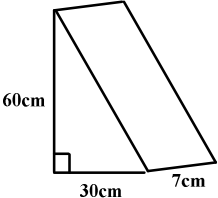


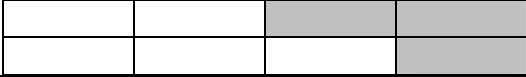
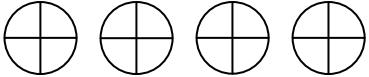
MATHS PROGRESSION LADDER - Mental calculation

Level	Pupil capability	Sample questions to be done mentally
3c	I know all addition and subtraction facts up to 20	(a) $7 + 9$ (b) $14 - 8$
	I know the 2, 5 and 10 times tables	
3b	I can add and subtract near multiples of 10 to or from 2-digit numbers	(a) $36 + 19$ (b) $67 - 29$
	I know the 3 and 4 times tables	
3a	I can add and subtract any pair of 2-digit numbers	(a) $34 + 57$ (b) $72 - 28$
	I can derive division facts from the 2, 3, 4, 5 and 10 times tables	
	I can find remainders after division	What is the remainder when 38 is divided by 4?
4c	I can find the difference between numbers by counting through the next multiple of 10, 100 or 1000	$2004 - 1993$
4b	I know all the tables up to 10×10	
4a	I can derive division facts from all the tables up to 10×10	$72 \div 8$
	I know the order of operations (BODMAS)	Calculate $5 + 3 \times 2$
5c	I can do simple calculations involving fractions, decimals and percentages	Find (a) $\frac{1}{4}$ of 24 (b) 50% of £36 (c) $2.3 + 0.8$
5b	I can solve simple word problems	How many chews costing 6p each can I buy for £1.20?
5a	I can do simple calculations involving squares, square roots, cubes and cube roots	What is (a) the cube of 5 (b) the squareroot of 400
6c	I can calculate harder fractions and percentages	Calculate (a) $\frac{5}{6}$ of 54 (b) 15% of £420
6b	I can multiply decimals	Find 1.2×0.07
6a	I can divide decimals	Find $4 \div 0.8$
7c	I can apply the rules of calculation to more complicated problems	Given that $23 \times 84 = 1932$, what is $19.32 \div 2.3$?
7b	I can solve more complicated logical problems	Find 3 consecutive multiples of 4 that add up to 96.
7a	I can work out area and volume problems	Find the volume of the prism shown. 

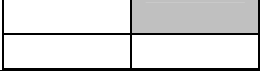
MATHS PROGRESSION LADDER - Written calculation

Level	Pupil capability	Sample questions
3c	I can add any pair of 2-digit or 3-digit numbers	(a) $27 + 36$ (b) $346 + 165$
3b	I can add more than two 2-digit numbers	$34 + 57 + 94 + 87$
3a	I can subtract any pair of 2-digit or 3-digit numbers	(a) $74 - 28$ (b) $607 - 239$
4c	I can add and subtract any pair of 4-digit numbers	(a) $3574 + 1733$ (b) $7345 - 4567$
4b	I can add and subtract numbers with up to two decimal places	(a) $3.54 + 7.58$ (b) $7.32 - 4.51$
	I can multiply and divide 3-digit numbers by single digit numbers including divisions giving remainders	(a) 236×7 (b) $379 \div 4$
4a	I can multiply two 2-digit numbers	67×23
	I can multiply a decimal by a single digit number	2.94×6
5c	I can divide a decimal by a single digit number	$3.78 \div 9$
	I can divide by single digit numbers giving a decimal answer	$235 \div 8$
5b	I know the order of operations including brackets	(a) $103 - 37 \times 2$ (b) $(36 + 53) \times 4$
	I can multiply 3-digit numbers by 2-digit numbers	362×53
5a	I can divide 3-digit numbers by 2-digit numbers	$787 \div 17$
6c	I can multiply by simple decimals	46×0.6
6b	I can add and subtract numbers of any size and varying numbers of decimal places	$253 + 4.56 - 2.9 + 0.077$
6a	I can divide by simple decimals	$452 \div 0.8$
7c	I can multiply any decimal number by a 2-figure decimal	28.3×0.31
7b	I can divide any decimal number by a 2-figure decimal	$2.85 \div 1.5$
7a	I can solve complex problems involving 2 or more stages	$4.2 \times 3.7 + 0.44^2$

