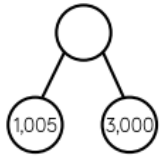
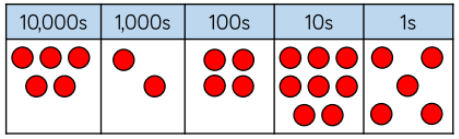
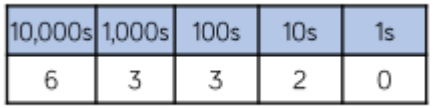
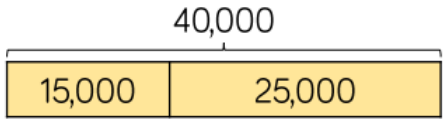
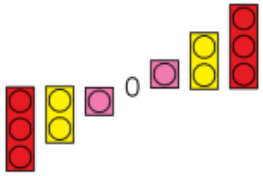
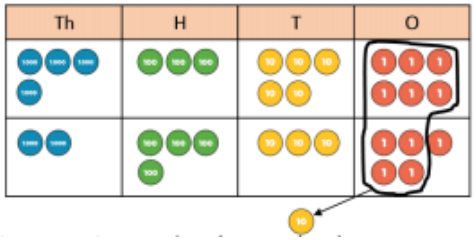
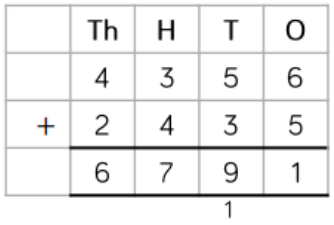
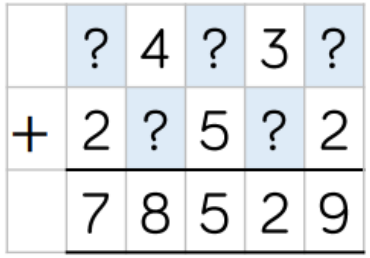
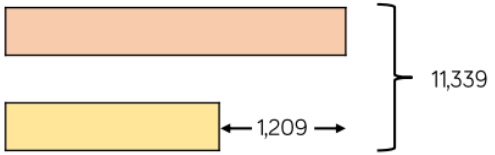
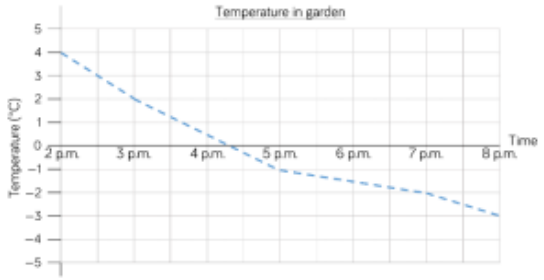
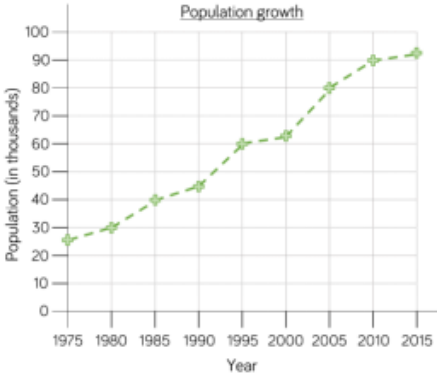
Mathematics Curriculum Progression for Year 5

Term	Topic	Knowledge and Skills	Methods and Visual Representations	Vocabulary
1 & 2	Place Value	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit e.g. what is the value of the '7' in 276,541? Find the difference between the largest and smallest whole numbers that can be made from using three digits Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 Solve number problems and practical problems that involve ordering and comparing numbers to 1 000 000, counting forwards or backwards in steps, interpreting negative numbers and rounding Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	      	greater than or equal to, less than or equal to, formula, divisibility, square number, prime number, ascending order, descending order nearest ten thousand

1 & 2	Addition and Subtraction	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) Add and subtract numbers mentally with increasingly large numbers Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	   	ones boundary, tenths boundary

