This table shows the progression of skills over the year groups, from Early Years to the end of KS2 for Maths

Working Mathematically (Adapted from PA Plus by Herts for Learning)

Application	EYFS	Key Stage One ('Phase A')	Lower Key Stage Two ('Phase B')	Upper Key Stage Two ('Phase C')
Ideas, questions and lines of enquiry	Solve real problems: for example, to share nine strawberries between three friends, they might put one in front of each, then a second, and finally a third. Finally, they might check at the end that everyone has the same number of strawberries.	· selects the mathematics they use in an increasing range of classroom activities - *adopts a suggested model or systematic approach* - *makes connections and applies knowledge to similar situations* · chooses equipment appropriate to the task with support · asks simple questions relevant to the problem and begins to suggest ways of exploring	· develops the mathematics they use in a wide range of contexts - *makes suggestions of ways to tackle a range of problems* - *makes connections to previous work* · chooses equipment appropriate to the task independently · *poses and answers questions related to a problem and suggests a range of possible approaches to the solution*	· identifies and obtain necessary information to carry through a task and solve mathematical problems - *recognises when information is or is not crucial to the solving of a problem* - *determines what is missing and develops lines of enquiry* · selects the most appropriate equipment and explains choices · uses their mathematical experiences to explore ideas and raises questions to pursue further lines of enquiry
Represent and communicate	Articulate their ideas and thoughts in well-formed sentences	· describes a problem in their own words e.g. - *acts it out* - *represents the problem pictorially or with*	· represents problems pictorially, using a model or with concrete resources - *restates the problem in another way*	· shows understanding of situations by describing them mathematically using symbols, words and diagrams

		· *concrete resources* · begins to develop own ways of recording - *uses and interprets **familiar** mathematical symbols and diagrams* · begins to organise work and check results - *shows evidence of method in responses* · discusses their mathematical work and begins to explain their thinking using appropriate mathematical vocabulary	· presents work in a clear and organised way - *uses and interprets a wide range of mathematical symbols and diagrams* · begins to work in an organised way from the start using strategies such as recording results in order and checks for accuracy · discusses their mathematical work and uses mathematical language in a more precise and accurate way	· decides how best to represent conclusions, using appropriate recording - *begins to understand and use formulae and symbols to represent problems* · organises work from the outset, looks for ways to record systematically and checks results to see if they are reasonable - *checks for and spots errors while working* · constructs complex explanations and reasoned arguments
Plan an approach and implement it	Plan and think ahead about how they will explore or play with objects. Make independent choices. Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them	· understands and uses known facts and procedures to solve simple problems · uses familiar strategies and operations to solve problems within known mathematical concepts and procedures · tries different approaches and finds ways of overcoming difficulties when solving problems – sometimes with support	· uses facts and procedures to solve simple and more complex problems · develops own strategies for solving problems and applying mathematics to practical contexts · finds solutions that match the context of the problem	· understands and uses facts and procedures creatively to solve complex or unfamiliar problems · uses appropriate mathematical concepts, processes, skills and tools to solve a problem · interprets the mathematical solution in the context of the problem and makes sense of the solution
Computational complexity (Within the range of	Guide their own thinking and actions by referring to visual aids or by talking to themselves	· solves problems with one or a small number of steps, where all steps are simple	· solves problems with more than one step at least one of which is more complex	· solves problems with a larger number of numeric steps, at least one of which is more complex

number facts known)	while playing. For example, a child doing a jigsaw might whisper under their breath: "Where does that one go? – I need to find the big horse next."			
Make connections	Connect one idea or action to another using a range of connectives	· recognises similarities to previous work through classroom discussion · begins to use familiar elements of knowledge to tackle problems that are more unfamiliar or complex · poses 'What if?' questions during practical problem solving opportunities	· makes connections to previous work within mathematics and with other subjects · poses and answer questions that will help make sense of the problem · poses 'What if?' questions that may change the outcome or direction of the problem	· poses own questions and create problems for peers that are similar to ones worked on in class · develops own lines of enquiry
Evaluate	Review their progress as they try to achieve a goal. Check how well they are doing.	· reviews their work by explaining why they have done something	· suggests refinements to elements of problem solving by comparing other approaches and against 'modelled' examples	· considers efficiency of methods and adapts work accordingly throughout problem solving activities
Draw conclusions	Know more, so feel confident about coming up with their own ideas. Make more links between those ideas. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen	· predicts an answer or outcome *e.g. numbers in an extended sequence* · talks about findings by referring to own work · explains why an answer is correct · begins to make simple inferences when referring to own work	· predicts conclusions and reason why when referring to work · comments on whether the conclusion was expected · makes valid inferences when referring to own work	· conjectures to develop own line of enquiry when testing outcomes · draws own valid conclusions and give an explanation of reasoning (including written explanations)

Generalise	Use new vocabulary through the day. Ask questions to find out more and to check they understand what has been said to them. Describe events in some detail.	· understands a general statement by finding a particular example that match it · begins to describe a pattern or sequence in words or using concrete resources or own representation	· finds solutions and makes predictions by identifying patterns when working · forms generalised rules in words, using concrete resources or own representation	· identifies more complex patterns and begins to express generalisations using symbolic notation
Justify	Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions.	· provides simple reasons for opinions	· justifies answers and solutions by referring to their work and support with examples	· justifies methods chosen and why the solution is the best one or not · supports conclusions with examples and counter examples
Problem Solving Strategies	Keep on trying when things are difficult. Review their progress as they try to achieve a goal. Check how well they are doing. Show resilience and perseverance in the face of challenge.	· sorts information · uses 'guess and check' strategy to solve unfamiliar problems · begins to look for patterns in results while working and uses them to find other possible outcomes · draws simple pictures or diagrams · gives examples to match statements and ones that do not · finds a starting point	· identifies irrelevant information; uses lists and tables to identify and organise information · uses informed 'guess and check' · seeks a pattern · draws a diagram or model · seeks an exception · breaks the problem down into simpler steps - *e.g. works backwards*	· organises, deconstructs and prioritises information; uses systematic lists and tables to identify information · uses informed 'guess, check and improve' · identifies and uses a pattern · draws a mathematical model to support visualisation of problem · uses and applies negative proof (uses counter argument to prove the rule) · uses a structured approach to tackle the problem (devise a plan) - *e.g. works backwards*

				· solves a simpler related problem