2 Maths Curriculum Intent, Implementation and Impact

Maths is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Strategic intent

To **develop a curriculum which** develops lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future. The National Curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems

- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language

- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Our Maths Curriculum focuses on 3 different types of knowledge:

- **Declarative knowledge** – I know that……..(facts and formulae moving onto the relationship between them)
- **Procedural knowledge** – I know how…….. (methods moving onto the relationship between facts, procedures and missing facts)
- **Conditional Knowledge** – I know when…….(different strategies moving onto the relationship between information, strategies and missing information)

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice in 'Keep Up' sessions, before moving on.

Children deserve:

- To be set appropriate learning challenges
- To be taught well and be given the opportunity to learn in ways that maximise the chances of success.
- To have adults working with them to tackle the specific barriers to progress they face.

Implementation

Content and Sequence

A Maths Mastery approach is used to consolidate the building blocks that children need to study maths successfully and to a high level. There is a careful selection, sequencing and linking of declarative, procedural and conditional knowledge with a sequence of teaching and rehearsal which allows children to commit learning to their long-term memory. Children study mathematics daily covering a broad and balanced mathematical curriculum including elements of number, calculation, geometry, measures and statistics. Alongside daily maths sessions an additional 15 minutes a day is spent focusing on Fluent in Five (addition, subtraction, multiplication, division and fractions) and Rapid Reasoning to build fluency and precision in these areas and to think about numbers in a different way and how to address problems in the most efficient way. Due to the interconnected nature of mathematics, we aim to teach maths in a cross curricular manner as well as discretely to teach the practical application of mathematical skills. We focus not only on the mathematical methods but also focus on mathematical vocabulary and to use Maths Mastery to broaden and deepen mathematical understanding.

We aim for each child to be confident in each yearly objective and develop their ability to use this knowledge to develop a greater depth understanding to solve varied fluency problems as well as problem solving and reasoning questions. We use a range of textbooks, worksheets and online resources throughout the school to ensure a curriculum that is specific to each child's learning needs. Children complete their homework activities using the online homework resource Mathletics, which aims to build pupil engagement and consolidate maths knowledge.

As schools in England are required to administer an online multiplication tables check (MTC) to year 4 pupils we also use 'Times Table Rockstars' as an online and fun learning platform which also offer resources to be used in the classroom and also at home and helps to equip our children with times table fluency.

Within each aspect, children have the opportunity to acquire/refine, practise/apply, and extend/deepen their learning. Each level of challenge builds on prior learning and extends thinking. Component steps are intentionally planned and set out daily so learning is cumulative, to give all children the opportunity for deliberate practice and the tools to reach a greater depth standard when appropriate. Maths learning is built using the Concrete, Pictorial and Abstract approach to learning, where children visually grasp the mathematical concepts covered prior to applying this to abstract learning and then beyond to conceptual variation.

Teaching and Learning, Assessment and Feedback

Starting points are identified through accurate teacher assessment, prior learning and/or as a result of summative testing. End points are taken as age related expectations at the end of each National Curriculum year.

The intended learning is always the focus of actions in the classroom. Activities and resources are carefully chosen and deliberately designed to focus effort towards practising the learning intentions.

Target books are used to personalise individual steps for learning.

Feedback is given is response to timely and continuous formative assessment in every lesson. Teachers use a range of formative assessment tools, including questions and observations to gauge children's level of understanding and knowledge. This is used to either offer support and scaffolds, or to give opportunities for greater challenge to deepen learning. Feedback is given in line with our feedback policy, including Green Pen Work to check, consolidate or challenge.

Starter and plenary activities allow children to become secure within their knowledge and skills. These are useful assessment opportunities: feedback is given to groups or the whole class as identified. Activities are used to revise previous content and address misconceptions as identified through observing children's work and responses and optimum use is made of 'Keep Up' sessions and in those cases where children are further behind 'Catch Up' sessions also. Assessments for SEN children are carefully used so as not to have a detrimental impact on the child's self confidence.

Impact

2017				2018				2019			
KS1		KS2		KS1		KS2		KS1		KS2	
Progress 2				Progress 0.2				Progress -1.2			
EXS (%)	GSD (%)	EXS (%)	GSD (%)	EXS (%)	GSD (%)	EXS (%)	GSD (%)	EXS (%)	GSD (%)	EXS (%)	GSD (%)
84	21	85	20	81	19	80	25	83	28	81	29

NB No validated data available for 2020 & 2021.

No ceiling is placed on any learner: teaching groups are flexible and adapted according to emerging learning needs and the level of support that is needed to enable all children to access the right curriculum content for their learning, whilst all strive to achieve end of year expectations. Children speak positively about the ability to drive their learning through self-assessment and the opportunities they have for extra practice time or additional challenge that the learning journey affords them.

Nearly all children leave Hanging Heaton CE (VC) J&I School having achieved at least the expected standard and as confident mathematicians, ready to take on the next stage in their education. High numbers achieve a greater depth within the standard. SEND children make at least expected progress and reach their attainment targets.

Disadvantaged children make progress that is in line with their peers.

Children leave Hanging Heaton VC (CE) J&I School as confident, capable mathematicians and with a positive attitude towards maths.

2.1 Maths Early Years Progression Charts

The first few years of a child's life are especially important for mathematics development. Research shows that early mathematical knowledge predicts later reading ability and general education and social progress. Conversely, children who start behind in mathematics tend to stay behind throughout their whole educational journey.

The objective for those working in Early Years, then, is to ensure that all children develop firm mathematical foundations in a way that is engaging, and appropriate for their age. The materials here are primarily designed to support Reception teachers (those working with 4-5 year olds), and are based on international research.

The materials are organised into key concepts (not individual objectives), which underpin many early mathematics curricula. The typical progression highlights the range of experiences (some of which may be appropriate for younger children) but the activities and opportunities could be developed across the Reception provision.

There are six key areas of early mathematics learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school, and beyond.

- **Cardinality and Counting:** Understanding that the cardinal value of a number refers to the quantity, or 'howmanyness' of things it represents
- **Comparison:** Understanding that comparing numbers involves knowing which numbers are worth more or less than each other
- **Composition:** Understanding that one number can be made up from (composed from) two or more smaller numbers
- **Pattern:** Looking for and finding patterns helps children notice and understand mathematical relationships
- **Shape and Space:** Understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking
- **Measure:** Comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later.

Maths Early Years Progression Charts – Cardinality and Counting

The cardinal value of a number refers to the quantity of things it represents, e.g. the numerosity, 'howmanyness', or 'threeness' of three. When children understand the cardinality of numbers, they know what the numbers mean in terms of knowing how many things they refer to. Counting is one way of establishing how many things are in a group, because the last number you say tells you how many there are. Children enjoy learning the sequence of counting numbers long before they understand the cardinal values of the numbers. Subitising is another way of recognising how many there are, without counting.

Counting: saying number words in sequence	**Practical examples**
Children need to know number names, initially to five, then ten, and extending to larger numbers, including crossing boundaries 19/20 and 29/30. Counting back is a useful skill, but young children will find this harder because of the demand it places on working memory.	counting backwards, for example number rhymes starting from different numbers.
Counting: tagging each object with one number word	**Practical examples**

Children need lots of opportunities to count things in irregular arrangements. For example, how many play people are in the sandpit? How many cars have we got in the garage? These opportunities can also include counting things that cannot be seen, touched or moved.	counting things of different sizes – this helps children to focus on the numerosity of the count counting things that can't be seen, such as sounds, actions, words and counting things that cannot be moved, such as pictures on a screen, birds at the bird table, etc.
Counting: knowing the last number counted gives the total so far	**Practical examples**
Children need the opportunity to count out or 'give' a number of things from a larger group, not just to count the number that are there. This is to support them in focusing on the 'stopping number' which gives the cardinal value.	playing dice games to collect a number of things playing track games and counting along the track.
Subitising: recognising small quantities without needing to count them all	**Practical examples**
Subitising is recognising how many things are in a group without having to count them one by one. Children need opportunities to see regular arrangements of small quantities, e.g. a dice face, structured manipulatives, etc., and be encouraged to say the quantity shown. Children also need opportunities to recognise small amounts (up to five) when they are not in the 'regular' arrangement, e.g. small handfuls of objects.	using dot cards, dominoes and dice as part of a game, including irregularly arranged dots (e.g. stuck on) playing hidden object games where objects are revealed for a few seconds; for example, small toys hidden under bowl – shuffle them, lift the bowl briefly and ask how many there were 'all at once fingers' – show me four fingers.
Numeral meanings	**Practical examples**
Children need to have the opportunity to match a number symbol with a number of things. Look for opportunities to have a range of number symbols available, e.g. wooden numerals, calculators, handwritten (include different examples of a number)	using numeral dice in games; matching numerals with varied groups of things using 'tidy-up labels' on containers and checking that nothing is missing reading number books • putting the right number of snacks on a tray for the number of children shown on a card.
Conservation: knowing that the number does not change if things are rearranged (as long as none have been added or taken away)	**Practical examples**
Children need the opportunity to recognise amounts that have been rearranged and to generalise that, if nothing has been added or taken away, then the amount is the same.	correcting a puppet who may say that there are more or fewer objects now, as they have been moved around, e.g. spread out or pushed together • contexts such as sharing things out (grouping them in different ways) and then the puppet complaining that it is not fair as they have less • encouraging the children to make different patterns with a given number of things.

Common errors in this area may include: • missing out an object or counting an object twice • when asked how many cars are in a group of four, simply recounting '1, 2, 3, 4,' without concluding that 'there are four cars in the group' • when asked to 'get five oranges' from a tray, a child just grabs some, or carries on counting past five • when objects in a group are rearranged, the child (unnecessarily) recounts them to find how many there are • difficulties in counting back • confusion over the 'teen' numbers – they are hard to learn • missing a number like 15 (13 or 15 are commonly missed out) or confusing 'thirteen' and 'thirty'.	**What to look for can a child**: • consistently recite the correct sequence of numbers and cross decade boundaries? • collect nine from a large pile, e.g. nine pencils from a pot? • subitise (instantly recognise) a group that contains up to four, then five, in a range of ways, e.g. fingers, dice, random arrangement? • select a numeral to represent a quantity in a range of fonts, e.g. , , ? • correct a puppet who thinks the amount has changed when their collection has been rearranged?

Maths Early Years Progression Charts – Comparison

Comparing numbers involves knowing which numbers are worth more or less than each other. This depends both on understanding cardinal values of numbers and also knowing that the later counting numbers are worth more (because the next number is always one more). This understanding underpins the mental number line which children will develop later, which represents the relative value of numbers.

More than/less than	**Practical examples**
Children need progressive experiences where they can compare collections and begin to talk about which group has more things. Initially, the groups need to be very obviously different, with one group having a widely different number of things. Collections should also offer challenges, such as including more small things and fewer large things, to draw attention to the numerosity of the comparison, i.e. the number of things, not the size of them.	collections for children to sort and compare, which include objects which are identical, and which include objects of different kinds or sizes collections with a large number of things, and collections with a small number of things.
Identifying groups with the same number of things	**Practical examples**
Children need the opportunity to see that groups could consist of equal numbers of things. Children can check that groups are equal, by matching objects on a one-to one basis.	ensuring that when providing groups to compare, there are some that have an equal amount asking children to convert two unequal groups into two that have the same number, e.g. 'There are 6 apples in one bag and 2 in another bag; can we make the bags equal for the 2 hungry horses?'
Comparing numbers and reasoning	**Practical examples**
Children need opportunities to apply their understanding by comparing actual numbers and explaining which is more. For example, a child is shown two boxes and told one has 5 sweets in and the other has 3 sweets in. Which box would they pick to keep and why? Look for the reasoning in the response they give, i.e. 'I would pick the 5 box because 5 is more than 3 and I want more.' If shown two numerals, children can say which is larger by counting or matching one-to-one. Children can compare numbers that are far apart, near to and next to each other. For example, 8 is a lot bigger than 2 but 3 is only a little bit bigger than 2.	explaining unfair sharing - 'This one has more because it has 5 and that one only has 3' comparing numbers that are far apart, near to, and next to each other.
Knowing the 'one more than/one less than' relationship	**Practical examples**
Children need opportunities to see and begin to generalise the 'one more than/one less than' relationship between sequential numbers. They can apply this understanding by recognising when the quantity does not match the number, i.e. if a pack is labelled as 5 but contains only 4, the children can identify that this is not right. Support children in recognising that if they add one, they will get the next number, or if one is taken away, they will have the previous number. For example: 'There are 4 frogs on the log, 1 frog jumps off. How many will be left? How do you know?' •	labelling groups with the correct numeral. Do children spot the error if a group is mislabelled? For example, 'The label on the pot says 4 and we have 5 – what do we need to do?' A child may say, 'We need to take one out because we have one too many.' ensuring children focus on the numerosity of the group by having items in the collection of different kinds and sizes • making predictions about what the outcome will be in stories, rhymes and songs if one is added to, or if one is taken away

Common errors in this area may include: • children not comparing the numerosity of the group and considering more in terms of size • children giving a response that does not match the context when estimating a number; e.g. when adding, giving as an answer a number that is smaller than the numbers given.	**What to look for can a child**: • state which group of objects has more? Can they do this with a large or small visual difference? • compare two numbers and say which is the larger? • predict how many there will be if you add or take away one?

