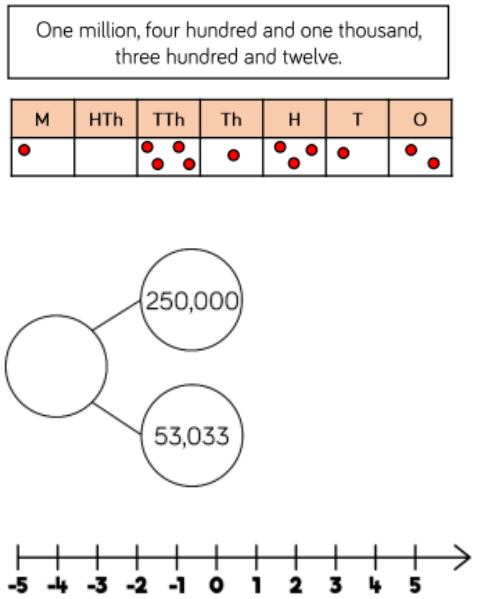
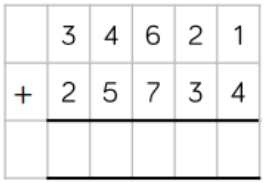
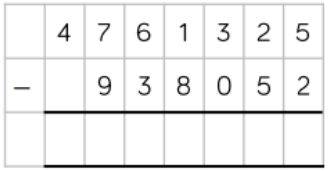
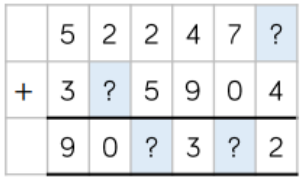
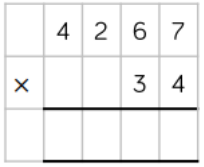
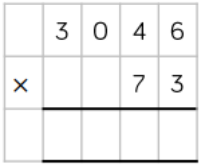
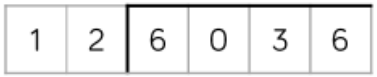
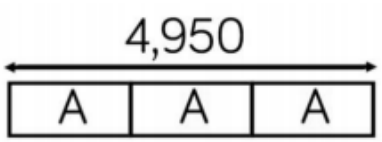
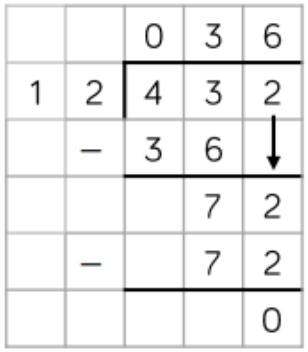
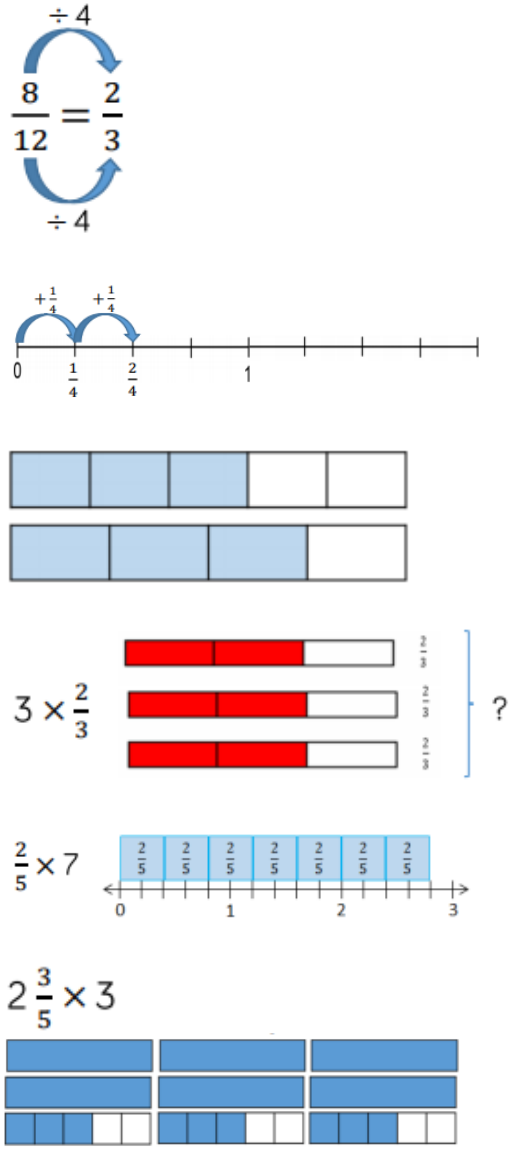
Mathematics Curriculum Progression for Year 6