1 & 2	Statistics	Solve comparison, sum and difference problems using information presented in a line graph Complete, read and interpret information in tables, including timetables	  		Male	Female	Total
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Constable	55	24	79
Sergeant	8	5	13
Inspector	2	4	6
Chief Inspector	1	1	2
Total	66	34	100 | |	Bus Timetable				
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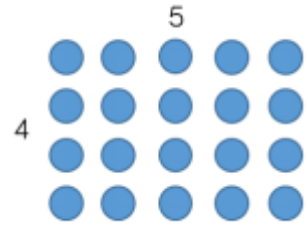
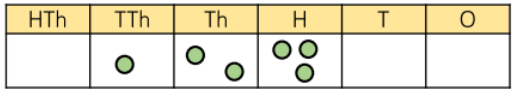
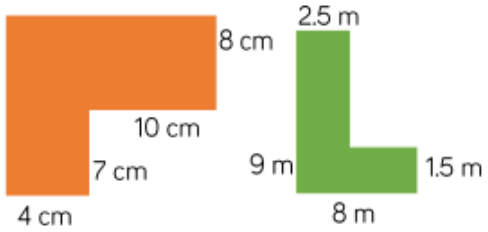
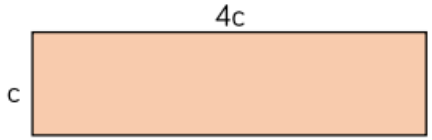
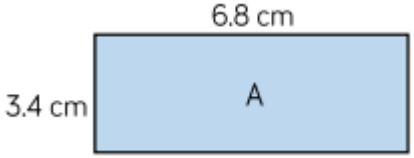
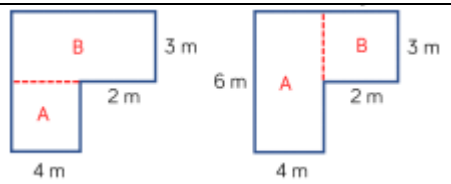
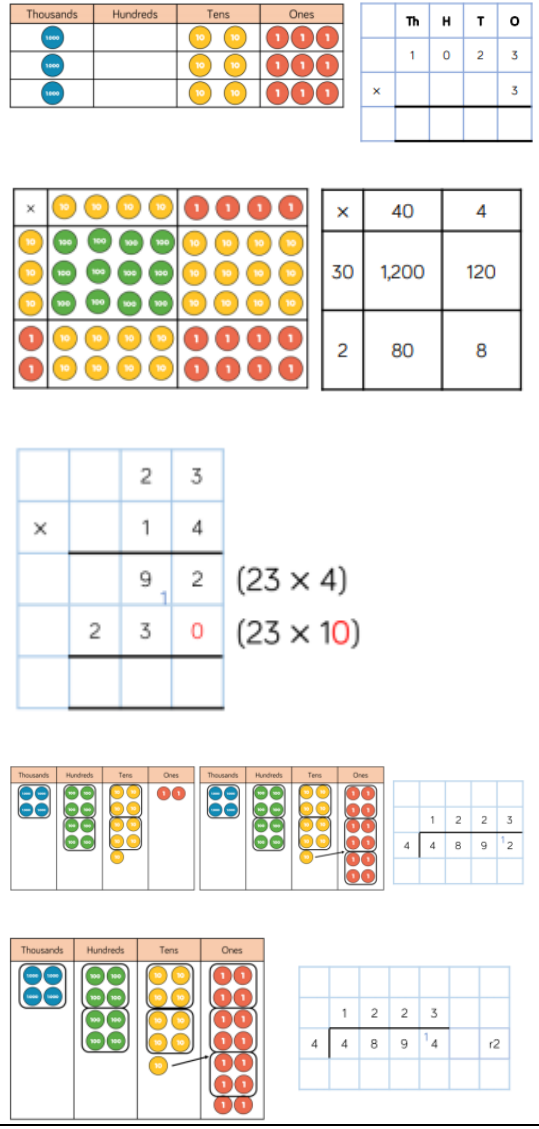
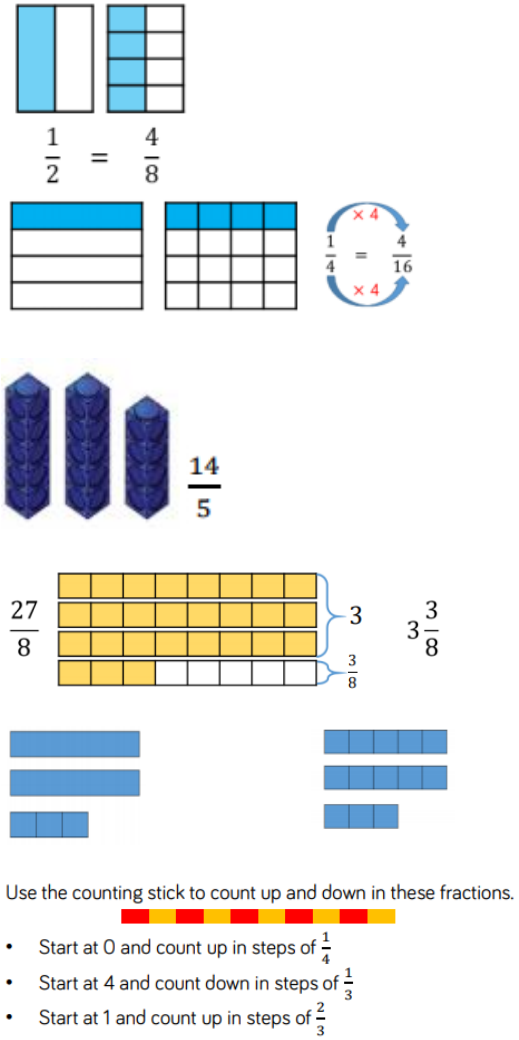
Halifax	06:05	06:35	07:10	07:43	08:15
Shelf	06:15	06:45		07:59	08:31
Shelf Village	06:16	06:46	07:23	08:00	08:32
Woodside	06:21	06:50	07:28		
Odsal	06:26	06:55	07:33	08:15	08:45
Bradford	06:40	07:10	07:48	08:30	09:00		database, bar line chart, line graph, value, maximum, minimum, outcome

