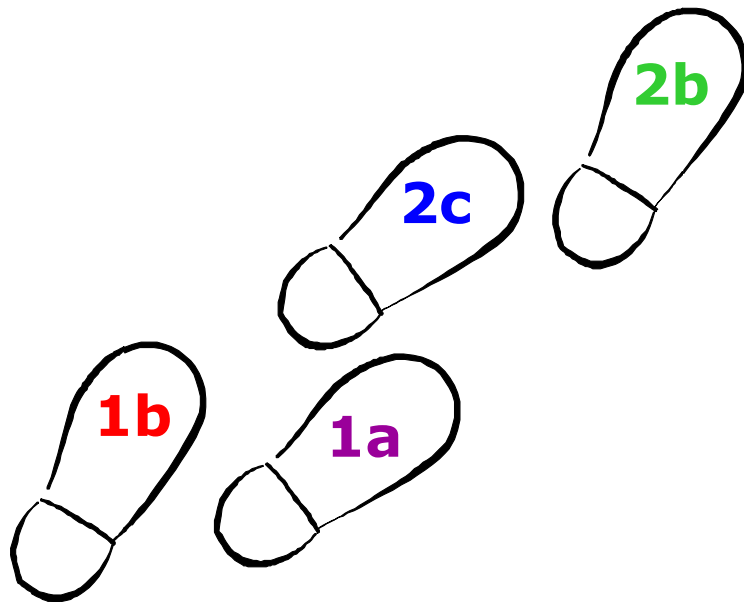
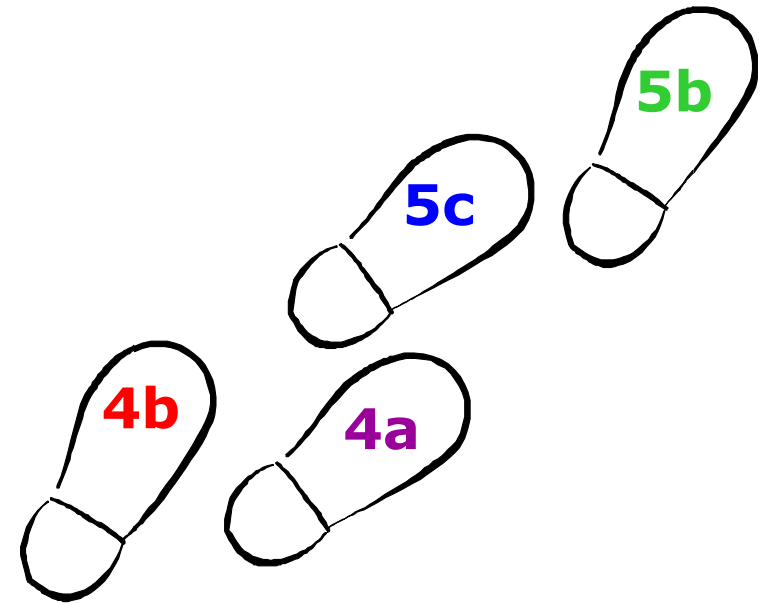


# Progress through the Sublevels in Mathematics



**This assessment tool has been developed by the West Sussex Maths Team. It is based on the National Curriculum statements of attainment and supports teachers in making sublevel judgements for each of the levels 1 to 5.**



## **Progression through the sublevels in Mathematics**

### **Introduction**

This document has been developed by the West Sussex Mathematics Team in response to teachers' requests for support with the process of making judgements about the levels at which pupils are working.

The starting point for the document is the National Curriculum and there is one section for each of the attainment targets. The level descriptors for each level are included and these have been broken down in order to describe the behaviours that one is likely to observe when a pupil is working at each of the sublevels. Within each of the attainment targets the different strands of mathematics are separated and you will clearly be able to make the links between these and the strands within the Framework for Teaching Mathematics.

Across a two-page spread you can track the development of an aspect of mathematics from level 1c to 5a, as appropriate.

### **How to use this document**

This document is designed to support teachers to build a picture of children's achievement as they progress through a year and year-to-year. It is not appropriate to make judgements based on one piece of work as this would only give an insight into a very small part of the mathematics curriculum.

Teachers will need to draw on their whole knowledge of a child or group of children. This could include:

- looking at children's work in maths books;
- reviewing pupils' self assessment;
- talking to children about their mathematical understanding;
- observing pupils while they are involved in independent mathematical enquiry;
- observing pupils during whole-class teaching contexts;
- reviewing marking comments that show exactly what a child knows, understands or can do;
- recorded assessment information such as Key Objective Records, Developmental Record etc;
- talking to others who have knowledge of the pupils' mathematical understanding e.g. teaching assistants, parents and carers, peers.

Using the available information teachers can use the document to establish or confirm their judgements about the levels at which children are working. As they may be working at different levels in different aspects teachers will need to decide a 'best-fit' level. Pupils do not need to have demonstrated achievement of all aspects within a sublevel in order for that to be their best-fit level. In making overall judgements teachers need to take account of the National Curriculum weightings for each attainment target. These are:

#### Key Stage 1

AT1 - 20%, AT2 - 60%, AT3 - 20%

If you require any further support in using this document please contact Bernard Oldfield - General Adviser (mathematics) or talk to any member of the West Sussex Mathematics Team

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#### Key Stage 2

AT1 - 20%, AT2 - 50%, AT3 - 20%, AT4 - 10%

Secretary's Telephone: 01293 435622

## Progression through the sublevels in Mathematics

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	Fractions, decimals and percentages	14 – 15
	Calculation	
	Recall of facts	16 – 17
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## Progression through the sublevels in Mathematics

### AT1: using and applying mathematics

Levels 1 – 3

★ When considering how children solve problems, communicate and reason, users will need to refer to the other attainment targets to determine expectations of the level of tasks.

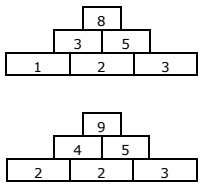
Problem Solving								
Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
Use mathematics as an integral part of classroom activities			Select the mathematics they use in some classroom activities			Try different approaches to problems to overcome difficulties that arise when they are solving problems		
<p><b>1c</b> Use objects to help solve practical problems e.g. laying table for three bears, exploring practically songs such as 5 speckled frogs, sorting buttons to given criteria</p>	<p><b>1b</b> With support, make connections and use prior knowledge, to solve similar practical problems in a new context e.g. packing a picnic for bears, finding total cows in two fields</p> <p>Find more than one possibility</p>	<p><b>1a</b> Independently make simple connections and use prior knowledge to solve practical problems e.g. dressing the three little pigs, finding out how many cars can be made with 8 wheels, choosing criteria to sort buttons</p> <p>Solve practical problems involving adding, subtracting, doubling or halving in the contexts of numbers, measures or money</p> <p>Begin to find lots of possibilities</p>	<p><b>2c</b> With support, identify the mathematical knowledge needed to solve practical problems e.g. use coins to buy a chocolate bar for 10p and a chew for 5p</p> <p>Choose from a limited range of suggested resources</p> <p>Find lots of possibilities</p>	<p><b>2b</b> Begin to independently transfer mathematical knowledge and use it to solve problems e.g. find the difference between two ribbons that are 24cm and 35cm</p> <p>Choose from resources in room and decide how to use them</p> <p>Solve problems involving adding, subtracting, multiplication, division in the contexts of numbers, measures or money</p>	<p><b>2a</b> Independently use prior mathematical knowledge to solve problems e.g. you have £2, buy two items from class shop to spend as much of it as you can</p> <p>Identify required resources that are not immediately available</p> <p>Begin to follow a system for finding the possibilities e.g. start with smallest number or blue shirts</p>	<p><b>3c</b> With support identify different approaches that can be used to solve a problem e.g. find ways to make 35p with silver coins, draw possibilities systematically, use coins or calculate number of possibilities</p> <p>Solve 1 step problems involving numbers, money or measures including time Begin to solve two step problems Choose and carry out appropriate calculations</p> <p>Make lists of possibilities using a given system</p>	<p><b>3b</b> Begin to try a variety of approaches to overcome difficulties when solving problems e.g. covering an area with rectangular tiles</p> <p>Solve one and two step problems Choose and carry out calculations</p> <p>Check for repeats when finding all possibilities</p>	<p><b>3a</b> Persevere by using different approaches to overcome difficulties when solving problems e.g. planning choices from a pizza menu, keeping to a given budget</p> <p>Break up a complicated task into smaller steps to make a start</p> <p>Solve one and two step problems involving whole numbers and decimals and all four operations Choose and use appropriate calculation strategies including calculator use</p> <p>Make lists of possibilities working systematically</p>

## Progression through the sublevels in Mathematics

### AT1: using and applying mathematics

Levels 4 – 5

★ When considering how children solve problems, communicate and reason, users will need to refer to the other attainment targets to determine expectations of the level of tasks.

