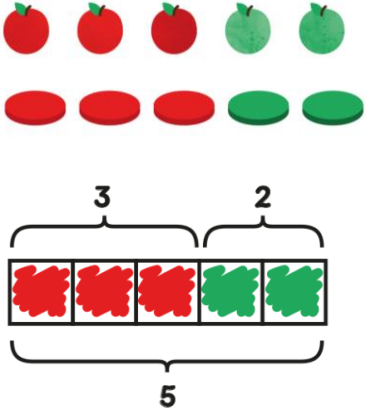
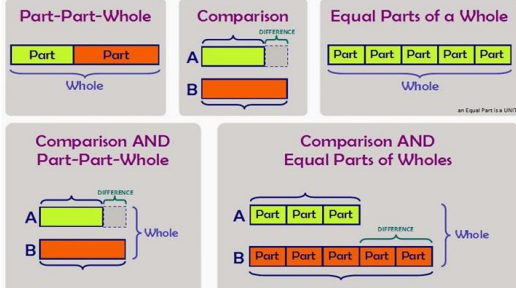
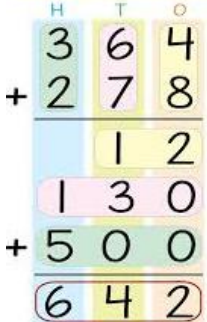
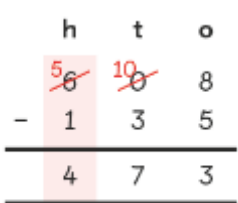
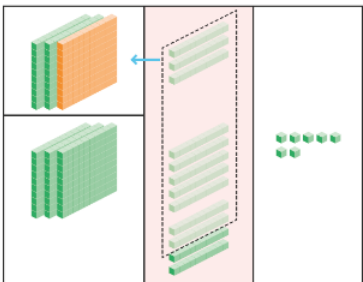
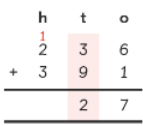


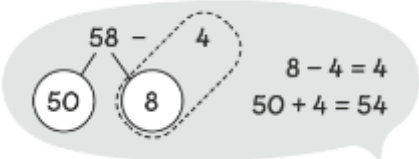
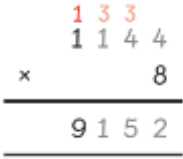
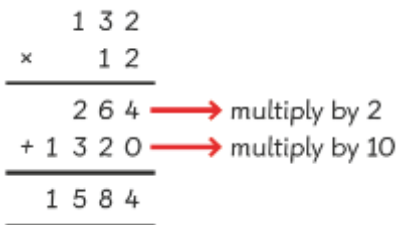
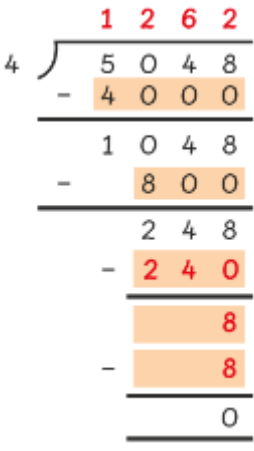
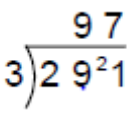
Glossary of terminology related to Maths No Problem, particularly in Allenton Primary

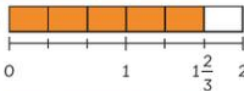
<u>Term</u> Term in bold is the key term to use, alternatives which are acceptable are listed below the main term.	<u>Representation example</u>	<u>Meaning</u>
Concrete	Any physical representation which the children can hold. e.g. fruit, flowers, cubes, base 10 etc. 	Concrete is the “doing” stage, using concrete objects to model problems. Instead of the traditional method of maths teaching, where a teacher demonstrates how to solve a problem, the CPA approach brings concepts to life by allowing children to experience and handle physical objects themselves. Every new abstract concept is learned first with a “concrete” or physical experience. For example, if a problem is about adding up four baskets of fruit, the children might first handle actual fruit before progressing to handling counters or cubes which are used to represent the fruit
Pictorial	Any 2D drawing representation. e.g. bar model, story map etc.	Pictorial is the “seeing” stage, using representations of the objects to model problems.

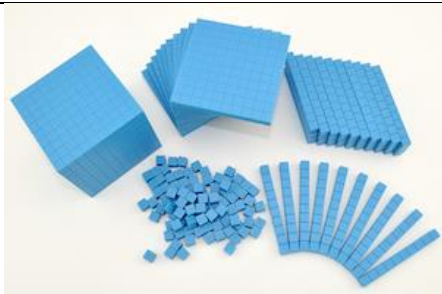
		This stage encourages children to make a mental connection between the physical object and abstract levels of understanding by drawing or looking at pictures, circles, diagrams or models which represent the objects in the problem. Building or drawing a model makes it easier for children to grasp concepts they traditionally find more difficult, such as fractions, as it helps them visualise the problem and make it more accessible.
Abstract	Any aspect where there is no involvement of pictorial or concrete representations including context e.g. column addition. $ \begin{array}{r} \text{h} \quad \text{t} \quad \text{o} \\ \begin{array}{r} 1 \\ 2 \\ 3 \\ + \quad 3 \\ \hline 6 \end{array} \begin{array}{r} 1 \\ 7 \\ 4 \\ + \quad 4 \\ \hline 2 \end{array} \begin{array}{r} 8 \\ 9 \\ 7 \end{array} \end{array} $	Abstract is the “symbolic” stage, where children are able to use abstract symbols to model problems (Hauser). Only once a child has demonstrated that they have a solid understanding of the “concrete” and “pictorial” representations of the problem, can the teacher introduce the more “abstract” concept, such as mathematical symbols. Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical