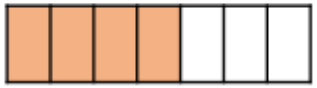
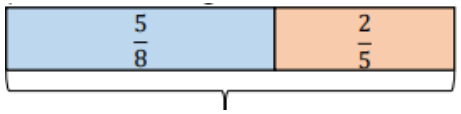
Term	Topic	Knowledge and Skills	Methods and Visual Representations	Vocabulary
1 & 2	Place Value	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit Round any whole number to a required degree of accuracy Use negative numbers in context, and calculate intervals across zero Solve number and practical problems that involve ordering and comparing numbers to 10 000 000, rounding to a required degree of accuracy, using negative numbers and calculating intervals across zero Demonstrate an understanding of place value including decimals e.g. 28.13 = 28 + ? + 0.03		factorise, prime factor, digit total

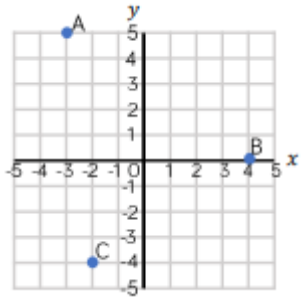
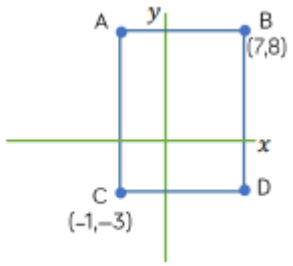
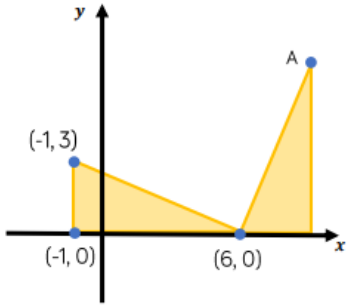
1 & 2	All Four Operations: Addition Subtraction Multiplication Division	Perform mental calculations with mixed operations to carry out calculations involving the four operations Solve multi-step problems in contexts, deciding which operations and methods to use and why e.g. find the change from £20 for three items that cost £1.24, £7.92 and £2.55; a roll of material is 6m long: how much is left when 5 pieces of 1.15m are cut from the roll?; a bottle of drink is 1.5 litres, how many cups of 175ml can be filled from the bottle, and how much drink is left? Solve problems involving addition and subtraction Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context 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	      	

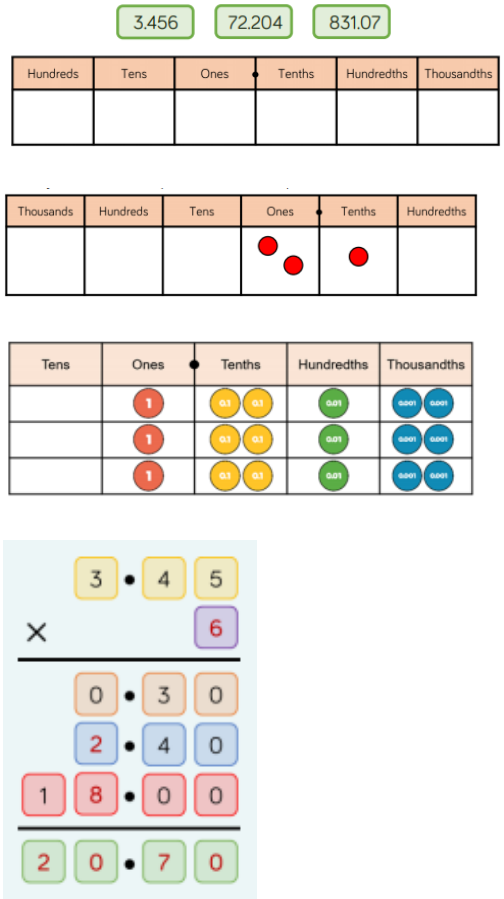
		Perform mental calculations, including with mixed operations and large numbers Identify common factors, common multiples and prime numbers Use knowledge of the order of operations to carry out calculations involving the four operations Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition, subtraction, multiplication and division Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	 	