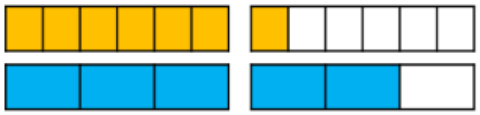
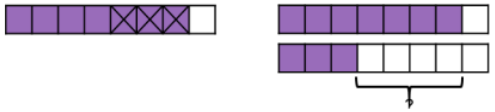
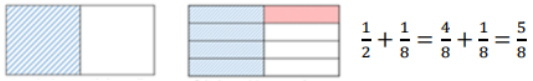
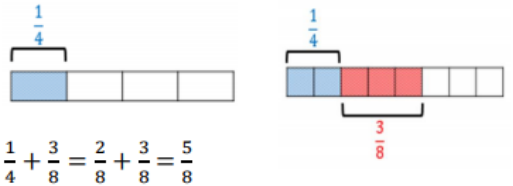
1 & 2	Multiplication and Division	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 Recognise and use square numbers and the notation for squared (2) Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes Recognise and use cube numbers and the notation for cubed (3)	 How many factors of twenty have you found by arranging your counters in different arrays?  When I multiply 234 by 10, where will I move my counters?  Divide the number by 100 Which direction do the counters move?	

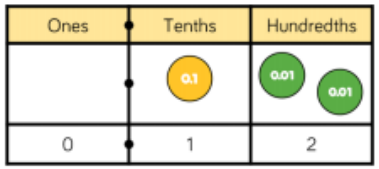
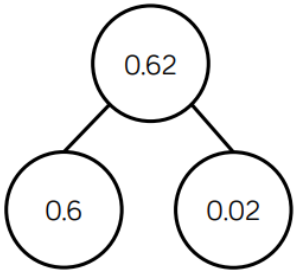
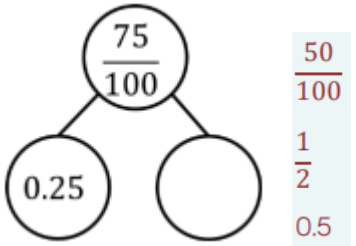
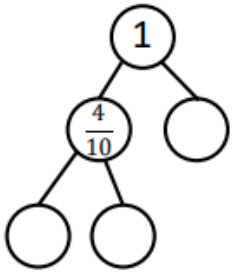
1 & 2	Measure: Perimeter and Area	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes	  The value of c is 14 m. What is the total perimeter of the shape?  The blue rectangle has a perimeter of 38 cm. What is the value of a? 	square metre, square millimetre