Problem Solving					
4c	Level 4		5c	Level 5	
	4b	4a		5b	5a
Are developing their own strategies for solving problems which they use within mathematics and when applying it in other contexts			To carry through tasks and solve problems, identify and obtain necessary information to solve problems and check their results considering whether these are sensible		
<p><b>4c</b> Use different approaches to successfully overcome difficulties when solving problems e.g. navigate a maze finding a route that totals 100</p> <p>Begin to recognise how a method can be applied to solve similar problems</p> <p>When prompted can simplify a problem by trying simpler cases</p> <p>When prompted can change one piece of information and notice the effect this has e.g. changing one brick in an addition pyramid</p> 	<p><b>4b</b> In new contexts apply their own strategies to solve problems e.g. What is the maximum number of months with 5 Sundays in a year?</p> <p>Sometimes has more than one way of finding a solution</p> <p>Recognise how a method can be applied to solve similar problems</p> <p>Can simplify a problem by trying simpler cases</p> <p>When having difficulty with a problem can stop, think about it and try a different approach</p> <p>Can change one piece of information and notice the effect this has</p> <p>Solve multi-step problems and problems involving fractions, decimals and percentages</p> <p>Can decide when all possibilities have been found</p>	<p><b>4a</b> Begin to identify and obtain necessary information to carry through tasks and solve mathematical problems</p> <p>Use mental estimates of the answers to check results</p> <p>Compare different methods and solutions and decide which is more efficient</p> <p>Independently simplify a problem by trying simpler cases</p> <p>Independently decide to change one piece of information and notice the effect this has</p>	<p><b>5c</b> Break down more complex problems, with support, into simpler steps before attempting a solution</p>	<p><b>5b</b> To carry through tasks and solve problems, identify and obtain necessary information to solve problems and check their results considering whether these are sensible</p> <p>Independently, solve problems by breaking down complex calculations into simpler steps</p> <p>Choose and use operations and calculation strategies appropriate to the numbers and context</p>	<p><b>5a</b> With increasing independence, persevere with longer and more complex problems, using a range of strategies</p>

## Progression through the sublevels in Mathematics

### AT1: using and applying mathematics

Levels 1 – 3

★ When considering how children solve problems, communicate and reason, users will need to refer to the other attainment targets to determine expectations of the level of tasks.

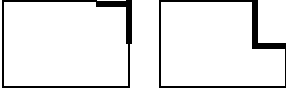
Communication								
Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
Represent their work with objects or pictures Discuss their work			Represent work using symbols and simple diagrams Discuss their work using mathematical language explain why an answer is correct			Organise their work and check results Discuss their mathematical work and explain their thinking, use and interpret mathematical symbols and diagrams		
<p><b>1c</b> With support use objects to show how they solved a problem and say how they help</p> <p>Respond to questions about their work using some mathematical words</p>	<p><b>1b</b> With some support draw pictures to show outcomes</p> <p>With some prompts explain what has been done using some mathematical words</p>	<p><b>1a</b> Use pictures to help explain what has been done</p> <p>Explain what has been done by talking about it using mathematical language</p>	<p><b>2c</b> Where appropriate, begin to use symbols to represent work</p> <p>Explain what has been done orally using a wider range of mathematical vocabulary</p>	<p><b>2b</b> With support use simple diagrams to represent work</p> <p>When prompted, can restate a problem in their own words</p> <p>Explain what has been done orally and using jottings to show the steps taken and explain why an answer is correct</p>	<p><b>2a</b> Begin to use and interpret diagrams and symbols more independently</p> <p>Without prompting, put a problem into their own words</p> <p>Explain what has been done orally, and in writing where appropriate, explaining why an answer is or is not correct</p> <p>Begin to check their own and other's work for accuracy</p>	<p><b>3c</b> With some support organise work so that it is possible to follow what has been done</p> <p>Begin to use words to represent possibilities rather than drawings</p> <p>Use and interpret diagrams and some mathematical symbols</p> <p>Begin to ask questions to clarify a problem</p> <p>Explain what has been done orally and, where appropriate, in writing, using language such as "It must be ... because ..."</p> <p>Check their own and other's work for accuracy</p>	<p><b>3b</b> Organise work so that it is possible to follow what has been done and explain presentation used</p> <p>Use words and then symbols to represent possibilities</p> <p>With support interpret mathematical symbols and diagrams</p> <p>Ask appropriate questions to clarify a problem</p> <p>Explain thinking behind choices that have been made, using language such as "It can't be ... because ..."</p> <p>Use a variety of methods to check their own and other's work</p>	<p><b>3a</b> Organise work effectively so that it is clear for all readers to follow what has been done</p> <p>Begin to interpret mathematical symbols and diagrams independently</p> <p>Independently seek to clarify problems</p> <p>Respond to probing questions giving reasons why choices have been made e.g. "Why do you think that?"</p> <p>Without any prompts use a variety of methods to check</p>

## Progression through the sublevels in Mathematics

### AT1: using and applying mathematics

Levels 4 – 5

★ *When considering how children solve problems, communicate and reason, users will need to refer to the other attainment targets to determine expectations of the level of tasks.*

Communication					
4c	Level 4 4b		4a	Level 5 5b	
4c			5c		
4b			5a		
Present information and results in a clear and organised way			Show understanding of situations by describing them mathematically using symbols, words and diagrams		
<p><b>4c</b> Interpret mathematical symbols and diagrams independently</p> <p>Usually present information and results in a clear and organised way</p>	<p><b>4b</b> Always present information and results in a clear and organised way using lists and tables as appropriate</p>	<p><b>4a</b> Compare ways of presenting something and say which is better and why</p>	<p><b>5c</b> Make choices when presenting something and justify why method is effective</p> <p>Begin to tabulate systematically</p> <p>Refine ways of recording using notation, diagrams and symbols correctly</p>	<p><b>5b</b> Show understanding of situations by describing them mathematically using symbols, words and diagrams e.g. Use a diagram to show that the perimeter of a rectangle is unchanged when a square corner is removed</p>  <p>Tabulate findings systematically</p>	<p><b>5a</b> Present and interpret solutions in the context of problems, being precise in the use of language, notation and diagrams</p>
	<p>Begin to ask probing questions of their own</p> <p>Compare different methods and describe their features</p>	<p>Compare different methods and describe the merits or limitations of their features</p>			

## Progression through the sublevels in Mathematics

### AT1: using and applying mathematics

Levels 1 – 3

★ *When considering how children solve problems, communicate and reason, users will need to refer to the other attainment targets to determine expectations of the level of tasks.*

Reasoning								
Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
Recognise and use a simple pattern or relationship						Show that they understand a general statement by finding particular examples that match it		
<b>1c</b> Recognise when objects or shapes form a simple pattern and recreate it	<b>1b</b> Be able to identify a simple pattern of objects or numbers and continue it	<b>1a</b> Create a pattern of objects or numbers and begin to explain it Predict what comes next in a simple sequence	<b>2c</b> Use patterns in familiar contexts Make predictions and test these with examples e.g. "The next one will have one more block"	<b>2b</b> Use patterns in new contexts e.g. "The next one will have 9 matchsticks because it is the next odd number"	<b>2a</b> Respond to questions such as 'What if...?' or 'What could you try next?'	<b>3c</b> Find examples that satisfy simple general statements e.g. "Every multiple of 4 is a multiple of 2"  Begin to make some simple general statements Suggest extensions by asking 'What if...?' or 'What could I try next?' type questions	<b>3b</b> Show understanding of a general statement by finding examples that match it e.g. "If you add two odd numbers you get an even number"	<b>3a</b> Show understanding of a general statements that are true by finding examples that match and statements that are false by giving counter examples