Maths Early Years Progression Charts – Composition

Knowing numbers are made up of two or more other smaller numbers involves 'part–whole' understanding. Learning to 'see' a whole number and its parts at the same time is a key development in children's number understanding. Partitioning numbers into other numbers and putting them back together again underpins understanding of addition and subtraction as inverse operations.

Part–whole: identifying smaller numbers within a number (conceptual subitising – seeing groups and combining to a total)	**Practical examples**
Children need opportunities to see small numbers within a larger collection. 'Number talks' allow children to discuss what they see. Eg: 'There are 5 spots altogether. I can see 4 and 1, I can see 3 and 2, and I can see 1 and 1 and 1 and 1 and 1.' Encourage exploration of all the ways that 'five' can be and look. Children are encouraged to look closely at numbers to see what else they can see. This reinforces the concept of conservation.	encouraging making arrangements with (e.g.) ten; ensuring the children talk about the different arrangements they can see within the whole.
Inverse operations	**Practical examples**
Children need opportunities to partition a number of things into two groups, and to recognise that those groups can be recombined to make the same total. Encourage children to say the whole number.	exploring songs; for example, 'Five Currant Buns' – show that the whole is still five, but some are in the shop and some have been taken away; check throughout that there are still five currant buns playing skittles and looking at how many are standing. How many have fallen over? How many are there altogether?
A number can be partitioned into different pairs of number	**Practical examples**
Children need opportunities to explore a range of ways to partition a whole number. The emphasis here is on identifying the pairs of numbers that make a total. Children can do this in two ways – physically separating a group, or constructing a group from two kinds of things.	Numicon towers: layering up Numicon pieces of the same total putting things into two containers in different ways making a number with two different kinds of things. For example, make a fruit skewer with five pieces of fruit, using bowls of bananas/strawberries to choose from; then ask the children to describe how they have made theirs. They should compare it with a partner's: 'What is the same about your skewers? What is different?' Bunny Ears: using your fingers like bunny ears. 'With two hands, show me five fingers. Can you do it in a different way?' Or, 'Show five fingers altogether with a friend.' • Spill the Beans: using double-sided counters or beans, where one side is coloured, throw the collection and note how many of each type can be seenaltogether. using six bean bags with different fabric on each side, throw the collection and note how many of each type can be seen.
A number can be partitioned into more than two numbers	**Practical examples**
Children need opportunities to explore the different ways that numbers can be partitioned, i.e. into more than two groups. Situations to promote this include increasing the number of pots to put a given amount into, e.g. planting ten seeds into three/more pots.	role play, e.g. in a toy shop, ten toys need arranging onto the three shelves. How will you organise them? having more than two places to sort things into in any given context, e.g. arranging characters in small-world play in different locations games such as 'Posh Ducks' (Griffiths, R., Back, J. & Gifford, S. (2016) Making Numbers: Using manipulatives to teach arithmetic, OUP): using a set number of ducks, for example ten in three different locations (nest, water, decking), roll the dice and make one group match the amount shown without adding or taking any away.

Number bonds: knowing which pairs make a given number	Practical examples
Children need opportunities to say how many are hidden in a known number of things. For example: 'Five toys go into a tent, then two come out. How many are left in the tent?' The child should respond that there are still three toys in the tent.	playing hiding games with a number of objects in a box, under a cloth, in a tent, in a cave, etc. utilising classroom routines such as tidy-up time to identify how many are still missing from a pot with a number label.
Common errors in this area may include: • children suggesting that a larger number than the total are hidden.	**What to look for can a child**: • subitise small groups within a larger number? • make a reasonable guess at a hidden number? • in context, state two groups that make a larger amount? For example, how might the (six) bean bags land? You could have three with stripes up and three with spots up.

Maths Early Years Progression Charts – Pattern

Seeking and exploring patterns is at the heart of mathematics (Schoenfeld, 1992). Developing an awareness of pattern helps young children to notice and understand mathematical relationships. Clements and Sarama (2007) identify that patterns may provide the foundations of algebraic thinking, since they provide the opportunity for young children to observe and verbalise generalisations.

The focus in this section is on repeating patterns, progressing from children copying simple alternating AB patterns to identifying different structures in the 'unit of repeat', such as ABB or ABBC. Patterns can be made with objects like coloured cubes, small toys, buttons and keys, and with outdoor materials like pine cones, leaves or large blocks, as well as with movements and sounds, linking with music, dance, phonics and rhymes. Children can also spot and create patterns in a range of other contexts, such as printed patterns, timetables, numbers and stories

Continuing an AB pattern	Practical examples
Children need the opportunity to see a pattern, to talk about what they can see, and to continue a pattern. At first, they will do this one item at a time, e.g. red cube, blue cube, red cube…verbalising the pattern helps. Children may then be asked to say what they would add next to continue it.	building towers or trains of different-coloured cubes (continuing patterns horizontally and vertically) extending patterns using a wide range of identical objects in different colours, e.g. beads; small plastic toys such as bears, dinosaurs, vehicles. Try to avoid interlocking cubes or bead-threading so children can focus on the pattern rather than their coordination skills
Copying an AB pattern	**Practical examples**
Copying a pattern can be difficult for children if they have to keep comparing item by item. AB patterns are easiest – when presented to children, these should contain several repeats, to ensure that the pattern unit is evident. Discuss the nature of the pattern: how has the pattern been made? Patterns can have a range of features such as varying objects, size or orientation.	accessing a range of patterns to copy. For example, using the plastic bears: big, small, big, small, big… footwear: shoe, welly, shoe, welly…, actions and sounds: jump, twirl, jump, twirl, jump… or clap, stamp, clap, stamp collecting things in the outdoors environment: leaf, stick, leaf, stick…
Make their own AB pattern	**Practical examples**
As children progress from continuing to copying patterns, they can be challenged to change the sample pattern or to create their own. A range of objects can be provided for children to decide what the features of the pattern are going to be.	challenging the child to change one element of the pattern they have created, e.g. 'Can you change the red bear to a blue bear? What is the pattern now?'

Children may find it easier to make a pattern with the same colours as the original but with different objects. For example, copying a red–blue cube pattern with red and blue dinosaurs is easier than with yellow and green cubes. Patterns can involve different aspects and modes such as sounds, words or actions: some children will need suggestions, while others will think of their own. As children construct the patterns, ensure they have opportunities to: • repeat the unit at least three times (big bear, small bear; big bear, small bear; big bear, small bear). This is to ensure the child can sustain the pattern • make a specified pattern, e.g. 'Can you do a green, yellow pattern?' This is to ensure the child can apply their pattern understanding • choose their own rule, e.g. 'I am going to make a big, small pattern.' This is to ensure the child can identify pattern features/rules/criteria • choose their own actions or sounds, e.g. clap, stamp… This is to help children generalise the idea of pattern.	ensuring that there are numerous opportunities to create patterns – e.g. in the outdoors, using natural materials such as sticks, leaves, stones, pine cones; in craft activities, using stamping, sticking, printing; with musical instruments, using sounds such as drums, shakers, triangles, etc. working collaboratively with a friend to take turns to create a pattern, e.g. one claps, one stamps, or one gets the red bear, one gets the yellow bear, etc. challenging a friend to continue or copy their pattern
Spotting an error in an AB pattern	**Practical examples**
When working with AB patterns, children also need the opportunities to spot and correct errors. It is easiest to spot an extra item, then a missing item, then items swapped around. When presented with an AB pattern, children can be encouraged to describe it to make sure it is right. Then, to detect an error, they can track the pattern from the start. To begin with, children may know there is something wrong, but might not be able to say what the error is. They then might take several attempts to correct it, before being able to repair the error in one move.	presenting patterns with deliberate errors, including extra, missing and swapped items, e.g. red cube, blue cube, red cube, blue cube, red cube, red cube, blue cube – identifying there is an extra item and fixing it by removing the extra red cube, putting in an extra blue cube, or swapping the final cubes asking the children to make a pattern with a deliberate mistake and challenging a friend to spot it.
Identifying the unit of repeat	**Practical examples**
The key aspect of understanding patterns is identifying the smallest part of the pattern, or the 'unit of repeat' You can draw children's attention to this when building patterns by picking up a unit at a time, e.g. a blue block and a red block together, and describing this as a 'red blue pattern', rather than a red, blue, red, blue, red, blue pattern. Children can also be asked to show the pattern unit which repeats, e.g. show two blocks, a red and a blue	highlight within a pattern what the unit of repeat is and ask the children to describe it. At this point for pattern novices (children who aren't as experienced as others), it would be good to do this with physical objects so that the unit of repeat can be moved to show how it repeats. Patterns that are printed, stamped or stuck down, and therefore cannot be corrected, are more appropriate for more confident pattern makers
Continuing an ABC pattern	**Practical examples**
Once children are secure with alternating patterns, they can tackle more complex pattern structures: **ABC** has more items in the unit of repeat, but all different, e.g. red, blue, yellow; red, blue, yellow… **ABB** is more challenging because they have two items within the same unit of repeat, e.g. red, blue, blue; red, blue, blue… **ABBC** is more complex because it is longer, with three items, but also includes items which are the same, e.g. red, blue, blue, yellow; red, blue, blue, yellow… **AABB** may be simpler as there are just two items, both repeated, e.g. red, red, blue, blue; red, red, blue, blue…	building towers or trains of different-coloured cubes (continuing patterns horizontally and vertically) extending patterns using a wide range of identical objects in different colours, e.g. beads; small plastic toys such as bears, dinosaurs and vehicles. Try to avoid using interlocking cubes or bead-threading, so children can focus on the pattern they are constructing rather than on their coordination skills.

Children who have only experienced alternating ABC patterns may state that patterns such as ABBC are not patterns, as you cannot have two of the same colour next to each other. This highlights that children need lots of experience of a range of pattern types, so early misconceptions do not form about what makes a pattern. When working on continuing these patterns, children should be encouraged to focus on the unit of repeat, e.g. 'I see you are making a red, blue, green pattern'. Ensure that children repeat the pattern at least three times and are encouraged to describe and say how they would continue.	
Continuing a pattern which ends mid-unit	**Practical examples**
As children work on patterns involving more elements, they can be challenged to continue patterns which do not end after a whole unit of repeat. Provide experiences where the given pattern stops mid-unit.	providing a range of patterns – physical and on cards – that children can continue ensuring that the patterns offered have different structures and end after a complete or a partial unit.
Make their own ABB, ABBC patterns	**Practical examples**
As with the first stages of making an AB pattern, the same range of experiences needs to be provided when the unit of repeat extends. A range of objects can be provided for children to decide what the features of the pattern are going to be. Patterns may include varied items and modes, such as sounds and actions. Ensure that children have opportunities to: • repeat the unit at least three times (big bear, small bear, medium bear; big bear, small bear, medium bear; big bear, small bear, medium bear). This is to ensure the pattern can be sustained over a longer duration • make a specified pattern, e.g. 'Can you do a green, yellow, blue pattern?' This is to ensure the child can apply their pattern understanding • choose their own rule, e.g. 'I am going to make a big, small, small pattern.' This is to ensure the child can identify pattern features/rules/criteria • choose their own actions or sounds, e.g. clap, stamp, twirl… This is to support children in generalising pattern structures.	utilising a range of items in the environment to create patterns such as interlocking cubes and toys, e.g. links, elephants, camels exploring and creating patterns on peg boards, with fruit (e.g. fruit kebabs), musical instruments, movements and dance sequences
Spotting an error in an ABB pattern	**Practical examples**
When working with ABB patterns, children also need the opportunities to spot and correct errors. It is easiest to spot an extra item, then a missing item, then items swapped around. When presented with an ABB pattern, children can be encouraged to describe it to make sure it is right. Then, to detect an error, they can track the pattern from the start. To begin with, children may know there is something wrong, but might not be able to say what the error is. They then might take several attempts to correct it, before being able to repair the error in one move.	presenting patterns with deliberate errors once children have fixed the pattern, encouraging them to check the 'fix' by tracking the pattern asking the children to make a pattern with a deliberate mistake and challenging a friend to spot it.
Symbolising the unit structure	**Practical examples**
As children become more experienced with pattern continuing, -extending and -creating, encourage them to record the patterns that they make. Initially this might be straightforward representations, but over time these recordings may become	• including the following phrasing in discussion and dialogue: 'This is a red blue pattern; this/that; I call it an A (one of these) then a B (one of those).' • constructing patterns with actions and