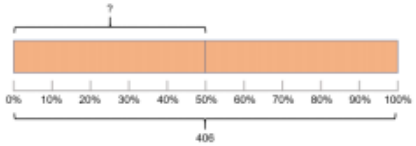
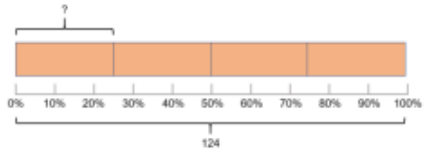
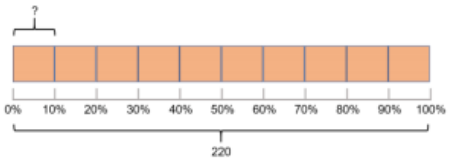
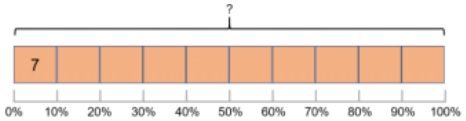
		0	3	6
1	2	4	3	2
	–	3	6	↓
			7	2
	–		7	2
				0

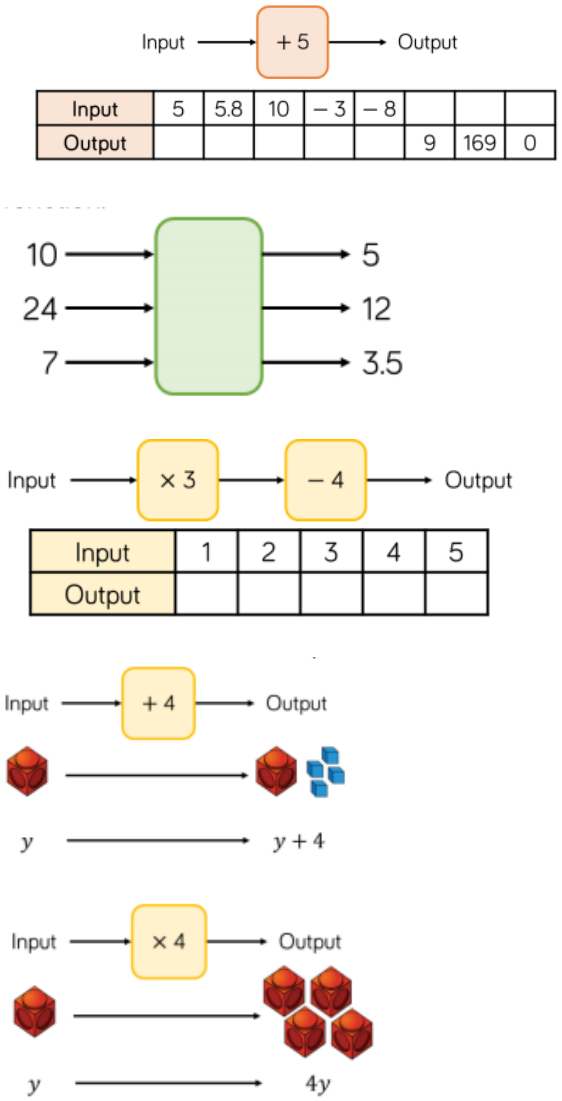
1 & 2	Fractions	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form e.g. 1/4 × 1/2 = 1/8 Divide proper fractions by whole numbers e.g. 1/3 ÷ 2 = 1/6 Associate a fraction with division and calculate decimal fraction equivalents e.g. know that 7 divided by 21 is the same as 7/21 and that this is equal to 1/3 and e.g. 0.375 is equivalent to 3/8		