## Progression through the sublevels in Mathematics

### AT1: using and applying mathematics

Levels 4 – 5

★ *When considering how children solve problems, communicate and reason, users will need to refer to the other attainment targets to determine expectations of the level of tasks.*

Reasoning							
4c	Level 4 4b		4a	5c	Level 5 5b		5a
Search for a solution by trying out ideas of their own				Draw simple conclusions of their own and give an explanation of their reasoning			
<p><b>4c</b> Begin to recognise the patterns in mathematical problems and actively search for them</p> <p>Can apply a rule to predict whether a number will be in a sequence or not</p> <p>Begin to use mathematical language to create a general statement orally</p> <p>Can a check a solution meets given criteria</p>	<p><b>4b</b> Search for a solution by trying out ideas of their own</p> <p>Develop the language of reasoning e.g. "If I do this ... then it will have ... effect"</p> <p>Can investigate a general statement to determine whether it is always, sometimes or never true</p> <p>Can use mathematical language to create a general statement orally</p>	<p><b>4a</b> Can look at what has been found and make a general statement about it e.g. "Taller people tend to have bigger feet, but boys have bigger feet on average than girls"</p> <p>Begin to use mathematical language and notation to create a general statement in writing</p>	<p><b>5c</b> Begin to draw simple conclusions of their own and give an explanation of their reasoning</p> <p>Can use mathematical language and notation to create a general statement in writing</p>	<p><b>5b</b> Try to search for patterns or reasons why things work out as they do e.g. "How can you get from one square number to the next?" "Is there a pattern?"</p> <p>Draw simple conclusions of their own and give an explanation of their reasoning</p>	<p><b>5a</b> Begin to justify simple mathematical statements by drawing upon previous knowledge</p>		

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 1 - 3**

<b>Numbers and the number system – Counting, ordering and place value</b>								
<b>Level 1</b>			<b>Level 2</b>			<b>Level 3</b>		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
Count when solving problems involving up to 10 objects Order numbers when solving problems involving up to 10 objects Can read and write the numbers to 10			Count sets of objects reliably Begin to understand the place value of each digit in a number and use this to order numbers up to 100			Show understanding of place value in numbers up to 1000 and use this to make approximations		
<p><b>1c</b> Count reliably up to 10 objects, that can or cannot be moved, or up to 10 actions.</p> <p>Order visual images that represent numbers, begin to order numerals and respond to 'more' and 'less'</p> <p>Read numbers to 10 and attempts to write numbers to 10</p>	<p><b>1b</b> Extend to counting objects or actions beyond 10 and using ordinal numbers</p> <p>Order numbers confidently to at least 10 understand and begin to use the vocabulary involved</p> <p>Read numbers to 10 confidently and write numbers (possibly with some reversals)</p>	<p><b>1a</b> Count reliably to at least 20 When solving problems pupils count reliably objects that can or cannot be moved</p> <p>When solving problems pupils compare and order numbers to about 20 and use appropriate vocabulary</p> <p>Read numbers to 20 confidently and begin to write 2-digit numbers</p> <p>Begin to partition numbers into 10s and 1s using apparatus that models place value in a visual or physical way to support understanding</p>	<p><b>2c</b> Count at least 30 objects accurately say number names to 100</p> <p>Begin to compare and order 2 digit numbers and position them on a number line or hundred square</p> <p>Read and write most 2 digit numbers (may sometimes confuse tens and ones digits)</p> <p>Partition numbers into 10s and 1s using apparatus to support understanding and beginning to work with place value cards</p>	<p><b>2b</b> Extend counting to at least 50 and group objects, in 1s, 2s, 10s or 5s, to make counting more efficient</p> <p>Compare and order numbers to at least 100 and position them on a number line or hundred square, explain choices made</p> <p>Confidently read all 2 digit numbers and write most of these</p> <p>Know what each digit in a 2 digit number represents, including 0 as a place holder, and partition 2 digit numbers into 10s and 1s</p>	<p><b>2a</b> Confidently count to at least 100 using a range of grouping strategies that are appropriate to problem or context</p> <p>Begin to compare and order numbers beyond 100 and confidently explain understanding.</p> <p>Begin to read and write 3 digit numbers</p> <p>Begin to partition 3 digit numbers and round 2 digit numbers to the nearest 10</p>	<p><b>3c</b></p> <p>Begin to compare and order all 3 digit numbers and position them on a number line</p> <p>Read and write most 3 digit numbers</p> <p>Know what each digit in a 3 digit number represents, (occasional problems with 0 as a place holder), and partition 3 digit numbers into 100s, 10s and 1s</p>	<p><b>3b</b></p> <p>Compare and order numbers to at least 1000 and position them on a number line</p> <p>Confidently read all 3 digit numbers and write most of these</p> <p>Know what each digit in a 3 digit number represents, including 0 as a place holder, begin to use rounding to make approximations that support calculation</p>	<p><b>3a</b></p> <p>Compare and order numbers beyond 1000.</p> <p>Begin to read and write numbers beyond 1000</p> <p>Begin to know what each digit represents in numbers greater than 1000, including 0 as a place holder, use rounding to make approximations that support calculation</p>

**Progression through the sublevels in Mathematics**

**AT2: number and algebra**

**Levels 4 – 5**

<b>Numbers and the number system - Counting, ordering and place value</b>					
<b>Level 4</b>			<b>Level 5</b>		
<b>4c</b>	<b>4b</b>	<b>4a</b>	<b>5c</b>	<b>5b</b>	<b>5a</b>
Use understanding of place value to multiply and divide whole numbers by 10 or 100			Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 and 1000		
<p><b>4c</b></p> <p>Begin to compare and order all whole numbers</p> <p>Begin to read and write all whole numbers</p> <p>Use understanding of place value to multiply and divide whole numbers by 10</p>	<p><b>4b</b></p> <p>Confidently compare and order all whole numbers</p> <p>Confidently read and write all whole numbers</p> <p>Use understanding of place value to multiply and divide whole numbers by 10 or 100</p>	<p><b>4a</b></p> <p>Use understanding of place value to multiply and divide whole numbers and decimals by 10 or 100</p>	<p><b>5c</b></p> <p>Use understanding of place value to multiply and divide whole numbers by 10, 100 and 1000</p>	<p><b>5b</b></p> <p>Use understanding of place value to multiply and divide whole numbers and decimals by 10, 100 and 1000</p>	<p><b>5a</b></p> <p>Use understanding of place value to multiply and divide whole numbers and decimals by any power of 10</p>

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 1 – 3**

<b>Numbers and the number system – Properties of numbers and sequences</b>								
<b>Level 1</b>			<b>Level 2</b>			<b>Level 3</b>		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
			Recognise sequences of numbers, including odd and even numbers			Recognise negative numbers, in contexts such as temperature		
<b>1c</b> Copy and continue patterns with two or three elements	<b>1b</b> Join in when counting in 2's and 10's Create patterns with more than two elements	<b>1a</b> Join in when counting in 2's, 5's and 10's and begin to do so independently and discuss patterns	<b>2c</b> When continuing a sequence (counting in 2's, 5's or 10's from 0) rely on pattern provided, recognise odd and even numbers to 10	<b>2b</b> Recognise and continue sequences (counting in 2's, 5's or 10's from range of numbers) using knowledge of patterns, counting forwards or backwards Recognise 2 digit odd and even numbers	<b>2a</b> Recognise and extend sequences (counting in 3's or 4's from any 2 digit number), continue past 100 when counting forwards (possibly hindered by 100 boundary) Recognise all odd and even numbers within counting range	<b>3c</b> Confidently recognise and extend sequences (in 2's, 3's, 4's, 5's or 10's from any 2 or 3 digit number) going beyond 100 when counting forwards and beginning to cross the 100 boundary when counting backwards  Begin to be aware of negative numbers	<b>3b</b> Recognise and continue sequences formed by counting from any number in whole number steps accurately crossing the 100's boundaries and extending beyond 0 when counting back  Recognise negative numbers in contexts such as temperature	<b>3a</b> Confidently work with sequences formed by counting from any number in whole number steps (and some fractions), accurately beginning to cross the 1000's boundary  Recognise negative numbers and begin to position them on a number line