MATHS PROGRESSION LADDER - Fractions

Level	Pupil capability	Sample questions
3c	I can recognise diagrams of unit fractions	(As for 3b question but with one part shaded)
	I can draw diagrams for unit fractions	Draw a rectangle and shade one quarter of it
3b	I can recognise diagrams of fractions	What fraction of the diagram is shaded? 
	I can draw diagrams for fractions	(As for 3a question but with any fraction)
3a	I can recognise diagrams showing mixed numbers	Shade the diagram below to show $2\frac{3}{4}$ 
	I understand simple equivalent fractions	How many quarters are equivalent to one half?
4c	I know simple fraction-decimal equivalents	(a) What decimal is equivalent to $\frac{3}{4}$? (b) Write 0.1 as a fraction
	I can identify two fractions that add up to 1	If $\frac{2}{9}$ of a ribbon is cut off, what fraction is left?
4b	I understand that fractions relate to division	Write $5 \div 8$ as a fraction
	I understand equivalent fractions	How many twentieths is equivalent to $\frac{3}{5}$?
4a	I can simplify fractions by cancelling	Simplify $\frac{24}{36}$
5c	I can find simple fractions of quantities	Find $\frac{2}{3}$ of £24
	I can add and subtract fractions with the same denominators	$\frac{2}{7} + \frac{3}{7}$
5b	I can convert decimals to fractions	Write 0.65 as a fraction in its simplest terms
5a	I can change between mixed numbers and improper fractions	Write $\frac{20}{3}$ as a mixed number
6c	I can order fractions by putting them over the same number	Write in descending order: $\frac{1}{2}$ $\frac{2}{3}$ $\frac{7}{12}$ $\frac{3}{4}$
	I can convert fractions to decimals by dividing	Write $\frac{5}{8}$ as a decimal
6b	I can find fractions of quantities in harder cases	Find $\frac{3}{4}$ of 17
6a	I can add and subtract fractions	(a) $\frac{2}{3} + \frac{1}{4}$ (b) $\frac{7}{10} - \frac{2}{5}$
7c	I can multiply fractions	$\frac{3}{4} \times \frac{2}{9}$
7b	I can work with simple algebraic fractions	Simplify $\frac{abc}{5cd}$
	I can divide fractions	$\frac{2}{5} \div \frac{4}{9}$
7a	I can change recurring decimals to fractions in simple cases	Write 0.777777..... as a fraction

MATHS PROGRESSION LADDER - Percentages & Ratios

Level	Pupil capability	Sample questions
3c	I can recognise percentage notation and know what it means	Write 7/100 as a percentage
3b	I know that 50% is equal to $\frac{1}{2}$ and 25% is equal to $\frac{1}{4}$	What percentage of the diagram is shaded? 
3a	I can identify percentages that add up to 1	If 23% of the pupils in a class are left-handed, what percentage are right-handed?
4c	I know fraction and decimal equivalents of simple percentages	What decimal is equivalent to 75%? Write 20% as a fraction
4b	I recognise ratio notation and can use it in simple situations	Of a team of 10 people, 3 are male. What is the ratio of males to females in the team?
4a	I can change percentages into decimals	Write 31.5% as a decimal
	I can calculate simple percentages of quantities	Calculate (a) 20% of £30 (b) 25% of 12m
5c	I know the percentages equal to $\frac{1}{3}$ and $\frac{1}{8}$	
5b	I can cancel a ratio to its simplest form	Simplify 35 : 45 : 60
	I can change percentages to fractions in their lowest terms	Write 24% as a fraction in lowest terms
5a	I can find percentages of quantities where the answer is a whole number	Find 16% of 125kg
6c	I can increase and decrease by percentages	Decrease £600 by 15%
	I can simplify ratios that include different units	Simplify 75p : £4
6b	I can divide quantities in a given ratio	Divide 80cm in the ratio 3 : 7
6a	I can find percentages of quantities where the answer is not a whole number	Find 12% of 9m
7c	I can represent percentage increase or decrease as a multiplier and use this on a calculator	Increase £34 by 7%
7b	I can solve questions involving proportion	A photo measuring 10cm by 14cm is enlarged so that the shorter side is 12cm. What is the length of the enlarged longer side?
7a	I can use the unitary method when comparing	If a 250g packet of cereal costs £1.20 and a 350g packet costs £1.70, which packet gives better value for money?
	I can solve harder percentage problems	If prices are increased by 10% and then decreased by 10%, what is the overall percentage change?

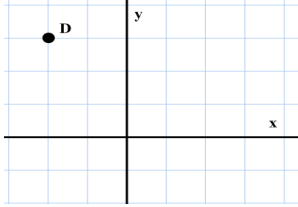
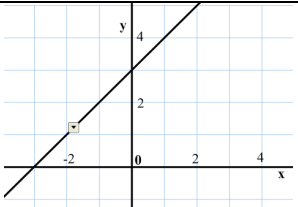
MATHS PROGRESSION LADDER - Place value, ordering and rounding