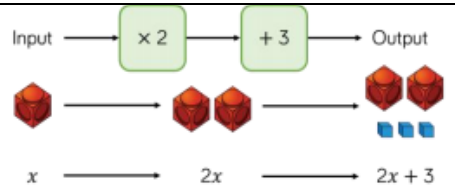
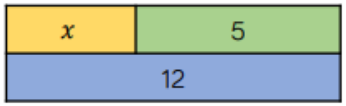
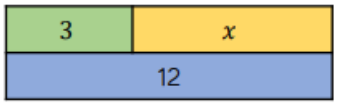
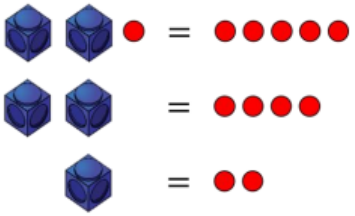
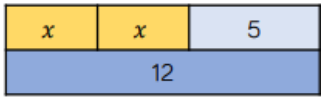
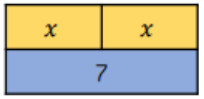
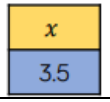
			$\frac{4}{7} \div 2 =$  $\frac{3}{5} \div 2$   48 kg  Jack has spent $\frac{2}{3}$ of his money. He spent £60, how much did he have to start with? 	

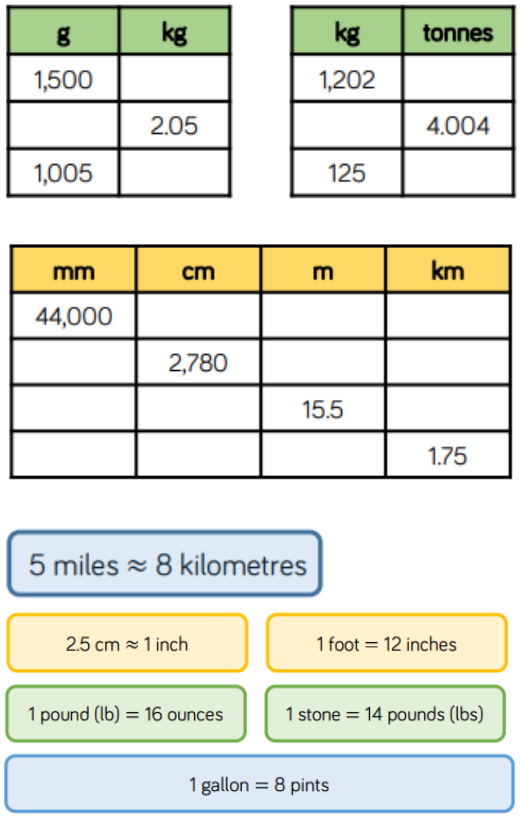
1 & 2	Position and Direction	Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane, and reflect them in the axis	  	

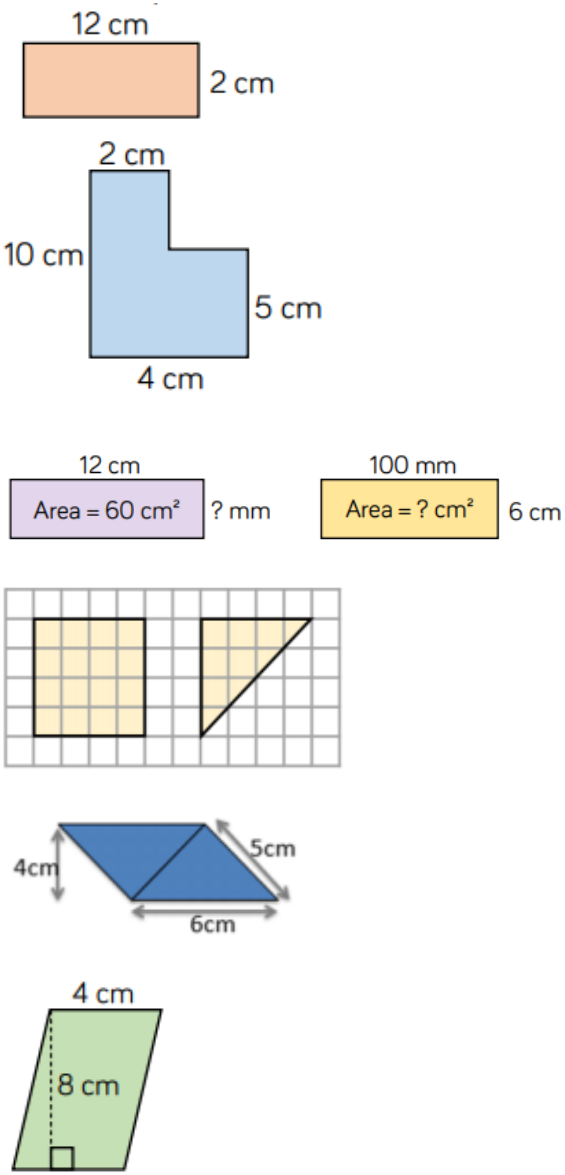
3 & 4	Decimals	Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Multiply one-digit numbers with up to two decimal places by whole numbers Use written division methods in cases where the answer has up to two decimal places Solve problems which require answers to be rounded to specified degrees of accuracy		