<b>Numbers and the number system - Properties of numbers and sequences</b>					
Level 4		Level 5			
4c	4b	4a	5c	5b	5a
Recognise and describe number patterns, and relationships including multiple, factor and square			Order, add and subtract negative numbers in context		
<p><b>4c</b> Confidently work with sequences formed by counting from any number in constant steps including some fractions</p> <p>Begin to recognise and find multiples, factors and square numbers</p> <p>Recognise negative numbers and position them on a number line</p>	<p><b>4b</b> Recognise and find multiples, factors and square numbers</p> <p>Calculate temperature rise and fall using negative numbers that do not bridge zero</p>	<p><b>4a</b> Begin to recognise and explore relationships in more complex patterns such as triangular numbers</p> <p>Calculate temperature rise and fall using negative numbers that bridge zero</p>	<p><b>5c</b> Recognise and explore relationships in more complex patterns such as triangular numbers</p> <p>Order a set of positive and negative numbers</p> <p>Add or subtract a positive number to or from negative number in context including crossing zero</p>	<p><b>5b</b></p> <p>Add and subtract negative numbers in context</p>	<p><b>5a</b></p> <p>Begin to add and subtract positive and negative numbers out of context</p>

# Progression through the sublevels in Mathematics

## AT2: number and algebra

## Levels 1 – 3

Numbers and the number system – Fractions, decimals and percentages								
Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
						Use decimal notation in contexts such as money Use simple fractions that are several parts of a whole and recognise when two simple fractions are equivalent		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
		Begin to recognise 1/2 in practical contexts	Recognise 1/2 and begin to recognise 1/4 in practical contexts	Find 1/2 and 1/4 of shapes and small numbers of objects	Recognise that two halves or 4 quarters make 1 whole and that two quarters and 1 half are equivalent Begin to recognise other unit fractions	Use £.p notation (mistakes may still be made with examples such as £3.06)  Recognise unit fractions and use them to find fractions of shapes and numbers, begin to recognise fractions that are several parts of 1 whole	Use £.p notation accurately and begin to use decimal notation in measures contexts  Position fractions on a number line, begin to recognise simple fractions that are equivalent to 1 half, 1 quarter or 3 quarters and explain understanding	Use and begin to understand decimals in a measures context Begin to order decimals with 1 decimal place  Recognise fractions that are several parts of 1 whole and mixed numbers, use simple equivalent fractions involving 1/2s, 1/3s, 1/4s, 1/5s, 1/6s, 1/8s and 1/10s and pairs of fractions that make 1

<b>Numbers and the number system – Fractions, decimals and percentages</b>					
<b>Level 4</b>			<b>Level 5</b>		
<b>4c</b>	<b>4b</b>	<b>4a</b>	<b>5c</b>	<b>5b</b>	<b>5a</b>
Recognise approximate proportions of a whole and use simple fractions and percentages to describe these Order decimals to three places			Can reduce a fraction to its simplest form and solve simple problems involving ratio and direct proportion. Calculate fractional or percentage parts of quantities and measurements, using a calculator where appropriate		
<p><b>4c</b> Order a set of decimal numbers with two decimal places</p> <p>Be able to recognise approximate proportions of an object, group of objects or measurement, and describe using a range of simple fractions (e.g. <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>) or their decimal equivalents</p> <p>Confidently recognise and use fractions that are several parts of 1 whole and mixed numbers, use equivalent fractions in problem solving contexts</p>	<p><b>4b</b> Order a set of decimal numbers with three decimal places and mixed sets of numbers with 1 and 2 decimal places</p> <p>Be able to recognise approximate proportions of an object, group of objects or measurement, and describe using a range of fractions, including simple non-unitary examples (eg <math>\frac{3}{4}</math>) or their equivalent decimals and percentages</p> <p>Independently identify and use equivalent fractions including those involving hundredths</p>	<p><b>4a</b> Order a mixed set of decimal numbers with up to three decimal places</p> <p>Be able to recognise approximate proportions of an object, group of objects or measurement and describe using non-unitary fractions and their equivalent percentages, and be able to use a calculator to convert fractions to their decimal equivalents. Be able to calculate fractional parts or percentages of quantities using unitary fractions</p> <p>Begin to use the language of ratio and direct proportion in context</p>	<p><b>5c</b></p> <p>Begin to recognise common factors in the context of fractions</p> <p>Begin to calculate simple fractional parts or percentages of quantities and measurements, using informal methods</p> <p>Solve simple problems involving ratio and direct proportion using informal methods</p>	<p><b>5b</b></p> <p>Be able to calculate simple fractional parts or percentages of quantities and measurements, using informal methods</p> <p>Be able to reduce a fraction to its simplest form by cancelling common factors</p> <p>Solve simple problems involving ratio and direct proportion using scaling methods</p>	<p><b>5a</b></p> <p>Be able to calculate simple fractional parts or percentages of quantities and measurements, using a calculator where appropriate</p> <p>Solve simple problems involving ratio and direct proportion using the unitary method where appropriate</p>

<b>Calculation – Recall of facts</b>								
<b>Level 1</b>			<b>Level 2</b>			<b>Level 3</b>		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
			Use mental recall of addition and subtraction facts to 10			Use mental recall of addition and subtraction facts to 20 in solving problems involving larger numbers Use mental recall of the 2, 3, 4, 5 and 10 multiplication tables and derive the associated division facts		
<b>1c</b>	<b>1b</b>	<p><b>1a</b> Begin to recall all pairs of numbers with a total of 10</p> <p>Begin to know doubles to 5 x 2</p>	<p><b>2c</b> Recall rapidly all pairs of numbers with a total of 10</p> <p>Know doubles to 5 x 2 and begin to know doubles to 10 x 2 Begin to know facts for 10 times multiplication table</p>	<p><b>2b</b> Recall rapidly all addition and subtraction facts for each number to at least 10</p> <p>Know doubles to 10 x 2 and corresponding halves Know facts for 10 times multiplication table</p>	<p><b>2a</b> Confidently use mental recall of addition and subtraction facts to 10 and then 20</p> <p>Know all the addition and subtraction facts for multiples of 10 to 100 Know by heart the 2, 5, and 10 multiplication tables</p>	<p><b>3c</b> Confidently use mental recall of addition and subtraction facts to 20 and apply to problems with small numbers</p> <p>Know all the addition and subtraction facts for multiples 5 to 100 Use mental recall of the 2, 5, and 10 multiplication tables and begin to know the 3's and 4's Begin to derive the associated division facts</p>	<p><b>3b</b> Confidently use mental recall of addition and subtraction facts to 20 and apply to problems with larger numbers</p> <p>Derive rapidly all number pairs that total 100 Use mental recall of the 2, 3, 4, 5, and 10 multiplication tables and begin to use these to derive the 6, and 8 multiplication tables. Derive the associated division facts</p>	<p><b>3a</b></p> <p>Use knowledge of number facts to 100 to work three digit numbers Use mental recall of the 2, 3, 4, 5 and 10 multiplication tables and derive the associated division facts Begin to know 6 and 8 tables</p>