more iconic, e.g. a red dot representing the red dinosaur, a squiggle or the letter R for red dinosaur. As this progresses, encourage the children to symbolise their patterns in a range of ways, and to use these symbols to continue the pattern to demonstrate their understanding of the pattern. Children may, with adult direction, pick up on the coding of patterns as AB, ABB, ABBC, etc. One additional level of challenge is to create symbols for movement/sound patterns, as the children need to construct a symbol with less concrete/visual support.	developing symbols to show the pattern and to provide 'instructions' for someone else to follow the pattern • inviting friends to copy the pattern from the symbols.
Generalising structures to another context or mode	**Practical examples**
As children gain experience of symbolising patterns, they develop their experience of pattern structure. As they identify the unit of repeat and express it, they will be able to use this knowledge to create a pattern in a different medium, which follows the same structure. You may ask them to describe the pattern, what comes next, what the rule is for their pattern, etc. If a child can do this confidently, they could be asked to recreate the same pattern rule with different objects. 'Can you use the nature basket to create a pattern with the same rule?' The child would need to recognise they need three different items, one of which is duplicated. They may say they will use a twig instead of the circle, a leaf instead of the square, a conker instead of the triangle, and create this instead:	• providing a range of experiences where children can create a pattern using a coding structure • ensuring children can follow the patterns they have coded.
Making a pattern which repeats around a circle	**Practical examples**
As children become more experienced with the structures of patterns, they can investigate whether patterns can continue indefinitely in a circle. Linking elephants, camels or making a necklace can provoke discussion about this. You then might lead discussions about whether the pattern works and how you can tell. If it doesn't work, can children explain why, and correct it so it does? Circles allow children to adjust the circle size, so they can add or take out items.	• making circular patterns such as necklaces, circles of linking elephants or camels • using pre-given circles to create a border, such as on or around a paper plate • exploring which patterns work, which don't, and why • offering a unit of the pattern and asking the child if they can include it in their pattern • making patterns around rectangular or other shaped frames.
Making a pattern around a border with a fixed number of space	**Practical examples**
This is where the children explore creating a pattern around a given space. In these sorts of activities, children have the additional challenge of recognising if their pattern can 'work' – fit into the given space. It is useful to include indoor and outdoor spaces, e.g. creating an outdoor reading area and defining it with a border of carpet tiles. Children can create a pattern on the carpet tiles with cubes to see if their pattern works, e.g. one coloured cube per tile. When exploring if a pattern works or not, draw attention to the number of spaces and the size of the unit of repeat.	• creating borders around defined spaces in the learning environment, i.e. a garden for the teddy bears, an outdoor reading area, etc. • encouraging children to predict if the pattern could 'keep going', voting on this and discussing their thoughts and reasons with a partner
Pattern-spotting around us	**Practical examples**
As children become pattern experts, look for opportunities to spot and study patterns in the environment. These patterns could be in construction, fabric, wrapping paper, wallpaper, etc. Look for opportunities to identify the unit of repeat and explain	• exploring patterns in stories, songs and rhymes • where possible, representing these diagrammatically to support pattern-spotting, and predicting what will happen next, and why

how it repeats. Consider other patterns, such as growing patterns, extending a cross shape, or spotting 'staircase' patterns of numbers going up in ones or twos. Children may make and spot spatial patterns, for example reflecting shapes or reversing an image. Stories and rhymes present a good opportunity to explore a growing pattern, e.g. 'There was an Old Lady who Swallowed a Fly', or 'A Squash and a Squeeze'. Explore representing these diagrammatically – to see a staircase pattern, for example.	• inviting children to spot patterns in the home environment, or bring in examples from home • looking at fabric patterns from different cultural traditions: discussing the patterns in terms of what stays the same and what is different • designing wrapping paper for a specific event that involves creating a pattern which the children can describe.
Common errors in this area may include: • not recognising a pattern such as ABBA (e.g. stating that patterns cannot have two of the same colour together) • when copying or extending a pattern, changing it before making three repeats • spotting that there is an error but not being able to describe it • identifying an error but not being able to correct it • correcting an error by making a 'local correction', which just moves the problem along (e.g. by adding an extra item when colours have been swapped) • describing the whole pattern instead of identifying the part which repeats, or the unit of repeat.	**What to look for can a child**: • continue, copy and create an AB pattern? • identify the pattern rule (unit of repeat) in an AB pattern? • continue, copy and create ABB, ABBC (etc.) patterns? • identify the pattern rule (unit of repeat) in ABB, ABBC (etc.) patterns? • spot an error and 'correct' a pattern? • explain whether a circular pattern is continuous or not?

Math Early Years Progression Charts – Shape and Space

Mathematically, the areas of shape and space are about developing visualising skills and understanding relationships, such as the effects of movement and combining shapes together, rather than just knowing vocabulary. Spatial skills are important for understanding other areas of maths and children need structured experiences to ensure they develop these. Here, the focus is on actively exploring spatial relations and the properties of shapes, in order to develop mathematical thinking (rather than on shape classification, which requires prior knowledge of properties). This section is concerned with developing the two aspects of spatial awareness and shape awareness, with some progression identified within each.

Developing spatial awareness: experiencing different viewpoint	**Practical examples**
Children need opportunities to move both themselves and objects around, so they see things from different perspectives. This will support them in visualising how things will appear when turned around and imagining how things might fit together. They need to make constructions, patterns and pictures, and select shapes which will fit when rotated or flipped in insert boards, shape sorters and jigsaws. These experiences will support them in noticing the results of rotating and reflecting images, and in visualising these.	• riding trikes around interesting routes • construction activities • printing and making pictures and patterns with shapes • posting boxes • jigsaws • making a complete circuit with a train track • directing a simple robot or remote-controlled toy vehicle along a route • tangrams: 'Can you make a person with the shapes?' • with toys in a line: 'Can you say what the teddy on the other side is seeing?'
Developing spatial vocabulary	**Practical examples**
Children need opportunities to be exposed to and to use the language of position and direction: position: 'in', 'on', 'under' direction: 'up', 'down', 'across'. Children also need opportunities to use terms which are relative to the	•hunting for hidden objects, with some prompts, e.g. 'Look behind the bicycle

viewpoint: 'in front of', 'behind', 'forwards', 'backwards' ('left' and 'right' to be used later on as ideas develop). Create as many opportunities as possible to explore this language, taking advantage of play in the outdoors to explore sequences of body movements (following obstacle courses, directing a friend, etc.).	store, take three steps from the front of the art cupboard…' • developing and talking about small-world scenarios, e.g. doll's house, miniature village, play park • acting out their own versions of well-known stories where characters negotiate routes and obstacles, for example 'We're Going on a Bear Hunt' • directing each other as robots.
Shape awareness: developing shape awareness through construction	**Practical examples**
Through play – particularly in construction – children have lots of opportunities to explore shapes, the attributes of particular shapes, and to select shapes to fulfil a particular need. Support this exploration by discussing items built by children in terms of how towers are built and why certain shapes are chosen to make a tower, and the space that has been created within an enclosure. Ask: 'How did you make that tower?', 'Why were those blocks good ones to use?'	• construction with structured and unstructured materials • making dens with varied materials outdoor
Representing spatial relationships	**Practical examples**
Small world play and model building provide lots of opportunities for children to describe things being 'in front of', 'behind', 'on top of' etc., and to consider objects from different perspectives. Drawing representations of these relationships is a further challenge. These drawings may include a simple representation of a three-dimensional object from a different viewpoint. For example, 'can you draw your construction from above, looking down on it?'	• designing a plan for a garden or play area, using a small tray with sand, twigs, building bricks, etc. • drawing or making a simple map of a route with 'landmarks', e.g. houses and trees • following a simple map of an excursion.
Identifying similarities between shapes	**Practical examples**
Children need opportunities to construct and create things that represent objects in their environment. As they do this, they should notice shape properties of the object that they want to represent; encourage them to think about the appropriateness of the shapes they choose. Examples of this may include representing a ball as a circle, building a train from wooden rectangular blocks, or using a curved block for the elephant's trunk.	• stories as a prompt for creating representations, e.g. building a house for the three bears • making pictures with found materials, as well as structured shapes and blocks.
Showing awareness of properties of shape	**Practical examples**
At this stage, children show increasing intentionality in their selection of shapes, for example using cylinders to represent wheels because they can roll. Draw children's attention to specific properties by using specific language in everyday situations, while children may use informal language. Properties may include: • curvedness • numbers of sides and corners (2D) or edges, faces and vertices (3D) • equal sides • parallel sides • angle size, including right angles • 2D shapes as faces of 3D shapes. In play, children show that they are utilising this knowledge by gathering specific items that are needed for their construction, e.g. making a bed for a teddy and gathering blocks of equal length to make the rectangle; taking time with constructing corners so the shapes fit together to make a right angle.	• making an insect hotel – selecting tube-like shapes from a collection of varied materials, some not fit for purpose • creating an extended channel for water to flow from a high container to a low one, some distance away • asking questions, for example: 'What shapes can you make with three people inside a loop of string? What about with four people?' 'What is the same and what is different about these?' • making shapes with sticks and with their own bodies • printing with shapes: 'What footprint do you think this cylinder will make?

Describing properties of shape	Practical examples
As children construct, and appear to be utilising, the properties of shapes, informally ask them about their constructions and representations. Children may use comparisons such as 'ball-shaped' or 'house-shaped', or start to discriminate between shapes, e.g. a 'fat' triangle and a 'pointy' triangle, using informal language. With shapes such as triangles and rectangles, ensure that children are used to seeing a range of examples, and the same shape in different orientations, as well as different sizes, colours and materials.	• covering objects in foil and inviting children to justify their guesses about what is inside • making arrangements with a selection of different rectangles, including squares.
Developing an awareness of relationships between shapes	**Practical examples**
As children become more confident with specific shapes, encourage them to spot shapes within shapes. You might talk about small triangles making a bigger triangle or identifying 2D faces of 3D shapes. Pattern blocks are a useful resource, since children can point out the shapes they have used to make their whole pattern. Also encourage children to predict what will happen when paper is cut or folded, or shapes are combined. Ask: 'What shapes will we see?', 'What will happen if we fold the square in half?', 'What if we put two triangles together?'	• choosing 2D shapes to construct a 3D model, e.g. using triangles and rectangles to make a tent • making decorations by folding and cutting • making 3D shapes using interlocking shapes.

Common errors in this area may include:	What to look for can a child:
• children thinking that only regular triangles are triangles, only brick-like rectangles are rectangles (i.e. shapes are defined by their image, not by their properties) • children thinking that squares are only squares when the bottom is horizontal (i.e. shapes are defined by their orientation).	• select and rotate shapes to fit into a given space? • use positional vocabulary, including relative terms, to describe where things are in small-world play? • show intentionality in selecting shapes for a purpose, such as cylinders to roll? • make a range of constructions, including enclosures, and talk about the decisions they have made? • see shapes in different orientations and recognise that they are still that shape? • recognise a range of triangles and say how they know what they are?

Maths Early Years Progression Charts – Measure

Mathematically, measuring is based on the idea of using numbers of units in order to compare attributes, such as length or capacity. Although young children engage with using rulers and experience being measured in centimetres, kilos – and years! – the measuring units themselves are hard to understand. Children need to realise which attribute is being measured, e.g. weight as opposed to size, and the idea of conservation: that the amount stays the same, even if the appearance alters, e.g. if dough is stretched out or in bits. In order to understand units, they need to realise that two items can be compared using a third item, or 'go between', such as a stick. Finally, children need to understand how equal size units are used repeatedly to express an amount as a number. While young children can engage actively in making comparisons and exploring equivalence of length, volume, capacity and weight in different ways, some of these ideas are challenging and will develop later in primary school. For instance, weight (mass or density) is difficult to distinguish from size since it is invisible, and the concept of conservation is harder to understand for weight and capacity. Measuring with non-standard units of different sizes in order to appreciate the need for equal units is less effective with younger children, so centimetre cubes are recommended as accessible units. While time is also elusive to measure, young children can sequence events and, for example, count 'sleeps'. (Money as a measure of value is too advanced to consider here.)