Level	Pupil capability	Sample questions
3c	I can read and write whole numbers up to 1000 in words and figures	Write two hundred and fifty-eight in figures
	I know what each digit represents	What is the value of the 7 in 271?
3b	I can compare whole numbers using words and symbols	(a) Find a number that is greater than 48 and less than 53 (b) Complete " $3 + 5 \nabla 7 - 2$ " using $<$, $>$ or $=$
3a	I can round any whole number less than 1000 to the nearest 10 or 100	Round 567 to the nearest ten
4c	I can multiply and divide whole numbers by 10 and 100	Calculate (a) 346×100 (b) $980 \div 10$
4b	I can order a set of positive and negative whole numbers	Write in order from largest to smallest: 7, -3, 4, -1, 9
4a	I can round decimals to the nearest whole number	Round to the nearest integer: (a) 23.54 (b) 9.3
	I can understand and use decimal numbers	What does the digit 3 represent in (a) 2.3 (b) 30.4 (c) 4.003?
	I can order a set of numbers including decimals	Write in descending order: 2.3, 2.26, 2.303, 2.244, 2.33
5c	I can multiply and divide decimals by 10 and 100	Calculate (a) 2.54×100 (b) $8.7 \div 10$
	I can round decimals to 1 decimal place	Round 2.456 to 1 decimal place
5b	I can find the difference between 2 positive or negative numbers	What is the rise in temperature from -3°C to 4°C ?
5a	I can round decimals to 2 decimal places	Round 2.456 to 2 decimal places
	I can multiply and divide by 0.1 and 0.01	Calculate (a) 2.3×0.1 (b) $5 \div 0.01$
6c	I can estimate calculations using rounding	Estimate 37.5×218.3
6b	I can write numbers greater than 10 in standard form	Write 450 in standard form
6a	I can round numbers to 1, 2 or 3 significant figures	Round 8.3629 to (a) 1 s.f. (b) 3 s.f.
7c	I can use upper and lower bounds of approximations	If the attendance at a match is 23000 to the nearest 1000, what is the largest possible actual attendance?
7b	I can estimate calculations using rounding to 1 s.f.	Estimate $0.37 \div 6.25$
7a	I can order numbers greater than 10 written in standard form	Put in ascending order: 2×10^2 , 3×10^5 , 2.5×10^3 , 6×10^2

MATHS PROGRESSION LADDER - Properties of number, integers, powers & roots

Level	Pupil capability	Sample questions
3c	I can recognise odd and even numbers up to 1000	Which are the odd numbers in 436, 87, 943, 258 and 991?
	I can count on or back from any 2 or 3 figure number in tens or hundreds	Count back from 263 in tens
3b	I can recognise multiples of 2, 3, 4, 5 and 10 up to the tenth multiple	From the numbers 18, 27, 28, 21 and 24 find (a) the multiples of 3, (b) the multiples of 4
3a	I can recognise negative numbers in context	Which is the lowest temperature from -2°C , 5°C , -4°C
4c	I can describe and continue sequences with steps of equal size	Find the next 4 terms in the sequence 23, 32, 41, 50,
	I know the first ten square numbers	(a) What is 7×7 ? (b) What number when squared is 81?
	I can recognise the first ten multiples of 6, 7, 8 and 9	From the numbers 38, 64, 56, 46 and 72 find the multiples of 8
4b	I can list the factors of a number	List all the factors of 20
	I know tests of divisibility for 2, 4, 5, 10 and 100	Explain whether 5634 is divisible by 4
4a	I know tests of divisibility for 3 and 9	Explain whether 5634 is divisible by 9
	I can factorise numbers up to 100 into prime factors	Write 48 as a product of prime factors
	I can recognise prime numbers	Which of these are prime numbers? 31, 33, 34, 35, 37, 39
5c	I can recognise the first few triangle numbers.	List the first 4 triangle numbers
	I know the first twelve square numbers and their roots	What is the squareroot of 121?
5b	I can add and subtract negative numbers	What is the temperature after a rise of 7 degrees from -3°C ?
5a	I can multiply and divide negative numbers	Calculate -3×-6
	I can find the HCF or LCM of pairs of simple numbers	Find the LCM of 8 and 12
6c	I can use index notation for integer powers	What is the value of 3^4 ?
6b	I know and can use the index law for multiplying positive integer powers	What is $2^7 \times 2^5$ as a power of 2?
6a	I know and can use the index law for dividing positive integer powers	What is $3^7 \div 3^2$ as a power of 3?
7c	I can use prime factors to find the HCF or LCM of pairs of numbers	Find the HCF of 120 and 264
7b	I know and can use the index law for finding powers of powers	What is $(5^3)^5$ as a power of 5?
7a	I can use negative integer powers and apply the index laws to them	(a) What is the value of 2^{-3} ? (b) What is $2^{-3} \times 2^5$ as a power of 2?

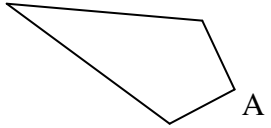
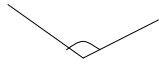
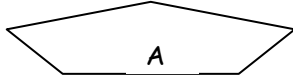
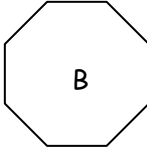
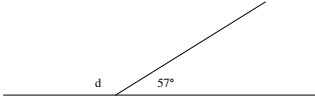
MATHS PROGRESSION LADDER - Sequences, functions & graphs