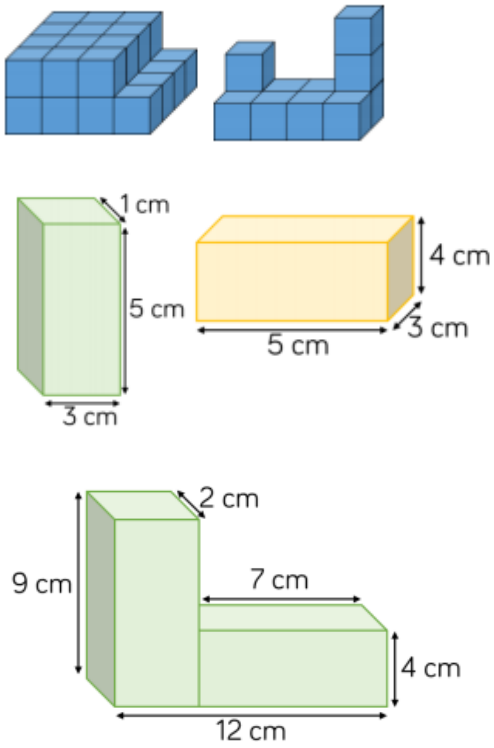
3 & 4	Percentages	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts e.g. one piece of cake that has been cut into 5 equal slices can be expressed as 1/5 or 0.2 or 20% of the whole cake	Order from smallest to largest: 50% $\frac{2}{5}$ 0.45 $\frac{3}{10}$ 54% 0.05  50% of 406 =  25% of 124 =  	

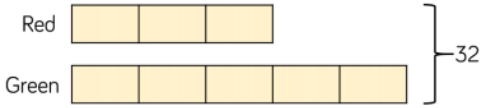
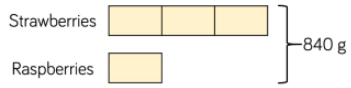
3 & 4	Algebra	Use simple formulae e.g. perimeter of a rectangle or area of a triangle Generate and describe linear number sequences Express missing number problems algebraically Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables		formula, formulae, equation, unknown, variable

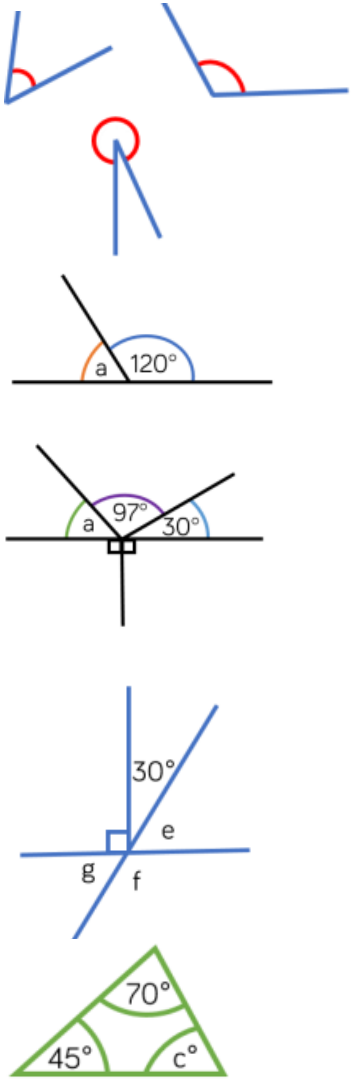
			 $x + 5 = 12$  $3x = 12$  $12 = 3 + x$  $2x + 1 = 5$ $2x = 4$ $x = 2$    	

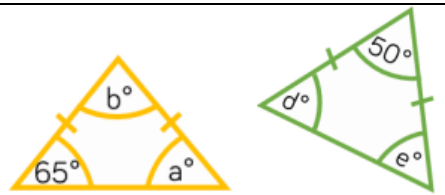
3 & 4	Measure: Converting Units	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places Convert between miles and kilometres		yard, foot, feet, inch, inches tonne, pound, ounce