Recognising attributes	Practical examples
In this first stage, children are able to recognise the specific attributes of (for example) length – that a stick is long; adults are tall. Their initial recognition may be a descriptor and over-applied (all straight things are long, and if it is not straight it cannot be long; all adults are tall). Children may use gestures or words to start to compare amounts of continuous quantities (length, capacity, weight), pointing to items that are big, tall, full or heavy. Children learn this vocabulary from the adults around them. Adults can seek opportunities to extend and refine conversations about things that are long, tall, high, heavy, full, etc. rather than just 'big'. At this point children may not be using comparative language such as, 'You are taller than me.'	• ensuring adults model language which highlights the specific attribute that is the focus of attention • dough modelling, which can provide a good opportunity to discuss the length of snakes, or the weight of different-sized lumps • water and sand-play, which can provide lots of opportunities to highlight capacity.
Comparing amounts of continuous quantities	**Practical examples**
Children can find something that is longer/shorter or heavier/lighter than a given reference item. They will utilise strategies such as direct comparison, e.g. placing objects side by side to determine which is longer. Children compare sizes, lengths, weights and capacities verbally and begin to use more specific terms, such as 'taller than', 'heavier than', 'lighter than', and 'holds more than', as well as more general comparative phrases, such as 'not enough', 'too much', and 'a lot more'. When comparing lengths directly, children need to ensure that they align the starting points, and compare like-for like, e.g. straightening skipping ropes before comparing lengths. When comparing capacities directly, children can pour from one container to another to find which holds more, or find one that is the same. However, children may conclude that if one container overflows that must mean 'bigger'. Ensure that children have opportunities to see a jug of coloured water poured into a range of container shapes. Ask: 'What do you think will happen if we pour this tall thin jugful into this short fat dish?' Comparing weight can be tricky to conceptualise. One way is to identify that greater mass is shown by a greater downward pull. Ask children to hold a carrier bag; encourage them to notice it feels as though their hand is being pulled down when something heavy is put in it. Place a carrier bag in each hand and identify which one is heavier, by discussing which arm feels more pulled down. Show this using a simple spring balance or a box attached to elastic bands; identify that the elastic is being stretched by being pulled down, just like our arms. Explore the link to the balance scales to show that the heavier side goes down. If possible, exemplify this with a see-saw. Ensure that children are presented with large, light things and small, heavy things, to prevent the overgeneralisation that big means heavy and small means light.	• encouraging children to compare different attributes in everyday situations: 'I wonder who has the longest snake?' 'I wonder whose pot will hold the most water?' 'I wonder which ball is the heaviest?' • cutting a piece of ribbon as long as a child's arm and encouraging them to find things in the environment that are longer, shorter or the same length • focusing on asking for specific things according to their attributes. For example: 'Please can you pass me a ... that is ... than this one?' • when comparing directly, finding the odd one out, by providing a varied range of container shapes all containing the same amount of liquid except for one. 'Which one do you think is the odd one out? Why? How will we check? Were we right?' • posing see-saw problems, relating to weight: 'What can we do to make this side of the see-saw go down?' • using a simple spring balance to compare the weight of cargo for a toy boat • setting up a 'balancing station' with interesting things to weigh and to balance, indoors and outdoors • comparing different parcels, ensuring some of the smaller parcels are heavy, and some of the larger parcels are light.
Showing awareness of comparison in estimating and predicting	**Practical examples**
After children have had lots of practical experiences of comparing attributes, they can begin to estimate and to predict. For instance, they can start to consider which container would be best to store a specific item in: 'Which box should Teddy have?', 'What will fit in here?'	• making bed for a teddy using blocks • selecting a box or container to store a specific item • dressing dolls, and selecting different-sized clothes • finding things that will fit inside a matchbox.

Comparing indirectly	Practical examples
Children can then move onto using one thing to compare with two others, if, for example, asked to put things in order of height, weight or capacity. This may involve using a 'go between', for instance pouring a jugful of water into two bottles to see which holds more. Problems may be posed such as: 'I would like to move this table outside – do you think it will fit through the door?'	• making 'Russian doll'-type sets of nesting boxes from a collection • finding ways of seeing if the cupboard or carpet will fit in the role-play area without moving it • finding which of three pairs of shoes is heaviest for packing in a rucksack • packing a shopping bag, making sure the lightest items do not get squashed by heavier things.
Recognising the relationship between the size and number of units	**Practical examples**
Before children use standard units of measure, they begin to compare units of different sizes in practical contexts. One example may be in the water tray, where children realise it will take them longer to fill a bucket using teaspoons than bottles. Another example would be to fill identical containers with different-sized objects, e.g. small balls or large balls. These sorts of playful experiences enable children to make the generalisation that the smaller the unit the more we need of them, or the bigger the unit the less we need of them. These experiences can be extended by encouraging estimations: 'How many tennis balls do you think will fit in this tub?' Then check this by filling it. 'What if I try to fill it with ping pong balls? Will our answer stay the same? If not, why not?' In practical situations, these sorts of questions can be asked to support children in their justification of the choice of equipment. For example: 'What can I use to help fill the water tray? Which bag shall I use for my shopping? Which box would be best to store these buttons? Why did you think that is a good choice?'	•setting up an Estimation Station and guessing how many things are in the jar each day • making biscuits from a given amount of dough – choosing cutters to see who will make the most biscuits • choosing from a selection of spoons, ladles, etc., to see who can fill their pot the quickest with rice. How do you know who will be quickest
Beginning to use units to compare things	**Practical examples**
Experiences can be provided where children use units to 'measure' and compare. It is better to provide identical bricks, centimetre cubes or metre sticks so they can count physical units, rather than repeating the use of one item as with using hands or feet. In order to measure accurately, they need to ensure there are no gaps between units of measure. Using standard units helps children make connections with measuring in 'real life'. Young children also enjoy using height charts, measuring tapes, rulers, digital scales and timers, although will not yet fully understand how they work.	• setting up a 'filling station' with lots of different-sized containers to fill with beads, then comparing capacities • using large bricks to measure the height of individuals using metre sticks to see if an elephant or dinosaur would fit in the room • measuring the growth of a beanstalk or sunflower with interlocking centimetre cubes • comparing the capacity of different bottles by filling lots of glasses.
Beginning to use time to sequence events	**Practical examples**
Time is an abstract aspect to measure, and tricky in a range of ways. Although their age may be the most familiar number they know, children may have little sense of the unit of a 'year', and few may know the date of their birthday. In order to tell the time, children need a sense of number, space and time, the ability to count, and some notion of fractions (for half and quarter hours). In the Early Years we begin by drawing children's attention to sequencing of activities, important times in their day, and some sequences of time that are significant to them. Vocabulary that supports the understanding of this concept includes the positional language of 'before', 'after', 'next', and the relative terms 'yesterday' and 'tomorrow'. Knowing days of the week	• un-muddling visual timetables • making picture sequences for cooking instructions • describing sequences by re-telling stories • discussing 'o'clock' times at registration, lunchtime, snack time, tidy-up time, etc. • making their own timetable for a day – selecting activities and ordering them.

also helps children to keep track of time. Direct children's attention to the short hand, pointing to a number on a clock face, and identify what we are doing at that time.	
Beginning to experience specific time durations	**Practical examples**
Children need to experience specific time spans in order to start to develop an overall sense of time. Initially, this may be based on familiar activities such as the number of 'sleeps' before an event. A class calendar may support this by highlighting certain events ('How many sleeps until the chicks start to hatch?', 'How many sleeps until my birthday?', 'How many sleeps until we go to the park?'). Discuss the number of sleeps getting smaller and what this means. By using timers in play, children can start to explore what they can do in a certain time period. For example: 'I wonder how long it takes you to run around the track?', 'How would we know if you were getting quicker?'. Identify that, in this case, the smaller the number of seconds the quicker you are getting (this is tricky for a child, as usually bigger numbers are 'better'). Children may also have the opportunity to see how many things they can do in a minute. For example: 'How many play people can you rescue from the pit?' (Wrap fabric around a water tray to create small gaps though which people can be rescued.)	• events on a class calendar to count down to • timers provided for children to set and respond to challenges; e.g. 'I wonder if we can run as fast as a cheetah', 'I wonder how many hops I can do in ten seconds', 'I wonder how many times I can write my name in a minute', etc. • time durations with songs or music.

Common errors in this area may include:	**What to look for can a child:**
• keeping track of events, e.g. 'Have I had my lunch yet?' • positional language associated with time; muddling the relative terms 'yesterday' and 'tomorrow' • using 'long' to describe the shape of something (e.g. a block that is much longer than it is wide) rather than to compare lengths • not taking into account both ends as the starting and stopping point • not being able to say 'than' in the phrase, 'this is longer than that' • not understanding that units must cover a complete length, with no gaps or overlaps, demonstrated by thinking that measuring is about counting units placed along something, or putting a ruler alongside and saying a number not understanding that units must be equal.	• find something that is longer, shorter, heavier, lighter (etc.) than a reference item? • find an appropriate container for a specific item? • describe the location of something using positional language? • accurately use the relative terms 'yesterday' and 'tomorrow'? • order a short sequence of events?

2.2 Maths Progression Map Addition and Subtraction

Number: Addition and Subtraction

National Centre for Excellence in the Teaching of Mathematics

NUMBER BONDS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
MENTAL CALCULATION					
add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers
read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				use their knowledge of the order of operations to carry out calculations involving the four operations

WRITTEN METHODS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.

PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
	solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)				Solve problems involving addition, subtraction, multiplication and division

2.3 Maths Progression Map Algebra

Algebra

National Centre for Excellence in the Teaching of Mathematics

EQUATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and ***missing number problems*** *such as* $7 = \square - 9$ (copied from Addition and Subtraction)	*recognise and use the inverse relationship between addition and subtraction and use this to check calculations and* ***missing number*** *problems.* (copied from Addition and Subtraction)	solve problems, *including* ***missing number*** *problems, using number facts, place value, and more complex addition and subtraction.* (copied from Addition and Subtraction) *solve problems, including* ***missing number*** *problems, involving multiplication and division, including integer scaling* (copied from Multiplication and Division)		*use the properties of rectangles to deduce related facts and find* ***missing lengths and angles*** (copied from Geometry: Properties of Shapes)	express missing number problems algebraically
	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)				find pairs of numbers that satisfy number sentences involving two unknowns
represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)					enumerate all possibilities of combinations of two variables

FORMULAE					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)		use simple formulae *recognise when it is possible to use* ***formulae*** *for area and volume of shapes* (copied from Measurement)
SEQUENCES					
sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening (copied from Measurement)	*compare and sequence intervals of time* (copied from Measurement) *order and arrange combinations of mathematical objects in patterns* (copied from Geometry: position and direction)				generate and describe linear number sequences

2.4 Maths Progression Map Fractions

COUNTING IN FRACTIONAL STEPS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)	count up and down in tenths	count up and down in hundredths		
RECOGNISING FRACTIONS					
recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find, name and write fractions $^1/_3$, $^1/_4$, $^2/_4$ and $^3/_4$ of a length, shape, set of objects or quantity	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (appears also in Equivalence)	
		recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
recognise, find and name a quarter as one of four equal parts of an object, shape or quantity		recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
COMPARING FRACTIONS					
		compare and order unit fractions, and fractions with the same denominators		compare and order fractions whose denominators are all multiples of the same number	compare and order fractions, including fractions >1

COMPARING DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
ROUNDING INCLUDING DECIMALS					
			round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy
EQUIVALENCE (INCLUDING FRACTIONS, DECIMALS AND PERCENTAGES)					
	write simple fractions e.g. $^1/_2$ of 6 = 3 and recognise the equivalence of $^2/_4$ and $^1/_2$.	recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	use common factors to simplify fractions; use common multiples to express fractions in the same denomination
			recognise and write decimal equivalents of any number of tenths or hundredths	read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$)	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
				recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
			recognise and write decimal equivalents to $^1/_4$; $^1/_2$; $^3/_4$	recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction	recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

ADDITION AND SUBTRACTION OF FRACTIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		add and subtract fractions with the same denominator within one whole (e.g. $^5/_7 + ^1/_7 = ^6/_7$)	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
				recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$)	
MULTIPLICATION AND DIVISION OF FRACTIONS					
				multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^1/_4 \times ^1/_2 = ^1/_8$)
					multiply one-digit numbers with up to two decimal places by whole numbers
					divide proper fractions by whole numbers (e.g. $^1/_3 \div 2 = ^1/_6$)

MULTIPLICATION AND DIVISION OF DECIMALS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					multiply one-digit numbers with up to two decimal places by whole numbers
			find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths		multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
					identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
					associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
					use written division methods in cases where the answer has up to two decimal places

PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		solve problems that involve all of the above	solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number	solve problems involving numbers up to three decimal places	
			solve simple measure and money problems involving fractions and decimals to two decimal places.	solve problems which require knowing percentage and decimal equivalents of $^1/_2$, $^1/_4$, $^1/_5$, $^2/_5$, $^4/_5$ and those with a denominator of a multiple of 10 or 25.	