<b>Calculation – Recall of facts</b>					
<b>4c</b>	<b>Level 4</b>		<b>5c</b>	<b>Level 5</b>	
	<b>4b</b>	<b>4a</b>		<b>5b</b>	<b>5a</b>
Recall of multiplication facts up to 10 x 10 and quick derivation of corresponding division facts					
<p><b>4c</b></p> <p>Use knowledge of number facts to find complements for 1 using 1 place decimal numbers</p> <p>Use mental recall of the 2, 3, 4, 5, 6, 8 and 10 multiplication tables and derive the associated division facts. Begin to know 7 and 9 tables</p> <p>Use doubling and halving starting from known facts e.g. double and halve two-digit numbers by doubling/halving the tens first or multiply by 20 by x10 and doubling</p>	<p><b>4b</b></p> <p>Use knowledge of number facts to find complements for 1 using 2 place decimal numbers and complements for 10 using 1 place decimal numbers</p> <p>Recall multiplication facts up to 10 x 10 and quickly derive corresponding division facts</p> <p>Use doubling and halving starting from known facts e.g. multiply by 25 by x100 and ÷4</p>	<p><b>4a</b></p> <p>Use recall of multiplication facts up to 10 x 10 and corresponding division facts to derive other related facts</p> <p>Use doubling and halving starting from known facts e.g. find x16 table facts by doubling x8 table facts</p>	<p><b>5c</b></p> <p>Rapidly recall square numbers to at least 25 x 25 to support estimation and calculation</p> <p>Use related facts of doubling or halving e.g. find the x24 table by doubling the x6 table twice</p>	<p><b>5b</b></p> <p>Use combinations of known facts and factors to work out a range of other table facts e.g. x32</p>	<p><b>5a</b></p> <p>Consolidate and extend mental methods of calculation include decimals, fractions and percentages</p>

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 1 – 3**

<b>Calculation – Addition and subtraction</b>								
<b>Level 1</b>			<b>Level 2</b>			<b>Level 3</b>		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
Add and subtract numbers when solving problems involving up to 10 objects			Use the knowledge that subtraction is the inverse of addition Choose the appropriate operation to solve addition and subtraction problems Use mental calculation strategies to solve number problems involving money and measures			Add and subtract numbers with two digits mentally Add and subtract numbers with three digits using written methods		
<p><b>1c</b> In practical contexts begin to understand the operation of addition as combining two groups and subtraction as taking away Respond to the vocabulary</p> <p>Find one more or one less than a given set of objects up to 10</p>	<p><b>1b</b> Understand addition as combining two groups and, with support, as counting on Understand subtraction as taking away and, with support, as counting back Use bead strings, number lines or other images to support understanding Begin to use vocabulary</p> <p>Compare two sets (up to 10) to find a numerical difference Begin to add or subtract more than one from a given number to 10</p>	<p><b>1a</b> When solving problems understand addition as combining 2 groups and as counting on using a number line When solving problems understand subtraction as counting back or, with support as finding difference Understand and use vocabulary independently</p> <p>Begin to select the appropriate apparatus to support calculation with numbers to 20</p>	<p><b>2c</b> Understand the concepts of addition and subtraction including using number lines and hundred squares Begin to understand the relationship between addition and subtraction using structured support Begin to understand the commutative law of addition</p> <p>Count on and back in ones as a core strategy within number problems up to about 30 including in practical contexts for money and measurement with support and structure</p>	<p><b>2b</b> Recognise that subtraction is the inverse of addition when calculating Begin to choose the appropriate operation in addition and subtraction problems Understand the commutative law of addition</p> <p>Begin to use strategies other than counting in ones, including in contexts such as money and measures In two-digit number problems that don't cross the 10's or 100 boundaries, begin to choose strategy, using number lines, 100 squares and other apparatus where appropriate</p>	<p><b>2a</b> Use knowledge that subtraction is the inverse of addition when calculating Choose the appropriate operation to solve addition and subtraction problems</p> <p>In addition and subtraction, calculate with two-digit numbers that cross the tens or hundred boundaries When solving problems, including those involving money and measures, begin to select from a growing repertoire of mental strategies (jotting where appropriate)</p>	<p><b>3c</b></p> <p>Select the most appropriate addition and subtraction strategy to calculate with 2- and 3-digit numbers that cross the tens or hundred boundaries Begin to use informal written methods for addition and subtraction and expanded methods to add</p>	<p><b>3b</b></p> <p>Add and subtract all two-digit numbers mentally Use informal and expanded written methods efficiently when solving addition and subtraction number problems Use a compact written method for addition</p>	<p><b>3a</b></p> <p>Choose an efficient mental strategy to work with three digit numbers if appropriate Use informal, expanded or compact written methods when solving addition and subtraction number problems involving all three-digit numbers</p>

# Progression through the sublevels in Mathematics

## AT2: number and algebra

Levels 4 – 5

<b>Calculation – Addition and subtraction</b>					
<b>Level 4</b>			<b>Level 5</b>		
<b>4c</b>	<b>4b</b>	<b>4a</b>	<b>5c</b>	<b>5b</b>	<b>5a</b>
Use a range of mental methods of computation with the four operations in solving problems Use efficient written methods of addition and subtraction, add and subtract decimals to two places			Use all four operations with decimals to two places		
<p><b>4c</b></p> <p>Use mental methods as a first resort e.g. when adding a two-digit and a three-digit number</p> <p>Refine informal and expanded methods or use compact written methods when solving addition and subtraction problems involving two or more three and four-digit integers and decimal fractions to one decimal place</p>	<p><b>4b</b></p> <p>Use mental methods as a first resort e.g. when adding larger numbers or 1 place decimal numbers</p> <p>Use refined or compact written methods when solving addition and subtraction problems involving two or more integers with four or more digits and decimal fractions to two decimal places</p>	<p><b>4a</b></p> <p>Use mental methods as a first resort e.g. when adding two place decimal numbers</p> <p>Confidently use a compact method for addition and subtraction for any calculation where a written method is appropriate</p>	<p><b>5c</b></p> <p>Use efficient written methods to solve number problems as appropriate</p>	<p><b>5b</b></p> <p>Be completely confident to choose the most efficient method to solve number problems</p>	<p><b>5a</b></p>

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 1 – 3**

<b>Calculation – Multiplication and division</b>								
<b>Level 1</b>			<b>Level 2</b>			<b>Level 3</b>		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
						Solve whole-number problems involving multiplication or division, including those that give rise to remainders		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b> In practical contexts understand multiplication as repeated addition and division as grouping and sharing	<b>2b</b> Understand multiplication as repeated addition and division as grouping and sharing, including shown as jumps on the number line	<b>2a</b> Understand multiplication and division as an array and begin to understand commutative law in the context of multiplication  Begin to solve whole-number problems involving multiplication, or division without remainders using known, or quickly derived multiples of 2, 5 and 10	<b>3c</b> Understand multiplication as scaling  Understand the commutative law of multiplication  Begin to use informal methods (e.g. number lines) to solve number problems involving multiplication or division using familiar multiplication facts ( $U \times \div U$ and $TU \times \div U$ )  Begin to find remainders in simple contexts	<b>3b</b>  Use informal or expanded methods (e.g. grid method or simple chunking) to solve number problems involving multiplication or division, including those that give rise to remainders using ( $TU \times \div U$ )	<b>3a</b>  Use informal, expanded or compact written methods when solving multiplication and division problems with two and three-digit numbers, including those with remainders using $TU \times \div U$ and begin to solve $HTU \times \div U$