3 & 4	Measure: Perimeter, Area and Volume	Recognise that shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume of shapes Calculate the area of parallelograms and triangles Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units e.g. mm^3 and km^3		centilitre, cubic centimetres, cubic metres, cubic millimetres, cubic kilometres

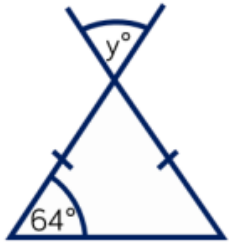
			 1 cm 5 cm 3 cm 4 cm 3 cm 5 cm 2 cm 9 cm 7 cm 4 cm 12 cm	

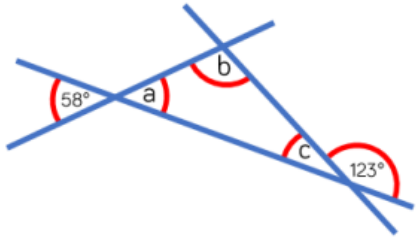
3 & 4	Ratio	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts e.g. find 7/9 of 108 Solve problems involving the calculation of percentages e.g. of measures, and such as 15% of 360 and the use of percentages for comparison Solve problems involving similar shapes where the scale factor is known or can be found Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples	 This bar model shows the ratio 2 : 3 : 4  Eva has a packet of sweets. For every 3 red sweets there are 5 green sweets. If there are 32 sweets in the packet in total, how many of each colour are there? You can use a bar model to help you.  Enlarge these shapes by: • Scale factor 2 • Scale factor 3 • Scale factor 4  The mass of strawberries in a smoothie is three times the mass of raspberries in the smoothie. The total mass of the fruit is 840 g. How much of each fruit is needed. 	ratio

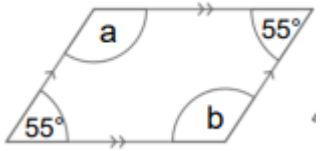
5 & 6	Properties of Shape	Draw 2-D shapes using given dimensions and angles Recognise, describe and build simple 3-D shapes, including making nets Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles		circumference, concentric, arc, net, open, closed, intersecting, intersection, plane dodecahedron reflex angle

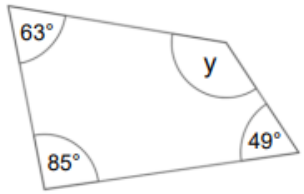

b°
65°
a°
50°
d°
e°

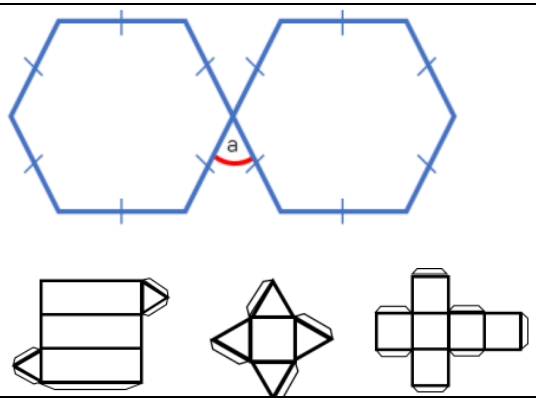

g°
39°
152°

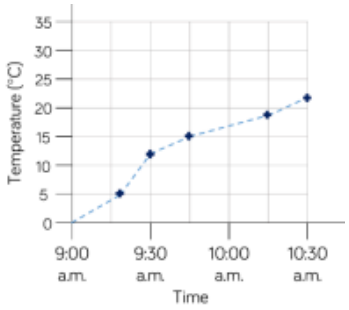
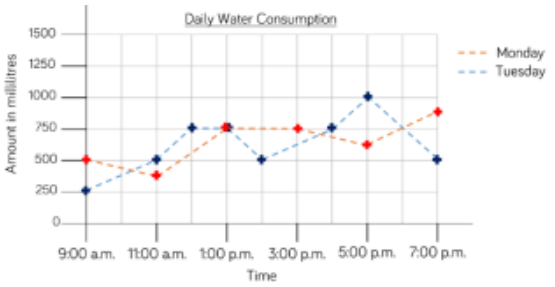

