td>9.00 a.m.</td><td>42</td></tr>
<tr><td>10.00 a.m.</td><td>58</td></tr>
<tr><td>11.00 a.m.</td><td>70</td></tr>
<tr><td>12.00 a.m.</td><td>95</td></tr>
<tr><td>1.00 p.m.</td><td>95</td></tr>
<tr><td>2.00 p.m.</td><td>118</td></tr>
</table>
Create a line graph to represent the information, where the divisions along the x-axis are every two hours.
Create a second line graph where the divisions along the x-axis are every hour.
Compare your graphs. Which graph is more accurate?
Would a graph with divisions at each half hour be even more accurate?

The pie chart represents the proportions of the four ingredients in a smoothie drink.
The sector representing the amount of strawberries takes up 22% of the pie chart.
The sector representing the amount of apple is twice as big as the sector representing the amount of strawberries.
The sectors representing the amount of yoghurt and the amount of banana are identical.</td>
</tr>
</table>