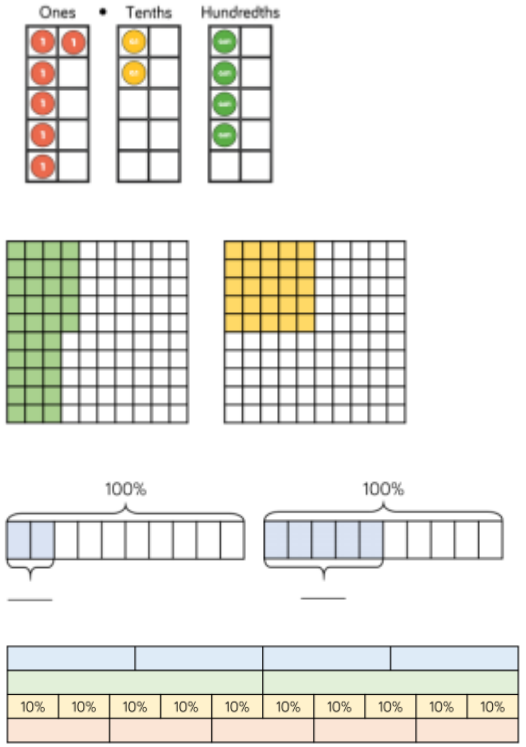
			 Estimate the area of the pond. Each square = 1 m^2 	

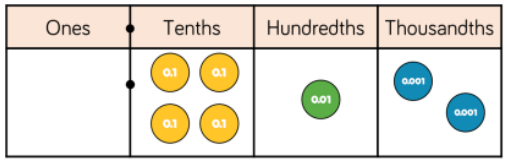
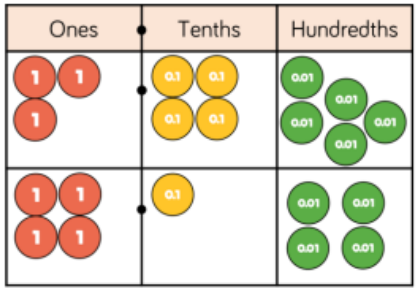
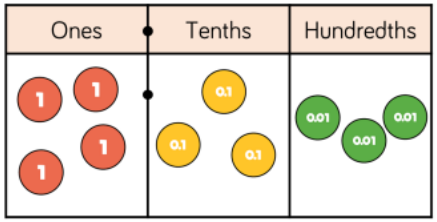
3 & 4	Multiplication and Division	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers Multiply and divide numbers mentally drawing upon known facts Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates		

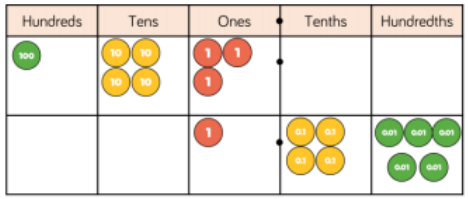
3 & 4	Fractions	Compare and order fractions whose denominators are all multiples of the same number Identify and name equivalent fractions of a given fraction, represented visually, including tenths and hundredths Write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number e.g. 2/5 + 4/5 = 6/5 = 1 1/5 Add and subtract fractions with the same denominator and denominators that are multiples of the same number Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams Read and write decimal numbers as fractions e.g. 0.71 = 71/100, 8.09 = 8 + 9/100		proper fraction, improper fraction, equivalent, reduced to, cancel, in every, for every

			Use bar models to compare $\frac{7}{6}$ and $\frac{5}{3}$  Here is a bar model to calculate $\frac{3}{5}+\frac{4}{5}$  Here are two bar models to calculate $\frac{7}{8}-\frac{3}{8}$   $\frac{1}{2}+\frac{1}{8}=\frac{4}{8}+\frac{1}{8}=\frac{5}{8}$  $\frac{1}{4}+\frac{3}{8}=\frac{2}{8}+\frac{3}{8}=\frac{5}{8}$	

3 & 4	Decimals and Percentages	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 Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25	    	percentage, per cent

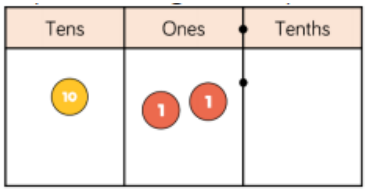
			 Ones Tenths Hundredths 100% 100% 10% 10% 10% 10% 10% 10% 10% 10% 10% 10%	

5 & 6	Decimals	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Round decimals with two decimal places to the nearest whole number and to one decimal place Read, write, order and compare numbers with up to three decimal places Solve problems involving number up to three decimal places	  3 . 4 5 + 4 . 1 4 _____  4 . 3 3 − 2 . 1 4 _____	thousandths



1 4 3 .

\+ 1 . 4 5



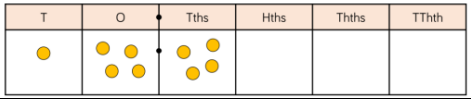
1 2 .