y°
64°

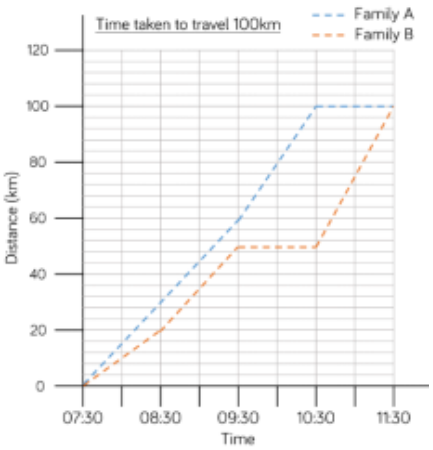

58°
a
b
c
123°

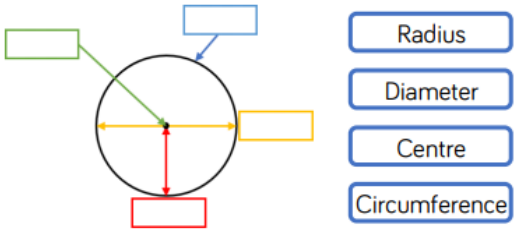

a
55°
55°
b

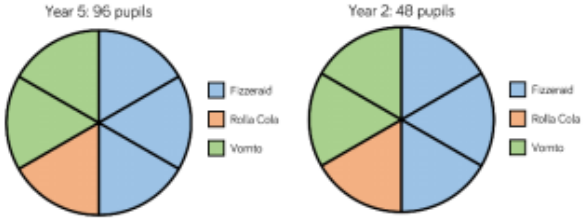

63°
y
49°
85°

			 a	

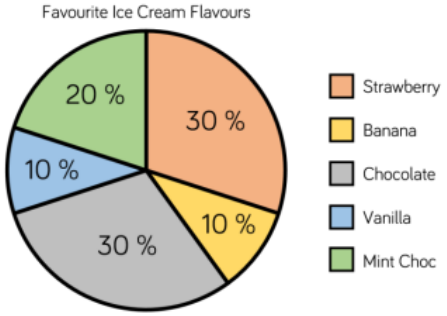
5 & 6	Statistics	Interpret and construct pie charts and line graphs and use these to solve problems Calculate and interpret the mean as an average	  | Time (seconds)	Height (metres)
---	---
0	0
10	8
20	15
30	25
40	37
50	50
60	70 | |	1990	1995	2000
---	---	---	---
UK	57,200,000	58,000,000	58,900,000
Australia	17,000,000	18,000,000	19,000,000
	2005	2010	2015
UK	60,300,000	63,300,000	65,400,000
Australia	20,200,000	22,100,000	23,800,000	pie chart, mean, mode, median, range, statistics, distribution, circumference

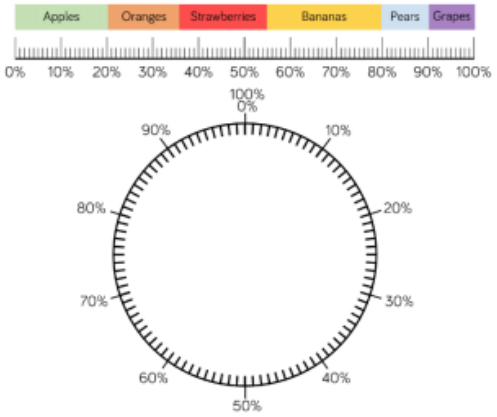

Time taken to travel 100km
Family A
Family B
120
100
80
60
40
20
0
Distance (km)
07:30
08:30
09:30
10:30
11:30
Time


Radius
Diameter
Centre
Circumference


Year 5: 96 pupils
Fizzerald
Rolla Cola
Vomto
Year 2: 48 pupils
Fizzerald
Rolla Cola
Vomto

150 children voted for their favourite ice cream flavours. Here are their results:





No. of glasses of juice drunk by 3 friends	Total glasses of juice drank	If each friend drank the same no. of glasses
		

The mean number of glasses of juice drunk is 3

			Work out the age of each member of the family if: Mum is 48 years old. Teddy is 4 years older than Jack and 7 years older than Alex.