<b>Calculation – Multiplication and division</b>					
<b>4c</b>	<b>Level 4</b>		<b>5c</b>	<b>Level 5</b>	
	<b>4b</b>	<b>4a</b>		<b>5b</b>	<b>5a</b>
Use a range of mental methods of computation with the four operations in solving problems Use efficient written methods of short multiplication and division			Understand and use appropriate non-calculator methods to solve problems that involve multiplying and dividing any three-digit number by any two-digit number Use all four operations with decimals to two places Use their understanding of place value to multiply and divide whole numbers and decimals by 10, 100 and 1000		
<p><b>4c</b> Begin to understand the associative and distributive laws as they apply to multiplication Begin to use brackets</p> <p>Solve multiplication problems, TU x U and HTU x U and begin to multiply TU by TU</p> <p>Solve division problems, including those with integer remainders using <math>TU \div U</math> and <math>HTU \div U</math> and be able to explain methods used and begin to know what to do with the remainder in a word problem</p>	<p><b>4b</b> Understand the associative and distributive laws as they apply to multiplication Use brackets</p> <p>Solve multiplication problems, TU x U and HTU x U and TU by TU</p> <p>Confidently solve division problems, including those with integer remainders using <math>TU \div U</math> and <math>HTU \div U</math> and be able to explain methods used and know what to do with the remainder in a word problem</p>	<p><b>4a</b></p> <p>Solve multiplication problems, ThHTU x U and begin to solve multiplication of numbers involving one decimal place</p> <p>Begin to solve division problems with mixed number answers, <math>TU \div TU</math> with whole number answers</p>	<p><b>5c</b></p> <p>Solve multiplication problems using ThHTU x U and begin to solve HTU x TU, and solve problems involving decimals to one decimal place and begin to extend to decimals with up to two decimal places</p> <p>Solve division problems with mixed number answers, <math>TU \div TU</math> with whole number answers and begin to divide decimal numbers by units</p>	<p><b>5b</b></p> <p>Solve multiplication problems using HTU x TU and decimals with up to two decimal places</p> <p>Solve division problems including those with mixed number answers and <math>HTU \div TU</math> with whole number answers and divide decimal numbers by units</p>	<p><b>5a</b></p> <p>Understand and use appropriate methods to solve problems that involve multiplying and dividing any three-digit number by any two-digit number</p> <p>Solve division problems including those with mixed number answers and divide integers by decimals</p>

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 1 - 3**

<b>Calculation – Checking</b>								
<b>Level 1</b>			<b>Level 2</b>			<b>Level 3</b>		
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>

## Progression through the sublevels in Mathematics

### AT2: number and algebra

Levels 4 - 5

Calculation – Checking					
Level 4			Level 5		
4c	4b	4a	5c	5b	5a
Check the reasonableness of their results by reference to their knowledge of the context or to the size of the numbers			Check their solutions by applying inverse operations or estimating using approximations		
<p><b>4c</b> Check with the inverse Check with an equivalent calculation Estimate by approximating (round to the nearest 10 or 100) and then check the result</p>	<p><b>4b</b> Check with the inverse or equivalent calculation including using a calculator Estimate by approximating (round to the nearest 10, 100 or 1000) and then check the result</p>	<p><b>4a</b> Check with the inverse or equivalent calculation including using a calculator and including decimals</p>	<p><b>5c</b> Check results using tests of divisibility</p>	<p><b>5b</b> Using the context of the problem check whether the answer is sensible Check by considering whether it is of the right order of magnitude Use rounding to approximate or judge whether the answer is in the right order of magnitude</p>	<p><b>5a</b> Using the context of the problem check whether the answer is sensible Check by considering whether it is of the right order of magnitude and by working the problem backwards</p>

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 1 - 3**

<b>Algebra</b>								
<b>1c</b>	<b>Level 1</b>		<b>2c</b>	<b>Level 2</b>		<b>3c</b>	<b>Level 3</b>	
	<b>1b</b>	<b>1a</b>		<b>2b</b>	<b>2a</b>		<b>3b</b>	<b>3a</b>
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b> Confidently tackle and solve problems where an empty box or other symbol represents a number	<b>3a</b>

<b>Coordinates</b>								
<b>1c</b>	<b>Level 1</b>		<b>2c</b>	<b>Level 2</b>		<b>3c</b>	<b>Level 3</b>	
	<b>1b</b>	<b>1a</b>		<b>2b</b>	<b>2a</b>		<b>3b</b>	<b>3a</b>
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b> Describe directions on a squared grid (e.g. three squares to the right and two squares up.)	<b>2a</b> Begin to describe and find the position of a square on a grid of squares where the rows and columns are labelled	<b>3c</b> Describe and find the position of a square on a grid of squares where the rows and columns are labelled	<b>3b</b> Begin to read and place coordinates in the first quadrant	<b>3a</b> Read and place coordinates in the first quadrant

**Progression through the sublevels in Mathematics**  
**AT2: number and algebra**

**Levels 4 - 5**

<b>Algebra</b>						
<b>4c</b>	<b>Level 4</b>		<b>4a</b>	<b>5c</b>	<b>Level 5</b>	
	<b>4b</b>				<b>5b</b>	<b>5a</b>
Begin to use simple formulae expressed in words				Construct, express in symbolic form, and use simple formulae involving one or two operations and use brackets appropriately		
<b>4c</b> Begin to be able to say how a calculation is used to answer a problem. For example, number of cakes $\times 15p$ gives the cost of all the cakes @ 15p each	<b>4b</b> Begin to use simple formulae expressed in words. Begin to use a simple formula to solve a problem  Begin to identify the sequence rule for numbers increasing or decreasing in whole number steps	<b>4a</b> Begin to use short hand, eg initial letters to record formulae. Understand that a letter can stand for an unknown number e.g. c stands for number of cakes How many cakes for 90p? $c \times 15p = 90p$  Be able to identify the sequence rule for numbers increasing or decreasing in whole number steps and extend or complete the sequence	<b>5c</b> Begin to use the BODMAS rules appropriately Be able to recognise the multiplication and addition link related to algebra (ie $4a = a+a+a+a$ )  Begin to use words to describe the rule for the next term of a linear sequence	<b>5b</b> Construct, express in symbolic form, and use simple formulae involving one or two operations and use brackets appropriately  Refine use of mathematical words to describe the rule for the next term of a linear sequence	<b>5a</b> Begin to identify a formula to represent a sequence of numbers Be able to use a formula to solve a problem  Begin to use symbols to describe the rule for the next term of a linear sequence	

<b>Coordinates</b>						
<b>4c</b>	<b>Level 4</b>		<b>4a</b>	<b>5c</b>	<b>Level 5</b>	
	<b>4b</b>				<b>5b</b>	<b>5a</b>
Use and interpret coordinates in the first quadrant				Use and interpret coordinates in all four quadrants		
<b>4c</b> Read and place coordinates in the first quadrant, consistently using accurate recording	<b>4b</b> Use and interpret coordinates in the first quadrant	<b>4a</b> Use and interpret coordinates in the first quadrant and begin to read and place coordinates in other quadrants	<b>5c</b> Read and place coordinates in all four quadrants	<b>5b</b> Use and interpret coordinates in all four quadrants	<b>5a</b> Generate and use pairs of coordinates that satisfy a simple linear relationship	

# Progression through the sublevels in Mathematics

## AT3: shape, space and measures

Levels 1 - 3

Shape								
Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
Use everyday language to describe properties when working with 2D and 3D shapes			Use mathematical names for common 3-D and 2-D shapes and describe their properties, including number of sides and corners			Classify 3-D and 2-D shapes in various ways using mathematical properties		
<p><b>1c</b> Recognise names and find simple 3D and 2D shapes (square, circle, rectangle, triangle, cube, sphere, cone)</p> <p>Use shapes to make models and pictures</p> <p>Recreate patterns, and describe them Talk about, recognise and recreate patterns using shapes and the environment</p>	<p><b>1b</b> Begin to name and describe some features of familiar 3D (faces) and 2D shapes (sides, corners) (shapes as 1c + cuboid, cylinder, pyramid)</p> <p>Make and describes models and pictures using equipment</p> <p>Continue patterns, and describe them</p>	<p><b>1a</b> Use everyday language to sort and describe features of common 3D and 2D shapes (see 1c/1b)</p> <p>Begin to relate solid shapes to pictures of them</p> <p>Use one or more shapes to create and describe repeating patterns</p>	<p><b>2c</b> Know the names of common 2D, including irregular examples (pentagon, hexagon, octagon) and some 3D shapes They use vocabulary such as circular, triangular and rectangular to describe shapes Use some mathematical language when describing shapes and sorts according to some of their properties</p>	<p><b>2b</b> Is confident with the names of 2D and a growing range of 3D shapes and can talk about their features using mathematical vocabulary (with visual or practical prompts)</p> <p>Relate solid shapes to pictures of them</p>	<p><b>2a</b> Name 2D and 3D shapes and can describe their features from memory</p> <p>Begin to draw shapes, including a range of irregular ones, according to given criteria relating to their properties</p>	<p><b>3c</b> Recognise and know names and properties of a good range of 3D and 2D shapes (e.g. hemisphere, prism, semi-circle, quadrilateral) Classify the above shapes using criteria such as right angles and lengths of sides</p> <p>Draw shapes, including range of irregular ones, according to given criteria relating to their properties</p>	<p><b>3b</b> Begin to classify and describe 3D and 2D shapes using mathematical properties (e.g. regular and irregular)</p> <p>Make and construct wide range of shapes discussing properties</p>	<p><b>3a</b> Classify and describe regular and irregular polygons using mathematical properties, including types of triangle</p> <p>Visualise. 3D shapes from 2D drawings</p>