2.5 Maths Progression Map Geometry – Position and Direction

Geometry: Position and Direction

National Centre for Excellence in the Teaching of Mathematics

<table>
<tr><th colspan="6">POSITION, DIRECTION AND MOVEMENT</th></tr>
<tr><th>Year 1</th><th>Year 2</th><th>Year 3</th><th>Year 4</th><th>Year 5</th><th>Year 6</th></tr>
<tr><td rowspan="2">describe position, direction and movement, including half, quarter and three-quarter turns.</td><td rowspan="2">use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)</td><td rowspan="2"></td><td>describe positions on a 2-D grid as coordinates in the first quadrant</td><td rowspan="2">identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed</td><td>describe positions on the full coordinate grid (all four quadrants)</td></tr>
<tr><td>describe movements between positions as translations of a given unit to the left/right and up/down</td><td>draw and translate simple shapes on the coordinate plane, and reflect them in the axes.</td></tr>
<tr><td></td><td></td><td></td><td>plot specified points and draw sides to complete a given polygon</td><td></td><td></td></tr>
<tr><th colspan="6">PATTERN</th></tr>
<tr><td></td><td>order and arrange combinations of mathematical objects in patterns and sequences</td><td></td><td></td><td></td><td></td></tr>
</table>

2.6 Maths Progression Map Geometry – Shape

IDENTIFYING SHAPES AND THIER PROPERTIES					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line		identify lines of symmetry in 2-D shapes presented in different orientations	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets (appears also in Drawing and Constructing)
	identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces				illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
	identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]				
DRAWING AND CONSTRUCTING					
		draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees (°)	draw 2-D shapes using given dimensions and angles
					recognise, describe and build simple 3-D shapes, including making nets (appears also in Identifying Shapes and Their Properties)

COMPARING AND CLASSIFYING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	use the properties of rectangles to deduce related facts and find missing lengths and angles	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
				distinguish between regular and irregular polygons based on reasoning about equal sides and angles	
ANGLES					
		recognise angles as a property of shape or a description of a turn		know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
		identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	identify acute and obtuse angles and compare and order angles up to two right angles by size	identify: * angles at a point and one whole turn (total 360°) * angles at a point on a straight line and ½ a turn (total 180°) * other multiples of 90°	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
		identify horizontal and vertical lines and pairs of perpendicular and parallel lines			

2.7 Maths Progression Map Measurement

COMPARING AND ESTIMATING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * mass/weight [e.g. heavy/light, heavier than, lighter than] * capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter] * time [e.g. quicker, slower, earlier, later]	compare and order lengths, mass, volume/capacity and record the results using >, < and =		estimate, compare and calculate different measures, including money in pounds and pence (also included in Measuring)	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (also included in measuring) estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3.
sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	compare and sequence intervals of time	compare durations of events, for example to calculate the time taken by particular events or tasks			
		estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Telling the Time)			

MEASURING and CALCULATING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
measure and begin to record the following: * **lengths and heights** * **mass/weight** * **capacity and volume** * **time** (hours, minutes, seconds)	choose and use appropriate standard units to estimate and measure **length/height** in any direction (m/cm); **mass** (kg/g); **temperature** (°C); **capacity** (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	measure, compare, add and subtract: **lengths** (m/cm/mm); **mass** (kg/g); **volume/capacity** (l/ml)	estimate, compare and calculate **different measures,** including **money in pounds and pence** (appears also in Comparing)	use all four operations to solve problems involving measure (e.g. **length, mass, volume, money**) using decimal notation including scaling.	solve problems involving the calculation and conversion of **units of measure**, using decimal notation up to three decimal places where appropriate (appears also in Converting)
		measure the **perimeter** of simple 2-D shapes	measure and calculate the **perimeter** of a rectilinear figure (including squares) in centimetres and metres	measure and calculate the **perimeter** of composite rectilinear shapes in centimetres and metres	recognise that shapes with the same areas can have different **perimeters** and vice versa

MEASURING and CALCULATING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
recognise and know the value of different denominations of **coins and notes**	recognise and use symbols for pounds **(£) and pence (p)**; combine amounts to make a particular value	add and subtract amounts of **money** to give change, using both £ and p in practical contexts			
	find different combinations of coins that equal the same amounts of money				
	solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change				
			find the area of rectilinear shapes by counting squares	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes *recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})* (copied from Multiplication and Division)	calculate the area of parallelograms and triangles
					calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3].
					recognise when it is possible to use formulae for area and volume of shapes

TELLING THE TIME					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)		
recognise and use language relating to dates, including days of the week, weeks, months and years	know the number of minutes in an hour and the number of hours in a day. (appears also in Converting)	estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight (appears also in Comparing and Estimating)			
			solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Converting)	solve problems involving converting between units of time	

CONVERTING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	know the number of minutes in an hour and the number of hours in a day. (appears also in Telling the Time)	know the number of seconds in a minute and the number of days in each month, year and leap year	convert between different units of measure (e.g. kilometre to metre; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
			read, write and convert time between analogue and digital 12 and 24-hour clocks (appears also in Converting)	solve problems involving converting between units of time	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Measuring and Calculating)
			solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days (appears also in Telling the Time)	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometres

2.8 Maths Progression Map Multiplication & Division

MULTIPLICATION & DIVISION FACTS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
count in multiples of twos, fives and tens (copied from Number and Place Value)	*count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward* (copied from Number and Place Value)	*count from 0 in multiples of 4, 8, 50 and 100* (copied from Number and Place Value)	*count in multiples of 6, 7, 9, 25 and 1 000* (copied from Number and Place Value)	*count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000* (copied from Number and Place Value)	
	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 × 12		
MENTAL CALCULATION					
		write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods)	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers
	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	*associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)* (copied from Fractions)

WRITTEN CALCULATION					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods)	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
				divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
					use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			recognise and use factor pairs and commutativity in mental calculations (repeated)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	identify common factors, common multiples and prime numbers
				know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	*use common factors to simplify fractions; use common multiples to express fractions in the same denomination* (copied from Fractions)
				establish whether a number up to 100 is prime and recall prime numbers up to 19	
				recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	*calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3* (copied from Measures)

ORDER OF OPERATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					use their knowledge of the order of operations to carry out calculations involving the four operations
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
		estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)	*estimate and use inverse operations to check answers to a calculation* (copied from Addition and Subtraction)		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	solve problems involving addition, subtraction, multiplication and division
				solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
				solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	*solve problems involving similar shapes where the scale factor is known or can be found* (copied from Ratio and Proportion)

2.9 Maths Progression Map Place Value

COUNTING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			count backwards through zero to include negative numbers	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use negative numbers in context, and calculate intervals across zero
count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;	count in multiples of 6, 7, 9, 25 and 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1000 000	
given a number, identify one more and one less		find 10 or 100 more or less than a given number	find 1000 more or less than a given number		
COMPARING NUMBERS					
use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1000	order and compare numbers beyond 1000 *compare numbers with the same number of decimal places up to two decimal places* (copied from Fractions)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
IDENTIFYING, REPRESENTING AND ESTIMATING NUMBERS					
identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		

READING AND WRITING NUMBERS (including Roman Numerals)					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1000 in numerals and in words *tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks* (copied from Measurement)	read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Comparing Numbers) read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Understanding Place Value)
UNDERSTANDING PLACE VALUE					
	recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) *find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths* (copied from Fractions)	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* (copied from Fractions)	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers) *identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places* (copied from Fractions)

ROUNDING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			round any number to the nearest 10, 100 or 1 000	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	round any whole number to a required degree of accuracy
			round decimals with one decimal place to the nearest whole number (copied from Fractions)	*round decimals with two decimal places to the nearest whole number and to one decimal place* (copied from Fractions)	*solve problems which require answers to be rounded to specified degrees of accuracy* (copied from Fractions)
PROBLEM SOLVING					
	use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above

2.10 Maths Progression Map Ratio and Proportion

Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division					
					Year 6
					solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
					solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison
					solve problems involving similar shapes where the scale factor is known or can be found
					solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

2.11 Maths Progression Map Statistics

Statistics

National Centre for Excellence in the Teaching of Mathematics

INTERPRETING, CONSTRUCTING AND PRESENTING DATA					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
	ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity				
	ask and answer questions about totalling and comparing categorical data				
SOLVING PROBLEMS					
		solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average

2.12 Ready to Progress Criteria

This section identifies the most important conceptual knowledge and understanding that pupils need as they progress from year 1 to year 6. These important concepts are referred to as ready-to-progress criteria and provide a coherent, linked framework to support pupils' mastery of the primary mathematics curriculum. The ready-to-progress criteria definitions for all year groups are as follows.

Ready-to-progress criteria strands	Code
Number and place value	NPV
Number facts	NF
Addition and subtraction	AS
Multiplication and division	MD
Fractions	F
Geometry	G

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
NPV	**1NPV–1** Count within 100, forwards and backwards, starting with any number.		**3NPV–1** Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10. →	**4NPV–1** Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. →	**5NPV–1** Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01. →	**6NPV–1** Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
		2NPV–1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning. →	**3NPV–2** Recognise the place value of each digit in *three*-digit numbers, and compose and decompose *three*-digit numbers using standard and non-standard partitioning. →	**4NPV–2** Recognise the place value of each digit in *four*-digit numbers, and compose and decompose *four*-digit numbers using standard and non-standard partitioning. →	**5NPV–2** Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning. →	**6NPV–2** Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.
	1NPV–2 Reason about the location of numbers to 20 within the linear number system, including comparing using < > and = →	**2NPV–2** Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10. →	**3NPV–3** Reason about the location of any *three*-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. →	**4NPV–3** Reason about the location of any *four*-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each. →	**5NPV–3** Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each. →	**6NPV–3** Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
NPV			**3NPV–4** Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts. →	**4NPV–4** Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts. →	**5NPV–4** Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. →	**6NPV–4** Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.
					5NPV–5 Convert between units of measure, including using common decimals and fractions.	
NF	**1NF–1** Develop fluency in addition and subtraction facts within 10. →	**2NF–1** Secure fluency in addition and subtraction facts within 10, through continued practice. →	**3NF–1** Secure fluency in addition and subtraction facts that bridge 10, through continued practice.			
	1NF–2 Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers. →		**3NF–2** Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number. →	**4NF–1** Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number. →	**5NF–1** Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.	
				4NF–2 Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context.		
			3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10). →	**4NF–3** Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100) →	**5NF–2** Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).	

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
AS	**1AS–1** Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.	**2AS–1** Add and subtract across 10.	**3AS–1** Calculate complements to 100.			**6AS/MD–1** Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
	1AS–2 Read, write and interpret equations containing addition (+), subtraction (−) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	**2AS–2** Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?".	**3AS–2** Add and subtract up to three-digit numbers using columnar methods.			**6AS/MD–2** Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.
		2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.	**3AS–3** Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure. Understand and use the commutative property of addition, and understand the related property for subtraction.			**6AS/MD–3** Solve problems involving ratio relationships.
		2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.				**6AS/MD–4** Solve problems with 2 unknowns.

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
MD		**2MD–1** Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	**3MD–1** Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	**4MD–1** Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size. →	**5MD–1** Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	For year 6, MD ready-to-progress criteria are combined with AS ready-to-progress criteria (please see above).
		2MD–2 Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).		**4MD–2** Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	**5MD–2** Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	
				4MD–3 Understand and apply the distributive property of multiplication. →	**5MD–3** Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	
					5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
F			**3F–1** Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.			**6F–1** Recognise when fractions can be simplified, and use common factors to simplify fractions.
			3F–2 Find unit fractions of quantities using known division facts (multiplication tables fluency). →		**5F–1** Find non-unit fractions of quantities.	**6F–2** Express fractions in a common denomination and use this to compare fractions that are similar in value.
			3F–3 Reason about the location of any fraction within 1 in the linear number system. →	**4F–1** Reason about the location of mixed numbers in the linear number system.		**6F–3** Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
				4F–2 Convert mixed numbers to improper fractions and vice versa.	**5F–2** Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	
			3F–4 Add and subtract fractions with the same denominator, within 1. →	**4F–3** Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.	**5F–3** Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions.	
G	**1G–1** Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. →	**2G–1** Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties. →	**3G–1** Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.		**5G–1** Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
G					**5G–2** Compare areas and calculate the area of rectangles (including squares) using standard units.	
	1G–2 Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. →		**3G–2** Draw polygons by joining marked points, and identify parallel and perpendicular sides. →	**4G–1** Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant. →		**6G–1** Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.
				4G–2 Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of regular and irregular polygons.		
				4G–3 Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.		