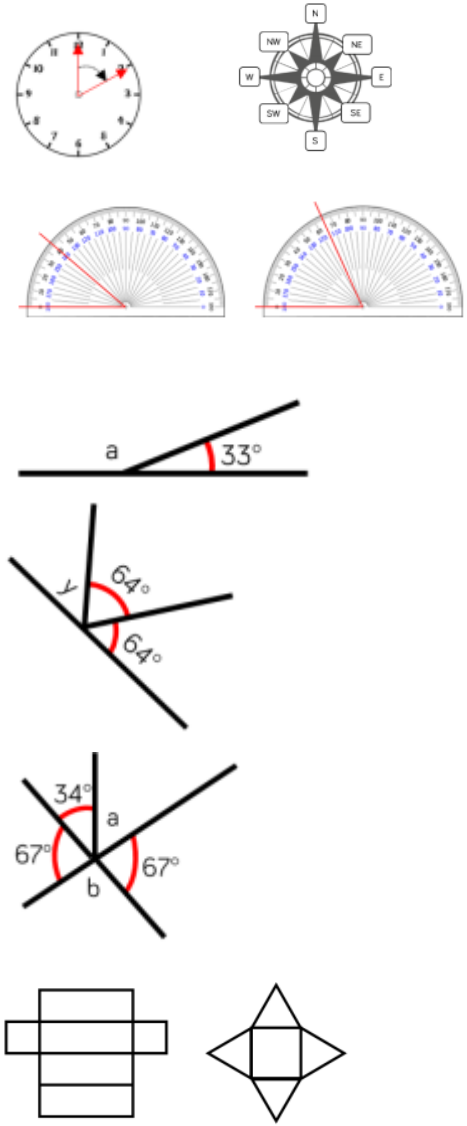
− 1 . 2

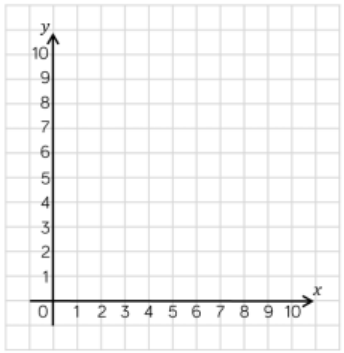
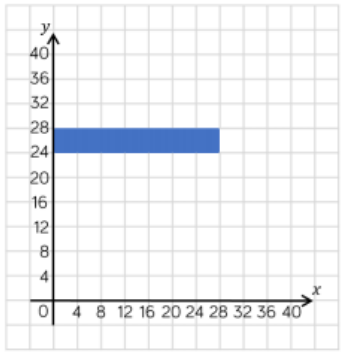
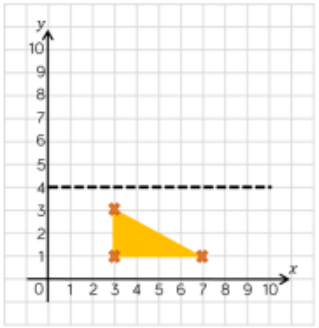
10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009

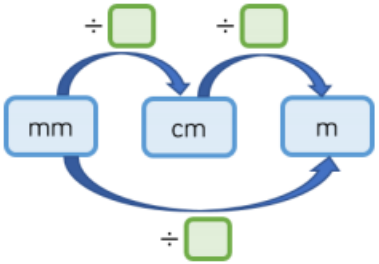
multiply 3.24 by 10, 100 and 1,000

divide 14.4 by 10, 100 and 1,000



5 & 6	Properties of Shape	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees (°) Identify angles at a point and one whole turn (total 360°) Identify angles at a point on a straight line and 1/2 a turn (total 180°) Identify other multiples of 90° Use the properties of rectangles to deduce related facts and find missing lengths and angles Distinguish between regular and irregular polygons based on reasoning about equal sides and angles		radius, diameter, congruent, protractor octahedron

5 & 6	Position and Direction	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	  Write the coordinates of the image after the object (triangle) has been reflected in the mirror line.  	axis of symmetry, reflective symmetry, coordinate, x-axis, y-axis, quadrant

5 & 6	Measure: Converting Units	Convert between different units of metric measure (for example, kilometre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Solve problems involving converting between units of time Use all four operations to solve problems involving measure e.g. length, mass, volume, money using decimal notation, including scaling		imperial unit, pint, gallon discount, currency
5 & 6	Measure: Volume	Estimate volume e.g. using 1 cm^3 blocks to build cuboids (including cubes) and capacity e.g. using water