# Progression through the sublevels in Mathematics

## AT3: shape, space and measures

## Levels 1 - 3

Position and transformation								
Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
Use everyday language to describe positions when working with 2D and 3D shapes			Distinguish between straight and turning movements Understand angle as a measurement of turn, and recognise right angles in turns			Classify 3-D and 2-D shapes in various ways using mathematical properties such as reflective symmetry for 2-D shapes		
<b>1c</b> In practical situations can follow instructions given in everyday language about position, direction and movement	<b>1b</b> Begin to use everyday language to describe positions, direction and movement and talk about things that turn	<b>1a</b> Use everyday language to describe positions, directions and movement and recognise and makes whole and half turns	<b>2c</b> In practical situations respond to language about whole, half and quarter turns and movements to the left or right  Fold shapes in half making symmetrical patterns	<b>2b</b> Begin to use vocabulary to describe whole, half and quarter turns, clockwise or anti-clockwise  Begin to recognise line symmetry	<b>2a</b> Recognise right angles in turns and 2D shapes and give instructions using language of turn confidently  Recognise a line of symmetry	<b>3c</b> Make and describe right angles, including turns between the four compass points and compare right angles with other angles  Identify lines of symmetry in simple shapes and begin to recognise shapes with no lines of symmetry	<b>3b</b> Recognise that a straight line is equivalent to two right angles  Sketch lines of symmetry in simple shapes and recognise shapes with no lines of symmetry	<b>3a</b> Begin to recognise simple examples of horizontal and vertical lines  Sketch the reflection of a simple shape in a mirror line parallel or perpendicular to one side, including where there is a distance between the mirror line and the shape

<b>Position and transformation</b>						
<b>4c</b>	<b>Level 4</b>		<b>4a</b>	<b>5c</b>	<b>Level 5</b>	
	<b>4b</b>			<b>5b</b>	<b>5a</b>	
Reflect simple shapes in a mirror line				Identify all the symmetries of 2-D shapes		
<p><b>4c</b> Recognise horizontal and vertical lines Begin to recognise perpendicular and parallel lines</p> <p>Recognise reflective symmetry in regular polygons</p>	<p><b>4b</b> Recognise perpendicular and parallel lines</p> <p>Complete symmetrical patterns with two lines of symmetry at right angles (using squared paper or pegboard)</p>	<p><b>4a</b></p> <p>Recognise where a shape will be after reflection in a mirror line parallel to one side (sides not all parallel or perpendicular to the mirror line) Recognise where a shape will be after a translation</p>	<p><b>5c</b></p> <p>Recognise where a shape will be after reflection in a mirror line touching the shape at a point (sides of shape not necessarily parallel or perpendicular to the mirror line)</p>	<p><b>5b</b></p> <p>Recognise where a shape will be after reflection in two mirror lines at right angles (sides of shape all parallel or perpendicular to the mirror line) Recognise where a shape will be after two translations</p>	<p><b>5a</b></p> <p>Recognise where a shape will be after reflection in two mirror lines at right angles (sides of shape not all parallel or perpendicular to the mirror line) Recognise the order of rotational symmetry in simple contexts</p>	

# Progression through the sublevels in Mathematics

## AT3: shape, space and measures

## Levels 1 - 3

Measures								
1c	Level 1		Level 2		Level 3			
	1b	1a	2c	2b	2a	3c	3b	3a
Measure and order objects using direct comparison Order events			Use non-standard and standard units to measure length and mass			Use non-standard units, standard metric units of length, capacity and mass in a range of contexts Use standard units of time, in a range of contexts		
<b>1c</b> In practical contexts, respond to vocabulary related to length, mass and capacity (e.g. longer or shorter)	<b>1b</b> In practical contexts, understand and begin to use vocabulary when making direct comparisons in length, mass and capacity (e.g. more or less, heavier or lighter)	<b>1a</b> Understand and use vocabulary when making direct comparisons in length, mass and capacity and begin to compare more than two lengths, capacities or masses (e.g. holds most or least, longest or shortest)  Suggest non-standard uniform measures to estimate then measure in practical situations	<b>2c</b> Use comparative language when comparing two or more lengths, capacities or masses  Suggest and use non-standard uniform and some standard measures (e.g. litre, metre) and gives reasonable estimates in practical situations	<b>2b</b> Use more standard units of length, mass and capacity (e.g. cm, gram) to estimate and begin to measure	<b>2a</b> Use standard units of length, mass and capacity (e.g. cm, gram) to estimate and measure and suggest suitable units and equipment for such measurements  Begin to read simple scales	<b>3c</b> Measure accurately and compare using standard units and know the relationships between some of these units (e.g. kms and metres, kgs and grams)  Read scales to the nearest labelled division	<b>3b</b> Use, read and write standard metric units including their abbreviations  Record estimate and read from scales (labelled and unlabelled) with growing accuracy	<b>3a</b> Know and use relationships between familiar units of length, mass and capacity  Record estimate and read from scales (labelled and unlabelled) accurately
Respond to the vocabulary of time in context (e.g. days of the week in order, parts of the day) Sequence familiar events	Understand and begin to use the vocabulary of time in context (e.g. seasons, late, early, old, new) Begin to read o'clock time Order familiar events in a day, or in a week or in a story	Understand and use the vocabulary of time including the passing of time (e.g. how long will it take to, how often) Read and use o'clock time in familiar contexts	Reads analogue clock to hour and half hour	Read the time to the quarter hour (past and to) on an analogue clock Know months and seasons of the year in order	Read the time to quarter hour on 12 hour digital clock understanding notation 7:30	Read the time to nearest 5 minutes on an analogue and 12-hour digital clock Use the units of time and knows the relationship between them (e.g. second, minute, hour, week)	Begin to use am and pm in a range of contexts Begin to read simple times in context (12 hour clock, such as feeding times at zoo) and use this year's calendar	Use am and pm in a range of contexts Read times on lists (12 hour clock, such as feeding times at zoo) and use calendars

# Progression through the sublevels in Mathematics

## AT3: shape, space and measures

## Levels 4 - 5

Measures					
4c	Level 4		5c	Level 5	
	4b	4a		5b	5a
Choose and use appropriate units and instruments, interpreting, with appropriate accuracy, numbers on a range of measuring instruments Find perimeters of simple shapes and find areas by counting squares			Know the rough metric equivalents of imperial units still in use today and convert one metric unit to another, make sensible estimates of a range of measures in relation to everyday situations Use the formula for the area of a rectangle		
<p><b>4c</b> Know the equivalent of one half, one quarter, three quarters and one tenth of 1km, 1m, 1kg, 1l in m, cm, g, ml Convert up to 1000cm to m, and vice versa</p> <p>Measure the perimeter and area of rectangles and other simple shapes, using counting methods</p> <p>Use am and pm notation. Read time on a 24-hour digital clock Use tables that include time (12 hour clock)</p>	<p><b>4b</b> Convert larger to smaller units (e.g. km to m, m to cm or mm, kg to g, l to ml).</p> <p>Measure lines to the nearest mm</p> <p>Measure and calculate the perimeter and area of rectangles and other simple shapes, using counting methods and standard units (cm, cm<sup>2</sup>)</p> <p>Use 24-hour clock notation</p>	<p><b>4a</b> Convert smaller to larger units (e.g. m to km, cm or mm to m, g to kg, ml to l). Know imperial units (mile, pint, gallon)</p> <p>Draw lines to the nearest mm</p> <p>Understand area measured in square centimetres (cm<sup>2</sup>). Understand the formula in words 'l x b' for the area of a rectangle</p> <p>Understand, measure and calculate perimeters of rectangles and regular polygons</p> <p>Use timetables (24-hour clock)</p>	<p><b>5c</b> Know imperial units (lb, oz)</p> <p>Use the formula in words 'l x b' for the area of a rectangle</p> <p>Calculate the perimeter and area of simple compound shapes that can be split into rectangles</p>	<p><b>5b</b> Know rough equivalents of lb and kg, oz and g, miles and km, l and pints or gallons</p> <p>Appreciate different times around the world</p>	<p><b>5a</b></p>