Level	Pupil capability	Sample questions
3c	I can describe a position in 2-D	(using "Battleships" notation: B4, C3, etc.)
3b	I know the convention that we give the "across" component before the "up" component	
3a	I can find numbers that satisfy a general statement	Any 2 odd numbers added together give an even number. Give examples.
4c	I can continue a sequence by following a given simple rule	The sequence 2, 5, 8, 11, is made by adding 3 to the previous term. What are the next 2 terms?
4b	I can plot points in the first quadrant of a coordinate grid	On a coordinate grid, plot the point (3,5)
4a	I can continue a sequence that follows a more complex rule	The sequence 2, 5, 11, 23, is made by doubling and then adding 1 to the previous term. What is the next term?
5c	I can read and plot points in all four quadrants of a coordinate grid	 <p>(a) What are the coordinates of the point D?</p> <p>(b) Plot the point E with coordinates (-2, -3)</p>
5b	I can find coordinate pairs that match a simple statement and draw simple linear graphs	Find 3 pairs of coordinates for which $x + y = 7$ and draw the graph of this equation
5a	I can find the nth term of a linear sequence	What is the nth term of the sequence 3, 7, 11, 15,?
6c	I can find the equation of a simple linear graph	 <p>What is the equation of the line shown?</p>
6b	I can plot graphs of linear equations	On the grid for the 6c question, plot the graph of $y = 2x + 1$
6a	I can show inequalities on a grid	Show on a coordinate grid, $x + 2y > 7$
7c	I can draw linear graphs written in a variety of forms	Draw the graphs $y = 3x - 4$ and $2x - 5y = 10$
7b	I can continue a quadratic sequence and find the nth term in simple cases	Find the nth term of the sequence 2, 5, 10, 17,
	I know the meaning of m and c in the equation $y = mx + c$	Without drawing it, describe the graph of $y = -2x + 3$
7a	I can plot simple quadratic and cubic graphs	Plot the graph of $y = 2x^2$

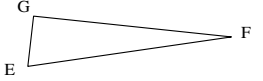
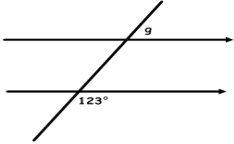
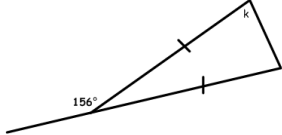
MATHS PROGRESSION LADDER - Equations, formulae & identities

Level	Pupil capability	Sample questions
3c	I can find the missing number in an addition or subtraction statement	(a) $\square + 7 = 11$ (b) $20 - \square = 6$
3b	I can find the missing number in an multiplication or division statement	(a) $\square \times 4 = 24$ (b) $36 \div \square = 12$
3a	I can find missing numbers to make an inequality true	2, 7, 9, 5, 10 For which of these numbers is $3 \times \square > 20$ true?
4c	I know that subtraction undoes addition and addition undoes subtraction	Given that $378 - 183 = 195$, use the same three numbers in the squares and one of +, -, x or \div in the triangle to make 3 other true statements $\square \triangle \square = \square$
4b	I know division undoes multiplication and multiplication undoes division	Given that $23 \times 34 = 782$, use the same three numbers in the squares and one of +, -, x or \div in the triangle to make 3 other true statements $\square \triangle \square = \square$
4a	I can make general statements about numbers using words and simple symbols	Given the list 21, 33, 27, 39, making statements such as "all in the 3 times table", "all > 20", "all < 40", "all odd", "none are even",
5c	I can use letters to represent unknown numbers	If Tessa is m years old and her brother Tom is 4 years younger than her, write down his age
5b	I can substitute values for letters in simple expressions	If $p=3$, what are the values of (a) $p+7$ (b) $5p$
5a	I can solve equations with one letter term	Solve $2d - 7 = 11$
	I can use simple algebraic formulae	On one mobile phone tariff the cost in pence of a call lasting k seconds is given by the formula $c = 10 + k/5$. What is the cost of a call lasting 30 seconds?
6c	I can form and use simple identities	
6b	I can solve equations with letter terms on both sides	Solve $4y + 3 = 2y - 11$
6a	I can simplify expressions involving brackets	Remove the brackets from $3(8 - 4x)$
7c	I can substitute values into more complex formulae, e.g involving powers, brackets or π	The surface area of a container is given by the formula $A = \pi r(r + 2h)$. If $\pi = 3.14$, $r = 5$ and $h = 3$, calculate the value of A
7b	I can expand and simplify pairs of brackets	Remove brackets and simplify $(2g + 3)(g - 5)$
7a	I can solve simultaneous equations	Find the values of x and y such that $x - 2y = 7$ and $5x + y = 13$

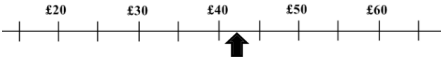

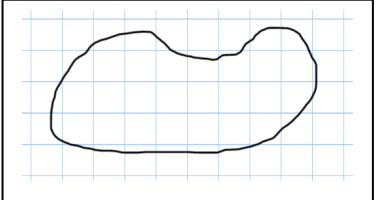

MATHS PROGRESSION LADDER - Geometry (page 1)