		symbols, for example +, −, x, / to indicate addition, multiplication, or division.
Ones	Anything which represents 1 as a unit– this could be a cube, an apple, any number which is in the smallest whole number column etc.	Previously known as units – for MNP purposes known as ‘ones’ as this is less abstract and represents that this is 1 whole that can be a part of a larger number.
Model	(See specific models for examples)	A representation (usually a diagram of some sort) which assists in understanding a problem without actually solving it.
Method Algorithm	(See specific methods for examples)	A series of steps with a particular order which will lead to finding the answer to a calculation.
Calculation Number sentence Equation	e.g. $45 \times 2 = 90$	A symbolic representation of a problem.
Part-whole model Part-part-whole model		Any model which relates a whole to the sum of its parts. Most often represented as circles and relating to number bonds/partitioning. The part whole model is most often seen with two parts to one whole but it can be as many parts as needed to make the one whole.

Bar model		A way of representing a problem pictorially which helps to understand the different elements involved.
Column addition (expanded)		Numbers are added together starting from the smallest column. Each column total is then lined up underneath to show the place value. These totals are then added together.
Column addition		
Column subtraction		
Renaming Regrouping Exchanging NB Do not use the term ‘borrowing’ – you will not be giving anything back so this is incorrect.	Add the tens. 3 tens + 9 tens = 12 tens Regroup the tens. 12 tens = 1 hundred + 2 tens  	A term used to describe the process of changing groups of ones into tens to make adding and subtracting easier (in thousands into hundreds and so on). Although most common for add/sub regrouping can also be used when partitioning is used for any operation. In MNP renaming/regrouping are often used interchangeably however regrouping would most often refer to the process

		and renaming the actual change in terms.
Partitioning/decomposing/ 'number bond' method	 This is an example for subtraction but any method where partitioning the number and representing in a part-whole model is this method. This can also be done without any use of the part-whole model if children suggest it but when modelling it, it should be shown in the model.	Separating the original whole number into parts that are more useful when calculating especially when renaming is involved.
Short multiplication		Multiplying a single digit by any number, without expanding the addition – only one row as the answer. <i>Expanded versions may be shown but these just link to partitioning rather than true long multiplication.</i>
Long multiplication		Multiplying any number by more than one digit, leading to more than one row which needs to be totalled for a final answer.
Long division		Division algorithm in which the original number to be divided is partitioned (put into chunks) to make it easier to subtract multiples of the divisor.
Short division		Division algorithm in which the quotient is written directly without a succession

		of intermediate workings.								
In focus task Anchor task What's in it for me Problem	 How many flowers are there altogether?	The problem posed which provides a real-life context for the mathematical learning								
Guided practice	Guided Practice 1 There are groups. Each group has apples. fours = There are apples.  2 groups of 2 = twos = There are ribbons altogether. 	Usually two or three problems based around the objective being covered which allow a chance to practice the learning in a new context.								
Let's Learn	Let's Learn 1   $1 = 6 \text{ sixths}$ $\frac{2}{3} = 4 \text{ sixths}$ $1\frac{2}{3} = 10 \text{ sixths}$ We can fill 10  cups.  The temperature is about 40 degrees Celsius.	A section of the Maths No Problem lesson which explains the understanding of the in focus task, showing the most appropriate methods and representations.								
Activity time	Work in groups of 4. 1 3 cups of water will be given to you. 2 Guess which cup of water is the warmest. 3 Measure the temperature of the water in each cup using the thermometer. 4 <table><tr><th>Cup</th><th>Temperature</th></tr><tr><td></td><td> °C</td></tr><tr><td></td><td> °C</td></tr><tr><td></td><td> °C</td></tr></table> What you need:  The temperature is about 40 degrees Celsius. 	Cup	Temperature		°C		°C		°C	An alternative to Guided Practice, usually more practical in nature.
Cup	Temperature									
	°C									
	°C									
	°C									
Journaling	Journaling can come in many forms – no one representation is correct however over time a variety of forms should be evident which show the children's understanding e.g. photos of practical work, pictorial representations, calculations, written explanations. There is an expectation that journaling will always reference the in focus task as a minimum.	A representation of the children's understanding of the in focus task plus any additional learning/understanding that has taken place within the lesson. Statements such as ‘I learned to _____’								

		today' are not journaling.
Base 10 Dienes apparatus	 May vary in colour but size is uniform.	The physical representation of the decimal number system.
Cuisenaire rods		Any of a set of coloured rods/bars usually of 1 centimetre cross section and of 10 lengths from 1 to 10 centimetres that are used for teaching number concepts and the basic operations of arithmetic. Can be used to support bar modelling for example.
Number discs Place value discs		Counters with numbers on in the value of each decimal 'place' (informally known as the value of each column) e.g. 10, 1000, 10000 etc. Variations include number discs which show fractions.