**Progression through the sublevels in Mathematics**

**AT3: shape, space and measures**

**Levels 1 - 3**

<b>Angles</b>								
<b>1c</b>	<b>Level 1</b>		<b>Level 2</b>			<b>Level 3</b>		
	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b> Begin to be able to use a right angle measure, such as the corner of a piece of paper, to identify the right angles in a shape or within the environment	<b>3a</b> Be able to use a right angle measure to identify the right angles in a shape or within the environment

## Progression through the sublevels in Mathematics

### AT3: shape, space and measures

Levels 4 - 5

Angles					
4c	Level 4		5c	Level 5	
	4b	4a		5b	5a
			When constructing models and when drawing or using shapes, measure and draw angles to the nearest degree, and use language associated with angle. Pupils know the angle sum of a triangle and that of angles at a point		
<p><b>4c</b> Know that angles are measured in degrees</p> <p>Understand and use angle measure in degrees</p> <p>Identify acute and obtuse angles</p> <p>Start to order a set of angles less than <math>180^\circ</math></p>	<p><b>4b</b> Estimate and order acute and obtuse angles</p> <p>Begin to use a protractor to measure acute and obtuse angles to the nearest <math>5^\circ</math></p>	<p><b>4a</b> Recognise and estimate angles</p> <p>Identify reflex angles</p> <p>Check that the sum of the angles of a triangle is <math>180^\circ</math> (e.g. by paper folding)</p> <p>Use a protractor to measure acute and obtuse angles to the nearest <math>5^\circ</math> (and begin to draw)</p> <p>Calculate angles in a straight line</p>	<p><b>5c</b> Use a protractor to measure acute and obtuse angles to the nearest degree</p> <p>Check that the sum of the angles of a triangle is <math>180^\circ</math> (e.g. by measuring)</p> <p>Calculate angles in a triangle</p> <p>Recognise where a shape will be after a rotation through <math>90^\circ</math> about one of its vertices</p>	<p><b>5b</b> Use a protractor to draw acute and obtuse angles to the nearest degree</p> <p>Calculate angles around a point</p>	<p><b>5a</b></p>

# Progression through the sublevels in Mathematics

## AT4: handling data

## Levels 1 - 3

### Classifying, collecting, organising and interpreting data

Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
Sort objects and classify them, demonstrating the criterion they have used.			Sort objects and classify them using more than one criterion Record results in simple lists, tables and block graphs, in order to communicate their findings			Extract and interpret information presented in simple tables and lists Construct and interpret bar charts and pictograms where the symbol represents a group of units		
<b>1c</b> Sort according to given criteria (mostly only two sets) and say which set an item belongs to e.g. "This blue one goes here"	<b>1b</b> Sort objects according to given or own simple criteria (two or more sets) and talk about why items are placed in a particular set	<b>1a</b> Choose criteria to sort in a variety of situations and talk about how items are sorted and classified. Record sorting pictorially	<b>2c</b> Sort according to two given criteria and say how items are classified e.g. "I have put all the ones with 4 legs here and the ones with 2 legs there" Record sorting in simple lists, tables and block charts as guided by teacher	<b>2b</b> Sort according to two or more criteria and confidently talk about their classification Suggest ways to record sorting in simple lists, tables and block charts and creates these (possibly with adult support) With support extract information from graphs and charts where the scale is in ones	<b>2a</b> Independently record sorting in simple lists, tables and charts Extract information from graphs and charts where the scale is in ones and use this to solve simple problems. Begin to interpret scales that are in twos Begin to use comparative language to talk about what a graph or sorting diagram shows	<b>3c</b> Create and interpret simple lists and tables to solve problems Construct and interpret graphs with scales that are in twos (support with drawing axes may be required). Complete and interpret sorting diagrams with two criteria. Use comparative language to talk about what a graph or sorting diagram shows.	<b>3b</b> Construct and interpret graphs with scales that are in ones, twos or fives (support given for choosing scale) With support construct and interpret sorting diagrams with two criteria Use comparative language confidently to talk about what a graph or sorting diagram shows	<b>3a</b> Independently construct and interpret graphs with scales that are in ones, twos or fives (and other steps in appropriate contexts) suggesting appropriate steps. Construct and interpret sorting diagrams with two criteria Talk with confidence when describing a graph or diagram

### Probability

Level 1			Level 2			Level 3		
1c	1b	1a	2c	2b	2a	3c	3b	3a
<b>1c</b>	<b>1b</b>	<b>1a</b>	<b>2c</b>	<b>2b</b>	<b>2a</b>	<b>3c</b>	<b>3b</b>	<b>3a</b>

## Progression through the sublevels in Mathematics

### AT4: handling data

Levels 4 - 5

Classifying, collecting, organising and interpreting data					
Level 4			Level 5		
4c	4b	4a	5c	5b	5a
Collect discrete data and record them using a frequency table, group data where appropriate in equal class intervals Draw and interpret frequency diagrams and construct and interpret simple line graphs Understand and use the mode and range to describe sets of data			Interpret graphs and diagrams, including pie charts, and draw conclusions Understand and use the mean of discrete data and compare two simple distributions, using the range and one of the mode, median or mean		
<b>4c</b> Collect discrete data and record in a frequency table Independently draw and interpret a range of graphs and charts (tally charts, bar charts, bar line graphs). Begin to choose and use appropriate scales Have some understanding that graphs must be suited to the data to be represented	<b>4b</b> Construct and interpret simple line graphs where intermediate points have no meaning Be efficient when choosing and using a range of appropriate scales Understand and find mode and range of a set of data when asked Explain why a chosen graph is appropriate for the given data	<b>4a</b> Construct and interpret simple line graphs where intermediate points have meaning Discuss the advantages and disadvantages of different types of graphs Group data, with equal class intervals where appropriate Construct graphs and charts with this grouped data Decide when to and use mode and range to describe a set of data	<b>5c</b> Interpret simple pie charts using the language of proportion Understand and find the median of a set of data	<b>5b</b> Compare two pie charts and show awareness that the total that is represented effects the outcomes Understand and find the mean of a set of data Compare two simple distributions, when asked, using the range and one of mode, median or mean as directed	<b>5a</b> Confidently compare two or more pie charts that represent different totals Compare two simple distributions independently, using the range and one of mode, median or mean

Probability					
Level 4			Level 5		
4c	4b	4a	5c	5b	5a
			Understand and use the probability scale from 0 to 1 Find and justify probabilities and approximations to these by selecting and using methods based on equally likely outcomes and experimental evidence as appropriate		
<b>4c</b>	<b>4b</b>	<b>4a</b> Discuss the likelihood of particular events using everyday and mathematical language	<b>5c</b> Begin to understand the probability scale and express likelihood using the language of probability Begin to understand the likelihood of events such as throwing dice, spinning spinners and drawing beads from a bag With some guidance carry out a probability experiment based on equally likely outcomes	<b>5b</b> Understand the probability scale from 0 – 1 Independently carry out a probability experiment based on equally likely outcomes Understand the likelihood of events such as throwing dice, spinning spinners and drawing beads from a bag	<b>5a</b> Discuss a probability experiment using mathematical language and know the effect of increasing the number of trials