Level	Pupil capability	Sample questions
3c	I can identify right angles and compare them with other angles	 <p>(a) Mark the diagram to show that angle A is a right angle (b) Put a cross in any angles that are bigger than a right angle</p>
	I know the notation for indicating a right angle	
3b	I can recognise horizontal and vertical lines	What can you say about the sides of a rectangle?
	I know the length and angle properties of squares and rectangles	
3a	I can identify different triangles and I know their properties	Describe fully an isosceles triangle
4c	I can recognise parallel and perpendicular lines	
4b	I can identify and estimate acute and obtuse angles	 <p>State what type of angle is shown and estimate its size</p>
4a	I can identify the different quadrilaterals and I know their properties	Describe (a) the diagonals of a kite, (b) the angles of a rhombus   <p>Name these 2 polygons What type of polygon is B?</p>
	I can identify and name polygons with up to 8 sides	
5c	I know and can use the sum of angles on a straight line	 <p>What is the angle d?</p>

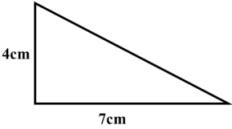
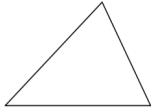

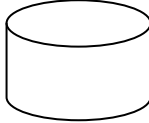
MATHS PROGRESSION LADDER - Geometry (page 2)

5b	I know and can use the angle sum of a triangle and angles at a point	 <p>In the triangle shown, angle $G = 93^\circ$ and angle $F = 19^\circ$. What is angle E?</p>
5a	I can use reasoning applied to angle and length properties	Explain why it is not possible to have a triangle with sides 9cm, 4cm and 3cm
6c	I can identify and use angles associated with parallel lines	 <p>Find angle g, explaining your reasoning</p>
6b	I can classify quadrilaterals by their geometric properties	A quadrilateral has 2 pairs of adjacent sides equal. What could it be?
6a	I can understand the proof of the angle sum of a triangle	
7c	I can use angle properties of exterior angles of a triangle and isosceles triangles	 <p>Given that the triangle shown is isosceles, find angle k, explaining your reasons</p>
7b	I can use angle properties of quadrilaterals and polygons	Two of the angles of a kite are 140° and 36° . What are the possible sizes of the other two angles?
7a	I can calculate the exterior or interior angles of a regular polygon	Find the size of an interior angle of a regular decagon

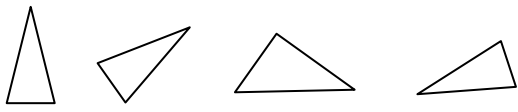
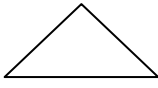

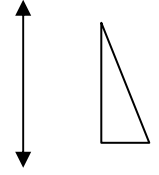

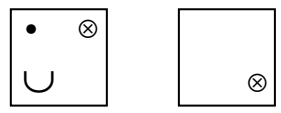
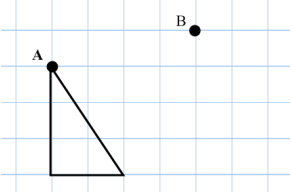
MATHS PROGRESSION LADDER - Measure, area, volume & Pythagoras (page 1)

Level	Pupil capability	Sample questions
3c	I know and can use units of time I can mark on and read off measurements on positive scales	 <p>(a) What amount does the arrow point to? (b) Draw another arrow to show £28</p>
3b	I can represent addition and subtraction using a number line	
3a	I can mark on and read off measurements on scales including negative numbers I can use timetables, calendars and 12-hour clock	 <p>What temperature is shown by the arrow?</p>
4c	I can represent addition and subtraction using a number line, including simple fractions and negative numbers I can estimate the area of a shape by counting squares	 <p>Estimate the area of the shape</p>
4b	I can use 24-hour clock I know the directions on an 8 point compass	<p>What is 4.25 p.m. written in the 24 hour clock? If I face north-east and then turn one right angle clockwise, what direction am I now facing?</p>
4a	I can read and interpret scales involving length, weight and capacity I can draw rectangles of a given area on a squared grid	 <p>Draw a rectangle of area 12 squares using the point shown as one corner</p>
5c	I can estimate metric lengths and weights I can calculate the area and perimeter of a rectangle	<p>A normal paperback book weighs about 2g, 20g, 200g or 2kg What is the area of a rectangle 11m long and 6m wide? What is the perimeter of a square with side 8cm?</p>



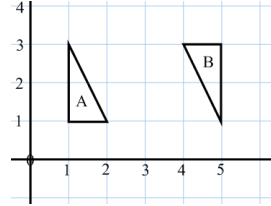
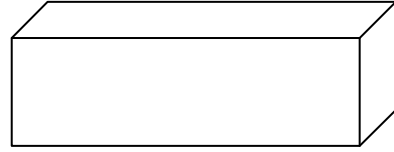
MATHS PROGRESSION LADDER - Measure, area, volume & Pythagoras (page 2)