2.13 Maths End Points By Year - EYFS:

Reception EYFS Maths Name:
3 – 4 years
• Fast recognition of up to 3 objects, without having to count them individually ('subitising').
• Recite numbers past 5.
• Say one number for each item in order: 1,2,3,4,5.
• Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').
• Show 'finger numbers' up to 5.
• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.
• Experiment with their own symbols and marks as well as numerals.
• Solve real world mathematical problems with numbers up to 5.
• Compare quantities using language: 'more than', 'fewer than'.
• Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.
• Understand position through words alone – for example, "The bag is under the table," – with no pointing.
• Describe a familiar route.
• Discuss routes and locations, using words like 'in front of' and 'behind
• Make comparisons between objects relating to size, length, weight and capacity
• Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc
• Combine shapes to make new ones – an arch, a bigger triangle etc.
• Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs' etc.
• Extend and create ABAB patterns – stick, leaf, stick, leaf.
• Notice and correct an error in a repeating pattern.
• Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'
Reception
• Count objects, actions and sounds.
• Subitise.
• Link the number symbol (numeral) with its cardinal number value
• Count beyond ten.
• Compare numbers
• Understand the 'one more than/one less than' relationship between consecutive numbers.
• Explore the composition of numbers to 10.
• Automatically recall number bonds for numbers 0–10.
• Select, rotate and manipulate shapes in order to develop spatial reasoning skills.
• Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.
• Continue, copy and create repeating patterns.
• Compare length, weight and capacity.
ELGs - Number
• Have a deep understanding of number to 10, including the composition of each number.
• Subitise (recognise quantities without counting) up to 5.
• Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
ELGs – Numerical Patterns
• Verbally count beyond 20, recognising the pattern of the counting system.
• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other Quantity`.
• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

Year 1 Maths Curriculum	**Name:**		
Numbers and the number system			
count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			
count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens given a number, identify one more and one less			
identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least			
read and write numbers from 1 to 20 in numerals and words			
Addition and subtraction			
read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs			
represent and use number bonds and related subtraction facts within 20			
add and subtract one-digit and two-digit numbers to 20, including zero			
solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = _ – 9			
Multiplication and division			
solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.			
Fractions and decimals			
recognise, find and name a half as one of two equal parts of an object, shape or quantity			
recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.			
Measurement			
compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] mass/weight [for example, heavy/light, heavier than, lighter than] capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] time [for example, quicker, slower, earlier, later]			
measure and begin to record the following: lengths and heights mass/weight capacity and volume time (hours, minutes, seconds)			
recognise and know the value of different denominations of coins and notes			
sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]			
recognise and use language relating to dates, including days of the week, weeks, months and years			
tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.			
Geometry			
recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles] 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]			
Describe position, direction and movement, including whole, half, quarter and three-quarter turns			

Year 2 Maths Curriculum	**Name:**		
Numbers and the number system			
count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward			
recognise the place value of each digit in a two-digit number (tens, ones)			
identify, represent and estimate numbers using different representations, including the number line			
compare and order numbers from 0 up to 100; use <, > and = signs			
read and write numbers to at least 100 in numerals and in words			
use place value and number facts to solve problems.			
Addition and subtraction			
solve problems with addition and subtraction:			
using concrete objects and pictorial representations, including those involving numbers, quantities and measures			
applying their increasing knowledge of mental and written methods			
recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100			
add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers			
show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot			
recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.			
Multiplication and division			
recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers			
calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs			
show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot			
solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts			
Fractions and decimals			
recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity			
write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and 1/2			
Measurement			
choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels			
compare and order lengths, mass, volume/capacity and record the results using >, < and =			
recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money			
solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change			
compare and sequence intervals of time			
tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times			
know the number of minutes in an hour and the number of hours in a day.			
Geometry			
identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line			
identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces			
identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]			
compare and sort common 2-D and 3-D shapes and everyday objects.			
order and arrange combinations of mathematical objects in patterns and sequences			
use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)			
Statistics			
interpret and construct simple pictograms, tally charts, block diagrams and simple tables			
ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity			
ask and answer questions about totalling and comparing categorical data.			

Year 3 Maths Curriculum	**Name:**		
Numbers and the number system			
count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number			
recognise the place value of each digit in a three-digit number (hundreds, tens, ones)			
compare and order numbers up to 1000			
identify, represent and estimate numbers using different representations			
read and write numbers up to 1000 in numerals and in words			
solve number problems and practical problems involving these ideas.			
Addition and subtraction			
add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens a three-digit number and hundreds			
add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction			
estimate the answer to a calculation and use inverse operations to check answers			
solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction			
Multiplication and division			
recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables			
write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods			
solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.			
Fractions and decimals			
count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10			
count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10			
recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
recognise and show, using diagrams, equivalent fractions with small denominators			
add and subtract fractions with the same denominator within one whole [for example, 1/7 + 3/7 = 4/7]			
compare and order unit fractions, and fractions with the same denominators			
solve problems that involve all of the above.			
Measurement			
measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)			
measure the perimeter of simple 2-D shapes			
add and subtract amounts of money to give change, using both £ and p in practical contexts			
tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks			
estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight			
know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events [for example to calculate the time taken by particular events or tasks].			
Geometry			
draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them			
recognise angles as a property of shape or a description of a turn			
identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle			
identify horizontal and vertical lines and pairs of perpendicular and parallel lines.			
Statistics			
interpret and present data using bar charts, pictograms and tables			
solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.			

Year 4 Maths Curriculum Name:			
Numbers and the number system			
count in multiples of 6, 7, 9, 25 and 1000			
find 1000 more or less than a given number			
count backwards through zero to include negative numbers			
recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)			
order and compare numbers beyond 1000			
identify, represent and estimate numbers using different representations			
round any number to the nearest 10, 100 or 1000			
solve number and practical problems that involve all of the above and with increasingly large positive numbers			
read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value			
Addition and subtraction			
add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate			
estimate and use inverse operations to check answers to a calculation			
solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why			
Multiplication and division			
recall multiplication and division facts for multiplication tables up to 12 × 12			
use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers			
recognise and use factor pairs and commutativity in mental calculations			
multiply two-digit and three-digit numbers by a one-digit number using formal written layout			
solve problems involving multiplying and adding, including using the distributive law			
to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.			
Fractions and decimals			
recognise and show, using diagrams, families of common equivalent fractions			
count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.			
solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number			
add and subtract fractions with the same denominator			
recognise and write decimal equivalents of any number of tenths or hundredths			
recognise and write decimal equivalents to ¼, ½, ¾			
find the effect of dividing a one- or two-digit number by 10 and 100, identifying the			
value of the digits in the answer as ones, tenths and hundredths			
round decimals with one decimal place to the nearest whole number			
compare numbers with the same number of decimal places up to two decimal places			
solve simple measure and money problems involving fractions and decimals to two decimal places.			
Measurement			
Convert between different units of measure [for example, kilometre to metre; hour to minute]			
measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres			
find the area of rectilinear shapes by counting squares			
estimate, compare and calculate different measures, including money in pounds and Pence			
read, write and convert time between analogue and digital 12- and 24-hour clocks			
solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.			
Geometry			
compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes			
identify acute and obtuse angles and compare and order angles up to two right angles by size			
identify lines of symmetry in 2-D shapes presented in different orientations			
complete a simple symmetric figure with respect to a specific line of symmetry. describe positions on a 2-D grid as coordinates in the first quadrant			
describe movements between positions as translations of a given unit to the left/right and up/down			
plot specified points and draw sides to complete a given polygon.			
Statistics			
interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.			
solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs			

Year5 Maths Curriculum Name:			
Numbers and the number system			
read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit			
count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000			
interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero			
round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000			
solve number problems and practical problems that involve all of the above			
read Roman numerals to 1000 (M) and recognise years written in Roman numerals.			
Addition and subtraction			
add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)			
add and subtract numbers mentally with increasingly large numbers			
use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy			
solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why			
Multiplication and division			
identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers			
identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers			
establish whether a number up to 100 is prime and recall prime numbers up to 19			
multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers			
multiply and divide numbers mentally drawing upon known facts			
divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context			
multiply and divide whole numbers and those involving decimals by 10, 100 and 1000			
recognise and use square numbers and cube numbers, and the notation for squared and cubed			
solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes			
solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign			
solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates			
Fractions and decimals			
compare and order fractions whose denominators are all multiples of the same number			
identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths			
recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number			
add and subtract fractions with the same denominator and denominators that are multiples of the same number			
multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams			
read and write decimal numbers as fractions [for example, 0.71 = 71/100]			
recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents			
round decimals with two decimal places to the nearest whole number and to one decimal place			
read, write, order and compare numbers with up to three decimal places			
solve problems involving number up to three decimal places			
recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal			
solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5 and 4/5 and those fractions with a denominator of a multiple of 10 or 25.			
Measurement			
convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)			
understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints			
measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres			
calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes			
estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]			
solve problems involving converting between units of time			
use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling			
Geometry			
identify 3-D shapes, including cubes and other cuboids, from 2-D representations			
know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles			
draw given angles, and measure them in degrees (o)			
identify: angles at a point and one whole turn (total 360o) , angles at a point on a straight line and , 1/2 a turn (total 180o) other multiples of 90o			
use the properties of rectangles to deduce related facts and find missing lengths and angles			
distinguish between regular and irregular polygons based on reasoning about equal sides and angles.			
identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed			
Statistics			
solve comparison, sum and difference problems using information presented in a line graph			
complete, read and interpret information in tables, including timetables			

Year 6 Maths Curriculum Name:			
Numbers and the number system			
read, write, order and compare numbers up to 10 000 000 and determine the value of each digit			
round any whole number to a required degree of accuracy			
use negative numbers in context, and calculate intervals across zero			
solv e number and practical problems that involve all of the above			
Addition, subtraction, multiplication and division			
multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication perform mental calculations, including with mixed operations and large numbers			
divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context			
divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context			
identify common factors, common multiples and prime numbers			
use their knowledge of the order of operations to carry out calculations involving the four operations			
solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why			
solve problems involving addition, subtraction, multiplication and division			
use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.			
Fractions and decimals			
use common factors to simplify fractions; use common multiples to express fractions in the same denomination			
compare and order fractions, including fractions > 1			
add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions			
multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, ¼ x ½ = 1/8]			
divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]			
associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8]			
identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places			
multiply one-digit numbers with up to two decimal places by whole numbers			
use written division methods in cases where the answer has up to two decimal places			
solve problems which require answers to be rounded to specified degrees of accuracy			
recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.			
Ratio and Proportion			
solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts			
solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison			
solve problems involving similar shapes where the scale factor is known or can be found			
solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.			
Algebra			
use simple formulae			
generate and describe linear number sequences			
express missing number problems algebraically			
find pairs of numbers that satisfy an equation with two unknowns			
enumerate possibilities of combinations of two variables.			
Measurement			
solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate			
use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places			
convert between miles and kilometres			
recognise that shapes with the same areas can have different perimeters and vice versa			
recognise when it is possible to use formulae for area and volume of shapes			
calculate the area of parallelograms and triangles			
calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other unit[for example, mm3 and km3].			
Geometry			
draw 2-D shapes using given dimensions and angles			
recognise, describe and build simple 3-D shapes, including making nets			
compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons			
illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius			
recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles			
describe positions on the full coordinate grid (all four quadrants)			
draw and translate simple shapes on the coordinate plane, and reflect them in the axes			
Statistics			
interpret and construct pie charts and line graphs and use these to solve problems			
calculate and interpret the mean as an average.			