5b	<p>I can convert between metric units</p> <p>I can calculate the area of a right-angled triangle</p>	<p>What is 4.9 metres in centimetres?</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>Find the area of this right-angled triangle</p> </div> </div>
5a	<p>I know rough metric equivalents to standard imperial units</p> <p>I can convert between units of time and interpret times given as decimals</p>	<p>Give approximate metric measurements for (a) 4 foot, (b) 9lb</p> <p>Change 5.2 minutes into minutes and seconds</p>
6c	<p>I can find the volume of a cuboid</p> <p>I know and can use the formulas for the area of a triangle, of a parallelogram and of a trapezium</p>	<p>What is the volume of a cuboid measuring 10cm by 5cm by 3cm?</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>By making appropriate measurements, calculate the area of this triangle</p> </div> </div>
6b	<p>I can convert between different units of area and volume</p> <p>I can find the circumference of a circle given the radius or diameter</p>	<p>What is 2m^3 in cubic centimetres?</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>What is the circumference of a circular coin with radius 2cm? (Use $\pi = 3.14$)</p> </div> </div>
6a	<p>I can find the area of a circle given the radius or diameter</p>	<p>Use a calculator to find the area of a circle with diameter 6cm? (Give your answer correct to 2 decimal places)</p>
7c	<p>I can find the volume of a prism or cylinder</p>	<div style="display: flex; align-items: center; justify-content: space-around;">  <div style="text-align: right;"> <p>A cylindrical tank has height 10m and a base of diameter 16m. Calculate the volume of the cylinder, giving your answer correct to 3 s.f.</p> </div> </div>
7b	<p>I can find and use measures of speed and density</p>	<p>How long would it take to travel 15km at 40km/h?</p>
7a	<p>I can use Pythagoras' theorem</p>	<p>Calculate the unknown side of the triangle in the 5b question, giving your answer correct to 3 significant figures</p>


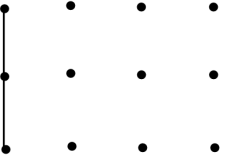

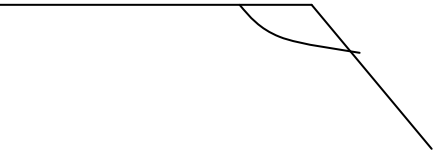
MATHS PROGRESSION LADDER - Symmetry & transformations (page 1)

Level	Pupil capability	Sample questions
3c	I can recognise shapes after turning	Which of these has a different shape? 
	I can recognise simple cases of line symmetry	Which of these does not have line symmetry? A E T G U
3b	I can draw a line of symmetry on a given shape	Draw in the line of symmetry 
3a	I can find all the lines of symmetry for a given shape	Show all lines of symmetry 
4c	I can draw the reflection of a shape in a vertical or horizontal mirror line	Reflect the triangle in the line shown 
4b	I can draw the reflection of a shape in any mirror line	Reflect the triangle in the line shown 
4a	I can complete a partly drawn shape after rotation	Complete the second shape so that it is a rotation of the first shape. 
5c	I can translate a shape on a squared grid	Draw this triangle after a translation that takes A to B. 

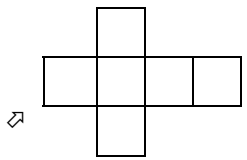

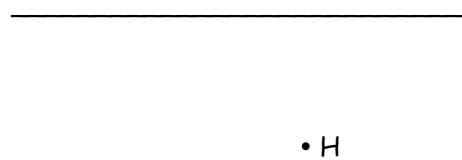
MATHS PROGRESSION LADDER - Symmetry & transformations (page 2)

5b	I can identify all the symmetries of a shape	 What is the order of rotational symmetry for this shape?
5a	I can rotate a shape on a grid by 1 or 2 right angles	Rotate the triangle in 5c question by 90° anticlockwise about point A
	I can draw an enlargement of a shape to a given scale factor	Using the diagram from 3b question, enlarge the triangle by scale factor 2
6c	I can rotate a shape by 1 or 2 right angles	Rotate the parallelogram by 180° about centre C 
6b	I can draw an enlargement from a given centre by a positive whole number scale factor	Enlarge the parallelogram in 6c question from centre C by scale factor 3
6a	I can fully describe transformations in simple cases	Describe fully the transformation that takes triangle A to triangle B 
7c	I can draw or count the planes of symmetry of a simple 3-D shape	For the solid shown draw on one plane of symmetry and state how many planes of symmetry it has altogether 
7b	I can draw an enlargement from a given centre by a fractional scale factor	Enlarge the parallelogram in 6c question from centre C by scale factor $\frac{1}{2}$
7a	I can draw an enlargement from a given centre by a negative scale factor	Enlarge the parallelogram in 6c question from centre C by scale factor -2












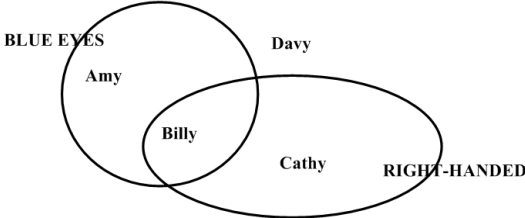
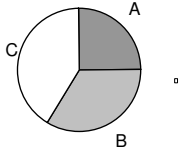
MATHS PROGRESSION LADDER - Constructions & loci (page 1)