2.14 Maths Teaching Sequences Summary

Class 1 – Reception/Year 1 – To be taught as two different lessons

EYFS

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Getting to know you (Take this time to play and get to know the children!)			Just like me!			It's me 1, 2, 3!			Light and Dark		
Spring	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation		
Summer	To 20 and Beyond			First, then, now			Find My Pattern			On the Move		

Year 1

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value (within 10)				Number: Addition and Subtraction (within 10)					Geometry: Shape	Number: Place Value (within 20)	
Spring	Consolidation	Number: Addition and Subtraction (within 20)			Number: Place Value (within 50)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation
Summer	Consolidation	Number: Multiplication and Division			Number: Fractions		Geometry: Position and Direction	Number: Place Value (within 100)		Measurement: Money	Measurement: Time	

Class 2 – Year 1/2 - to be taught as two separate lessons

<table>
<tr><th></th><th>Week 1</th><th>Week 2</th><th>Week 3</th><th>Week 4</th><th>Week 5</th><th>Week 6</th><th>Week 7</th><th>Week 8</th><th>Week 9</th><th>Week 10</th><th>Week 11</th><th>Week 12</th></tr>
<tr><td>Autumn</td><td colspan="3">Number: Place Value
Y1 – Numbers to 20
Y2 – Numbers to 100</td><td colspan="5">Number: Addition and Subtraction
Year 1- Numbers within 20 (including recognising money)
Year 2- Numbers within 100 (including money)</td><td colspan="3">Number: Year 1: Place Value to 50 and Multiplication Year 2: Multiplication</td></tr>
<tr><td>Spring</td><td colspan="2">Number: Year 1: Division & consolidation
Year 2: Division</td><td colspan="2">Year 1: Place Value to 100
Year 2: Statistics</td><td>Measurement: Length and Height</td><td colspan="2">Geometry:
Year 1: Shape and Consolidation
Year 2: Properties of Shape</td><td colspan="2">Number:
Year 1: Fractions and Consolidation
Year 2: Fractions</td><td>Consolidation</td></tr>
<tr><td>Summer</td><td>Geometry: Position and Direction</td><td colspan="2">Measurement: Time</td><td colspan="2">Problem solving and efficient methods</td><td colspan="2">Measurement:
Year 1: Weight and Volume
Year 2: Mass, Capacity and Temperature</td><td colspan="4">Consolidation and Investigations</td></tr>
</table>

Class 3 – Year 3/4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value				Number: Addition and Subtraction				Number: Multiplication and Division			
Spring	Number: Multiplication and Division		Measurement: Length, Perimeter and Area		Number: Fractions				Y3: Measurement: Mass and Capacity Y4: Number: Decimals			Consolidation
Summer	Number: Decimals (including Money)				Measurement: Time		Statistics		Geometry: Properties of Shape (including Y4 Position and Direction)			Consolidation

Class 4 – Year 4/5

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value				Number: Addition and Subtraction			Number: Multiplication and Division			Measurement: Length, Perimeter and Area	
Spring	Number: Multiplication and Division				Number: Fractions				Number: Decimals (including Y5 Percentages)			
Summer	Number: Decimals (including Y4 Money)		Measurement: Time		Statistics	Geometry: Properties of Shape			Geometry: Position and Direction	Y4: Consolidation Y5: Converting Units & Volume		Consolidation

Class 5 – Year 5/6

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Four Operations					Number: Fractions				
Spring	Y5: Number: Fractions Y6: Number: Ratio		Number: Decimals and Percentages			Y5: Number: Decimals Y6: Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Statistics	
Summer	Geometry: Properties of Shape		Geometry: Position and Direction	Y6: SATS		Investigations and Consolidation						

2.15 Maths Teaching Sequences by Class: Class 1

EYFS

Autumn

Week	Day	Topic
1 6/9/21 Settling in	Monday	Inset
	Tuesday	Transition, settling in, baselining
	Wednesday	Transition, settling in, baselining
	Thursday	Transition, settling in, baselining
	Friday	Transition, settling in, baselining
2 13/9/21 Settling in	Monday	Transition, settling in, baselining
	Tuesday	Transition, settling in, baselining
	Wednesday	Transition, settling in, baselining
	Thursday	Transition, settling in, baselining
	Friday	Transition, settling in, baselining
3 20/9/21 Settling in	Monday	Transition, settling in, baselining
	Tuesday	Transition, settling in, baselining
	Wednesday	Transition, settling in, baselining
	Thursday	Transition, settling in, baselining
	Friday	Transition, settling in, baselining
4 27/9/21 Just like me	Monday	Match 1
	Tuesday	Match 2
	Wednesday	Sort 1
	Thursday	Sort 2
	Friday	Digging Deeper Match & Sort
5 4/10/21 Just like me	Monday	Compare amounts 1
	Tuesday	Compare amounts 2
	Wednesday	Compare – size, mass and capacity 1
	Thursday	Compare – size, mass and capacity 2
	Friday	Digging Deeper Making comparisons
6 11/10/21 Just like me	Monday	Make simple patterns 1
	Tuesday	Make simple patterns 2
	Wednesday	Make simple patterns 3
	Thursday	Digging Deeper exploring pattern
	Friday	Digging Deeper exploring pattern
7 18/10/21 Review	Monday	Review, Consolidate and Reinforce
	Tuesday	Review, Consolidate and Reinforce
	Wednesday	Review, Consolidate and Reinforce
	Thursday	Review, Consolidate and Reinforce
	Friday	Review, Consolidate and Reinforce
8 1/11/21 It's me 1,2,3	Monday	Inset
	Tuesday	Representing 1,2,3 - 1
	Wednesday	Representing 1,2,3 - 2
	Thursday	Comparing 1,2,3 - 1
	Friday	Comparing 1,2,3 - 2
9 8/11/21 It's me 1,2,3	Monday	Composition of 1,2,3 - 1
	Tuesday	Composition of 1,2,3 - 2
	Wednesday	Digging Deeper 1,2,3 - 1
	Thursday	Digging Deeper 1,2,3 - 2
	Friday	Circles and triangles - 1
10 15/11/21 It's me 1,2,3	Monday	Circles and triangles - 2
	Tuesday	Spatial awareness – positional language 1
	Wednesday	Spatial awareness – positional language 2
	Thursday	Digging Deeper - Spatial awareness – positional language 1
	Friday	Digging Deeper - Spatial awareness – positional language 2
11 22/11/21 Numbers to 5	Monday	Four 1
	Tuesday	Four 2
	Wednesday	Five 1
	Thursday	Five 2
	Friday	Digging Deeper – numbers to 5.
12 29/11/21 Numbers to 5	Monday	One more one less 1
	Tuesday	One more one less 2
	Wednesday	Digging Deeper - One more one less
	Thursday	Shapes with 4 sides 1
	Friday	Shapes with 4 sides 2
13 6/12/21 Numbers to 5	Monday	Digging Deeper - Shapes with 4 sides 1
	Tuesday	Digging Deeper - Shapes with 4 sides 2
	Wednesday	Night and Day 1
	Thursday	Night and Day 2
	Friday	Digging Deeper – Night and Day
14 13/12/21 Review	Monday	Review, Consolidate and Reinforce
	Tuesday	Review, Consolidate and Reinforce
	Wednesday	Review, Consolidate and Reinforce
	Thursday	Review, Consolidate and Reinforce
	Friday	Review, Consolidate and Reinforce

Spring

Week	Day	Topic
1 4/1/22 Alive in 5	Monday	Bank holiday
	Tuesday	Introducing zero 1
	Wednesday	Introducing zero 2
	Thursday	Comparing numbers to 5 1
	Friday	Comparing numbers to 5 2
2 10/1/22 Alive in 5	Monday	Composition of 4 & 5 1
	Tuesday	Composition of 4 & 5 2
	Wednesday	Digging Deeper – composition to 5 1
	Thursday	Digging Deeper – composition to 5 2
	Friday	Compare mass 1
3 17/1/22 Alive in 5	Monday	Compare mass 2
	Tuesday	Compare capacity 1
	Wednesday	Compare capacity 2
	Thursday	Compare capacity 3
	Friday	Digging Deeper – mass and capacity
4 24/1/22 Growing 6,7,8	Monday	6,7,8 1
	Tuesday	6,7,8 2
	Wednesday	Matching pairs 1
	Thursday	Matching pairs 2
	Friday	Digging Deeper 6,7,8
5 31/1/22 Growing 6,7,8	Monday	Combining 2 groups 1
	Tuesday	Combining 2 groups 2
	Wednesday	Digging Deeper - Combining 2 groups
	Thursday	Length and height 1
	Friday	Length and height 2
6 7/2/22 Growing 6,7,8	Monday	Time 1
	Tuesday	Time 2
	Wednesday	Time 3
	Thursday	Digging Deeper – Length and Height 1
	Friday	Digging Deeper – Length and Height 1
7 14/2/22 Review	Monday	Review, Consolidate and Reinforce
	Tuesday	Review, Consolidate and Reinforce
	Wednesday	Review, Consolidate and Reinforce
	Thursday	Review, Consolidate and Reinforce
	Friday	Review, Consolidate and Reinforce
8 28/2/22 Building 9 & 10	Monday	9 & 10 1
	Tuesday	9 & 10 2
	Wednesday	Comparing numbers to 10 1
	Thursday	Comparing numbers to 10 2
	Friday	Bonds to 10 1
9 7/3/22 Building 9 & 10	Monday	Bonds to 10 2
	Tuesday	Digging Deeper 9 & 10 1
	Wednesday	Digging Deeper 9 & 10 2
	Thursday	3D shape 1
	Friday	3D shape 2
10 14/3/22 Building 9 & 10	Monday	3D shape 3
	Tuesday	Extended patterns 1
	Wednesday	Extended patterns 2
	Thursday	Digging Deeper – Extended Patterns 1
	Friday	Digging Deeper – Extended Patterns 2
11 21/3/22 Bonds to 10	Monday	Recap bonds to 3,4,5 (and associated take aways) 1
	Tuesday	Recap bonds to 3,4,5 (and associated take aways) 2
	Wednesday	Recap bonds to 6,7,8 (and associated take aways) 1
	Thursday	Recap bonds to 6,7,8 (and associated take aways) 2
	Friday	Recap bonds to 9 & 10 (and associated take aways) 1
12 28/3/22 Bonds to 10	Monday	Recap bonds to 9 & 10 (and associated take aways) 2
	Tuesday	Recap all bonds 1
	Wednesday	Recap all bonds 2
	Thursday	Digging Deeper Bonds to 10 1
	Friday	Digging Deeper Bonds to 10 2
13 4/4/22 Review	Monday	Review, Consolidate and Reinforce
	Tuesday	Review, Consolidate and Reinforce
	Wednesday	Review, Consolidate and Reinforce
	Thursday	Review, Consolidate and Reinforce
	Friday	Review, Consolidate and Reinforce

Summer

Week	Day	Topic
1 25/4/22 To 20 and beyond	Monday	Recap – subitising
	Tuesday	Recap - composition
	Wednesday	Recap – comparing and ordering
	Thursday	Building numbers beyond 10 1
	Friday	Building numbers beyond 10 2
2 2/5/22 To 20 and beyond	Monday	Bank holiday
	Tuesday	Counting patterns beyond 10 1
	Wednesday	Counting patterns beyond 10 2
	Thursday	Digging Deeper - numbers beyond 10
	Friday	Digging Deeper - capacity
3 9/5/22 To 20 and beyond	Monday	Spatial reasoning rotation 1
	Tuesday	Spatial reasoning rotation 2
	Wednesday	Spatial reasoning rotation 3
	Thursday	Digging Deeper Spatial reasoning rotation 1
	Friday	Digging Deeper Spatial reasoning rotation 2
4 16/5/22 First then now	Monday	Adding more 1
	Tuesday	Adding more 2
	Wednesday	Taking away 1
	Thursday	Taking away 2
	Friday	Taking away 3
5 23/5/22 First then now	Monday	Digging Deeper –adding and taking away
	Tuesday	Spatial reasoning shapes 1
	Wednesday	Spatial reasoning shapes 2
	Thursday	Digging Deeper - spatial reasoning
	Friday	Inset
6 6/6/22 Review	Monday	Review, Consolidate and Reinforce
	Tuesday	Review, Consolidate and Reinforce
	Wednesday	Review, Consolidate and Reinforce
	Thursday	Review, Consolidate and Reinforce
	Friday	Review, Consolidate and Reinforce
7 13/6/22 Find my pattern	Monday	Doubling 1
	Tuesday	Doubling 2
	Wednesday	Doubling 3
	Thursday	Sharing and grouping 1
	Friday	Sharing and grouping 2
8 20/6/22 Find my pattern	Monday	Sharing and grouping 3
	Tuesday	Even and odd 1
	Wednesday	Even and odd 2
	Thursday	Even and odd 3
	Friday	Digging Deeper odd/even
9 27/6/22 Find my pattern	Monday	Digging Deeper find half
	Tuesday	Digging Deeper make 2 equal groups
	Wednesday	Spatial reasoning - viewpoints
	Thursday	Spatial reasoning recreating
	Friday	Digging Deeper - Spatial reasoning
10 4/7/22 On the move	Monday	Consolidation - subitising
	Tuesday	Consolidation - counting
	Wednesday	Consolidation - sorting
	Thursday	Consolidation - matching
	Friday	Consolidation - comparing
11 11/7/22 One the move	Monday	Consolidation - ordering
	Tuesday	Deepening Understanding (Conceptual Variation)
	Wednesday	Patterns and relationships
	Thursday	Spatial reasoning - directions
	Friday	Digging Deeper – Problem solving
12 18/7/22 Review	Monday	Review, Consolidate and Reinforce
	Tuesday	Review, Consolidate and Reinforce
	Wednesday	Review, Consolidate and Reinforce
	Thursday	Review, Consolidate and Reinforce
	Friday	Review, Consolidate and Reinforce