Level	Pupil capability	Sample questions
3c	I can measure lines in centimetres	Measure this line 
3b	I know the 4 main compass directions and can use them in describing a simple journey	On a grid show a journey of 3 squares East, followed by 2 squares South
3a	I can draw triangles, squares and rectangles on a squared line or dotted grid	Using the line shown and another dot, draw an isosceles triangle 
4c	I can measure a line to the nearest millimetre	Measure this line 
4b	I can measure angles to the nearest degree	 Measure the angle shown
4a	I can draw quadrilaterals on a squared line or dotted grid	On a copy of the grid from 3a question, use the line shown and 2 other dots to draw a trapezium
5c	I can draw lines accurate to the nearest millimetre.	Draw a line of length 4.7cm
5b	I can draw angles accurate to the nearest degree.	Draw and label an angle of 214°
5a	I can accurately draw a circle of a given radius	Draw a circle with radius 6.3cm

MATHS PROGRESSION LADDER - Constructions & loci (page 2)

6c	I can recognise nets of cubes and cuboids and visualise how they will come together as a solid	<p>If the net below was folded to make a cube, mark the 2 other points that will meet the corner marked.</p> 
6b	I can construct triangles when given sufficient lengths or angles	Construct a triangle with sides 4cm, 5cm and 6cm.
	I can recognise 3-D solids (made from cubes) drawn on isometric grids	(e.g.) Draw the plan of a solid represented on an isometric grid and made up of 3 or 4 cubes
6a	I can represent 3-D solids (made from cubes) by drawing on an isometric grid	(e.g.) Represent on an isometric grid a solid made up of 3 or 4 cubes, whose plan is given
7c	I can construct the angle bisector of a given angle	Construct the angle bisector of the angle shown in 4b question
7b	I can construct the perpendicular bisector of a given line	<p>Construct the perpendicular bisector of this line</p> 
	I can draw simple loci involving arcs	<p>An ant is on a lead of length 4cm. The other end of the lead is fixed to the point A shown. Draw the locus of all those points the ant can reach.</p> <p style="text-align: center;">• A</p>
7a	I can construct a perpendicular to a given line that passes through a given point	<p>Construct the perpendicular to the line FG that passes through H.</p> 

MATHS PROGRESSION LADDER - Handling Data (page 1)

Level	Pupil capability	Sample questions
3c	I can construct and interpret pictograms	<p>The diagram shows how many hours of television 4 pupils watched one weekend. How many hours did Sam watch?</p> <p>Noel    represents 2 hours</p> <p>Olly     </p> <p>Pat</p> <p>Sam   </p>
3b	I can complete tally charts and frequency tables	<p>Complete a tally chart and frequency table for this data:</p> <p style="text-align: center;">B D C C A D E B C A B B C D D B A B C</p>
	I can select the relevant information for a problem	
	I can extract information given in lists, tables and diagrams	(e.g. Using tariff charts, network diagrams, ...)
3a	I can construct and interpret bar charts	Draw a bar chart for the data in question 2.
	I can construct and interpret Venn and Carroll diagrams	<p>Which pupil has blue eyes and is left-handed?</p> 
4c	I can find the mode and range of a set of data	For the list 13, 14, 12, 15, 12, 14, 12, 11 find (a) the mode, (b) the range
4b	I can find the median for a set of numerical data	What is the median of 6, 4, 7, 3, 8 ?
4a	I can find the mean for a set of numerical data	What is the mean of 3, 4 and 11 ?
5c	I understand the mode, median, mean and range	<p>Four test scores are 12, 17, x and 13</p> <p>(a) find a value for x so that the list has a median of 14</p> <p>(b) find a value for x so that the list has a mean of 13</p>
5b	I can interpret pie charts and percentage bar charts	<p>If the whole pie chart represents 60 people, how many does the B section represent?</p> 

MATHS PROGRESSION LADDER - Handling Data (page 2)

5a	I can compare 2 sets of data using the range and one of the median, mode or mean	Fred and Wilma play a game. Fred's scores are 5, 9, 1, 2, 9. Wilma's scores are 5, 6, 6, 7, 5. Compare their results.																				
6c	I can construct scatter graphs	<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="padding: 2px;">Height (m)</td> <td style="padding: 2px;">1.6</td> <td style="padding: 2px;">1.4</td> <td style="padding: 2px;">1.7</td> <td style="padding: 2px;">1.6</td> <td style="padding: 2px;">1.5</td> <td style="padding: 2px;">1.7</td> <td style="padding: 2px;">1.5</td> <td style="padding: 2px;">1.8</td> <td style="padding: 2px;">1.6</td> </tr> <tr> <td style="padding: 2px;">Mass (kg)</td> <td style="padding: 2px;">70</td> <td style="padding: 2px;">65</td> <td style="padding: 2px;">80</td> <td style="padding: 2px;">66</td> <td style="padding: 2px;">57</td> <td style="padding: 2px;">70</td> <td style="padding: 2px;">63</td> <td style="padding: 2px;">78</td> <td style="padding: 2px;">68</td> </tr> </tbody> </table> <p style="text-align: center;">Draw a scatter graph for the paired data in the table.</p>	Height (m)	1.6	1.4	1.7	1.6	1.5	1.7	1.5	1.8	1.6	Mass (kg)	70	65	80	66	57	70	63	78	68
Height (m)	1.6	1.4	1.7	1.6	1.5	1.7	1.5	1.8	1.6													
Mass (kg)	70	65	80	66	57	70	63	78	68													
	I can calculate the mean from a frequency table	<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="padding: 2px;">Score</td> <td style="padding: 2px;">0</td> <td style="padding: 2px;">1</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">Frequency</td> <td style="padding: 2px;">7</td> <td style="padding: 2px;">3</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">2</td> </tr> </tbody> </table> <p style="text-align: center;">Calculate the mean score from the data in the table</p>	Score	0	1	2	3	Frequency	7	3	6	2										
Score	0	1	2	3																		
Frequency	7	3	6	2																		
6b	I can construct and interpret line graphs																					
	I understand discrete and continuous data																					
6a	I can construct and interpret two-way tables	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 2px;"></th> <th style="padding: 2px;">Boys</th> <th style="padding: 2px;">Girls</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Blue eyes</td> <td style="padding: 2px;">9</td> <td style="padding: 2px;">6</td> </tr> <tr> <td style="padding: 2px;">Brown eyes</td> <td style="padding: 2px;">6</td> <td style="padding: 2px;">4</td> </tr> </tbody> </table> <p style="margin-left: 20px;">(a) What percentage of the pupils shown in the table are girls with brown eyes? (b) What fraction of the boys have blue eyes?</p>		Boys	Girls	Blue eyes	9	6	Brown eyes	6	4											
	Boys	Girls																				
Blue eyes	9	6																				
Brown eyes	6	4																				
	I can construct pie charts	Draw a pie chart of the information in the 6c frequency table																				
7c	I can interpret scatter graphs and identify correlation																					
	I can plan data collection considering source, sample size and accuracy																					
7b	I can use frequency tables of grouped data to estimate the median	<table border="1" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="padding: 2px;">Score</td> <td style="padding: 2px;">0-2</td> <td style="padding: 2px;">3-5</td> <td style="padding: 2px;">6-8</td> <td style="padding: 2px;">9-10</td> <td rowspan="2" style="padding: 2px; vertical-align: middle;">Estimate the median score</td> </tr> <tr> <td style="padding: 2px;">Frequency</td> <td style="padding: 2px;">2</td> <td style="padding: 2px;">4</td> <td style="padding: 2px;">5</td> <td style="padding: 2px;">3</td> </tr> </tbody> </table>	Score	0-2	3-5	6-8	9-10	Estimate the median score	Frequency	2	4	5	3									
Score	0-2	3-5	6-8	9-10	Estimate the median score																	
Frequency	2	4	5	3																		
	I can construct and interpret stem and leaf diagrams	Draw a stem and leaf diagram for the masses in the 6c question																				
7a	I can use frequency tables of grouped data to estimate the mean	Estimate the mean score for the table in the 7b question																				
	I can select and use suitable graphical representations for the results of a statistical enquiry																					

MATHS PROGRESSION LADDER - Probability

Level	Pupil capability	Sample questions
3c		
3b		
3a		
4c	I recognise that some events are more likely than others	Compare the likelihood of seeing a red car or a pink car
4b	I can use the vocabulary of probability (certain, likely, unlikely, impossible)	
4a	I can describe the likelihood of an event	Describe the probability of you coming to school tomorrow
5c	I can use the 0 to 1 probability scale	Mark on a probability scale the probabilities of it raining on your school (a) in January (b) on 15 th July
5b	I can find the probability when rolling a dice or tossing a coin	What is the probability of getting a 5 when rolling a fair dice?
	I can find the probability of an event not happening	If the probability of my team winning is $\frac{3}{5}$, what is the probability that they won't win?
5a	I can estimate the probability based on an experiment	Of 20 cars entering the car park, 11 were red, 4 were silver, 3 were blue and 2 were green. Estimate the probability that the next car entering will be silver.
6c	I can record all the outcomes for 2 events	List the possible outcome if I toss a coin and roll a dice.
6b	I can use the sum of probabilities being 1	If the probability of a home win is $\frac{6}{11}$ and the probability of a draw is $\frac{3}{11}$, what is the probability of an away win?
6a	I can estimate the frequency of an event happening	If I roll a fair dice 300 times, estimate the frequency of getting a 2
7c	I understand relative frequency as an estimate of probability	How would you estimate the probability that it will rain on 12 th April?
7b	I can find the probability of 2 independent events occurring	If you take a card from a standard pack and you roll a dice, what is the probability of getting two fours?
7a	I can construct and use a tree diagram for 2 events	The probability that I am late for work is $\frac{2}{9}$. Draw a tree diagram to show the probabilities of my being late or not late on two successive days. Use your diagram to find the probability that I will be late on exactly one of the two days.