Year 1 – Autumn Term

Lesson by lesson overview 2020/21

Week	Day	Topic	
1 07/09/2020	Monday	Sorting up to 10 objects	NPV-1
	Tuesday	Count objects to 10	NPV-1
	Wednesday	Count objects from a group of 10	NPV-1
	Thursday	Represent up to 10 objects	NPV-1
	Friday	Represent numbers to 10	NPV-1
2 14/09/2020	Monday	Count forwards to 10	NPV-1
	Tuesday	Count backwards from 10	NPV-1
	Wednesday	Count one more for numbers within 10	NPV-1
	Thursday	Count one less for numbers within 10	NPV-1
	Friday	Counting activity	NPV-1
3 21/09/2020	Monday	One to one correspondence	NPV-1
	Tuesday	Compare up to 10 objects	NPV-2
	Wednesday	Introduce <, > and = for numbers within 10	NPV-2
	Thursday	Compare numbers within 10	NPV-2
	Friday	Comparing activity	NPV-2
4 28/09/2020	Monday	Order up to 10 objects	NPV-2
	Tuesday	Order numbers up to 10	NPV-2
	Wednesday	Ordinal numbers	NPV-2
	Thursday	The number line from 0 to 10	NPV-2
	Friday	Mini assessment	

Week	Day	Topic	
5 05/10/2020	Monday	Introducing parts and wholes (single object)	AS-1
	Tuesday	Parts and wholes activity (groups of objects)	AS-1
	Wednesday	Part-whole model (with images)	AS-1
	Thursday	Part-whole model	AS-1
	Friday	Addition symbol	AS-2
6 12/10/2020	Monday	Fact families - addition facts	NF-1 AS-2
	Tuesday	Find number bonds for numbers within 10	NF-1 AS-1
	Wednesday	Systematic methods for number bonds within 10	NF-1 AS-1
	Thursday	Number bonds to 10	NF-1 AS-1
	Friday	Compare number bonds	NF-1 AS-1
7 19/10/2020	Monday	Addition - adding together	NF-1 AS-2
	Tuesday	Addition - adding more	NF-1 AS-2
	Wednesday	Addition - adding more	NF-1 AS-2
	Thursday	Addition - using bonds	NF-1 AS-2
	Friday	Finding a part	NF-1 AS-1
8 02/11/2020	Monday	Subtraction - taking away - crossing out	NF-1 AS-2
	Tuesday	Subtraction - taking away - using the symbol	NF-1 AS-2
	Wednesday	Subtraction - find a part	NF-1 AS-2
	Thursday	Fact families - the 8 facts	NF-1 AS-2
	Friday	Subtraction - counting back	NF-1 AS-2
9 09/11/2020	Monday	Subtraction - finding the difference	NF-1 AS-2
	Tuesday	Subtraction - finding the difference	NF-1 AS-2
	Wednesday	Comparing addition and subtraction statements a + b > c	AS-2
	Thursday	Comparing addition and subtraction statements a + b > c + d	AS-2
	Friday	Mini-assessment	

Week	Day	Topic	
10 16/11/2020	Monday	Recognise and name 3-D shapes	G-1
	Tuesday	Sort 3-D shapes	G-1
	Wednesday	Recognise and name 2-D shapes	G-1
	Thursday	Sort 2-D shapes	G-1
	Friday	Patterns with 3-D and 2-D shapes	G-1
11 23/11/2020	Monday	Count forwards and backwards and write numbers to 20	NPV-1
	Tuesday	Numbers from 11 to 20	NPV-1
	Wednesday	Tens and ones	NPV-1
	Thursday	Tens and ones	NPV-1
	Friday	Count one more one less	NPV-1
12 30/11/2020	Monday	Compare groups of objects	NPV-2
	Tuesday	Compare numbers	NPV-2
	Wednesday	Order groups of objects	NPV-2
	Thursday	Order numbers	NPV-2
	Friday	Mini assessment	
13 07/12/2020	Consolidation week. Use this week to recap and consolidate learning from this term. For additional challenge – check out our problems of the day.		
14 14/12/2020	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

Year 1 – Spring Term

Lesson by lesson overview 2020/21

White Rose Maths

Week	Day	Topic
1 04/01/2021	Consolidation week. Use this week to recap and consolidatelearning from the Autumn term. For additional challenge – check out our problems of the day.	
2 11/01/2021	Monday	Add by counting on within 20 activity
	Tuesday	Add by counting on within 20
	Wednesday	Add ones using number bonds activity
	Thursday	Add ones using number bonds
	Friday	Find and make number bonds to 20
3 18/01/2021	Monday	Add by making 10 activity
	Tuesday	Add by making 10
	Wednesday	Subtraction - not crossing 10
	Thursday	Subtraction - not crossing 10 (counting back)
	Friday	Subtraction - crossing 10 (counting back)
4 25/01/2021	Monday	Subtraction - crossing 10 (1)
	Tuesday	Subtraction - crossing 10 (2)
	Wednesday	Related facts
	Thursday	Compare number sentences
	Friday	Mini-assessment

Week	Day	Topic	
5 01/02/2021	Monday	Counting to 50 by making 10s activity	NPV-1
	Tuesday	Numbers to 50	NPV-1
	Wednesday	Counting forwards and backwards within 50	NPV-1
	Thursday	Tens and ones	NPV-1
	Friday	Represent numbers to 50	NPV-1
6 08/02/2021	Monday	One more one less activity	NPV-1
	Tuesday	One more one less	NPV-1
	Wednesday	Compare objects within 50	
	Thursday	Compare numbers within 50	
	Friday	Order numbers within 50	
7 22/02/2021	Monday	Count in 2s activity	NF-2
	Tuesday	Count in 2s	NF-2
	Wednesday	Count in 5s activity	NF-2
	Thursday	Count in 5s	NF-2
	Friday	Mini-assessment	
8 01/03/2021	Monday	Compare lengths activity	NPV-2
	Tuesday	Compare heights activity	NPV-2
	Wednesday	Compare lengths & heights	NPV-2
	Thursday	Measuring lengths (non-standard units) activity	NPV-2
	Friday	Measure length (1)	NPV-2
9 08/03/2021	Monday	Introducing the ruler activity	NPV-2
	Tuesday	Measure length (2)	NPV-2
	Wednesday	Adding length problems	AS-2
	Thursday	Subtracting length problems	AS-2
	Friday	Mini-assessment	

Week	Day	Topic
10 15/03/2021	Monday	Introducing weight and mass activity
	Tuesday	Introducing weight and mass
	Wednesday	Measure mass
	Thursday	Compare mass
	Friday	Weight and mass problems
11 22/03/2021	Monday	Introduce capacity and volume activity
	Tuesday	Introduce capacity and volume
	Wednesday	Measure capacity
	Thursday	Compare capacity
	Friday	Mini-assessment
12 29/03/2021	Activity week. This week we will be providing some themed activities linking to the learning from this term.	

Year 1 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Topic	
1 12/04/2021	Consolidation week. Use this week to recap and consolidate learning on addition and subtraction within 10 and 20		
2 19/04/2021	Monday	Count in 2s	NF-2 (R)
	Tuesday	Count in 5s	NF-2 (R)
	Wednesday	Count in 10s activity	NF-2
	Thursday	Count in 10s	NF-2
	Friday	Make equal groups activity	
3 26/04/2021	Monday	Make equal groups	
	Tuesday	Add equal groups	
	Wednesday	Make arrays activity	
	Thursday	Make arrays	
	Friday	Make doubles	
4 03/05/2021	Monday	Make equal groups - grouping activity	
	Tuesday	Make equal groups - grouping	
	Wednesday	Make equal groups - sharing activity	
	Thursday	Make equal groups - sharing	
	Friday	Mini-assessment	

Week	Day	Topic	
5 10/05/2021	Monday	Making a half activity	
	Tuesday	Making a whole activity	
	Wednesday	Find a half (1)	
	Thursday	Find a half of a quantity activity	
	Friday	Find a half (2)	
6 17/05/2021	Monday	Making a quarter activity	
	Tuesday	Find a quarter (1)	
	Wednesday	Find a quarter of a quantity activity	
	Thursday	Find a quarter (2)	
	Friday	Mini-assessment	
7 24/05/2021	Monday	Describe turns activity	G-2
	Tuesday	Describe turns	G-2
	Wednesday	Describe position (1)	G-2
	Thursday	Describe position (2)	G-2
	Friday	Mini-assessment	
8 07/06/2021	Monday	Counting to 100 by making 10s activity	NPV-1
	Tuesday	Counting to 100	NPV-1
	Wednesday	Counting forwards and backwards within 100	NPV-1
	Thursday	Introducing the 100 square activity	NPV-1
	Friday	Partitioning numbers	
9 14/06/2021	Monday	Comparing numbers (1)	
	Tuesday	Comparing numbers (2)	
	Wednesday	Ordering numbers	
	Thursday	One more, one less	NPV-1
	Friday	Mini-assessment	

Week	Day	Topic
10 21/06/2021	Monday	Recognising coins
	Tuesday	Recognising notes
	Wednesday	Counting in coins activity **NF-2**
	Thursday	Counting in coins **NF-2**
	Friday	Mini-assessment
11 28/06/2021	Monday	Before and after activity
	Tuesday	Before and after
	Wednesday	Dates
	Thursday	Time to the hour activity
	Friday	Time to the hour
12 05/07/2021	Monday	Time to the half hour activity
	Tuesday	Time to the half hour
	Wednesday	Writing time
	Thursday	Comparing time
	Friday	Mini-assessment
13 12/07/2021	Activity week. This week we will be providing some themed activities linking to the learning from this term.	

2.16 Maths Teaching Sequences by Class: Class 2

Year 1/2 – Autumn Term

Lesson by lesson overview 2020/21

White Rose Maths

Week	Day	Y1 Topic	Y2 Topic
1 07/09/20	Mon	Sorting up to 10 objects	Counting forwards and backwards within 20 (R)
	Tue	Count objects to 10	Tens and ones within 20 (R)
	Wed	Count objects from a group of 10	Counting forwards and backwards within 50 (R)
	Thu	Represent up to 10 objects	Tens and ones within 50 (R)
	Fri	Represent numbers to 10	Compare numbers within 50 (R)
2 14/09/20	Mon	Count forwards to 10	Count objects to 100
	Tue	Count backwards from 10	Read and write numbers to 100 in numerals and words
	Wed	Count one more for numbers within 10	Represent numbers to 100 activity
	Thu	Count one less for numbers within 10	Represent numbers to 100
	Fri	Counting activity	Tens and ones using a part-whole
3 21/09/20	Mon	One to one correspondence	Tens and ones using addition
	Tue	Compare up to 10 objects	Use a place value chart
	Wed	Introduce <, > and = for numbers within 10	Compare objects
	Thu	Compare numbers within 10	Compare numbers
	Fri	Comparing activity	Order objects and numbers
4 28/09/20	Mon	Order up to 10 objects	Count in 2s (R)
	Tue	Order numbers up to 10	Count in 5s (R)
	Wed	Ordinal numbers	Count in 10s (R)
	Thu	The number line from 0 to 10	Count in 3s
	Fri	Mini assessment	Mini-assessment

Year 1/2 – Autumn Term

Lesson by lesson overview 2020/21

White Rose Maths

Week	Day	Y1 Topic	Y2 Topic
5 05/10/20	Mon	Introducing parts and wholes (single)	Fact families - bonds to 20
	Tue	Parts and wholes activity (groups)	Check calculations
	Wed	Part-whole model (with images)	Compare number sentences
	Thu	Part-whole model	Know your bonds
	Fri	Addition symbol	Related facts
6 12/10/20	Mon	Fact families - addition facts	Bonds to 100 (tens)
	Tue	Find number bonds within 10	Add and subtract 1s
	Wed	Systematic methods for bonds within 10	10 more 10 less
	Thu	Number bonds to 10	Add and subtract 10s
	Fri	Compare number bonds	Add by making 10 (R)
7 19/10/20	Mon	Addition - adding together	Add 2-digit and 1-digit - crossing ten
	Tue	Addition - adding more	Add 2-digit and 1-digit - crossing ten
	Wed	Addition - adding more	Subtraction- crossing 10 (R)
	Thu	Addition - using bonds	Subtract 1-digit from 2-digit- cross ten
	Fri	Finding a part	Subtract 1-digit from 2-digit- cross ten
8 02/11/20	Mon	Subtraction - taking away- crossing out	Add 2-digit numbers - not crossing ten
	Tue	Subtraction - taking away- symbol	Add 2-digit numbers - crossing ten
	Wed	Subtraction - find a part	Subtract 2-digits - not crossing ten
	Thu	Fact families - the 8 facts	Subtract 2-digits- crossing ten
	Fri	Subtraction - counting back	Mixed addition and subtraction activity
9 09/11/20	Mon	Subtraction - finding the difference	Find and make number bonds (R)
	Tue	Subtraction - finding the difference	Bonds to 100 (tens and ones)
	Wed	Compare + and – (a + b > c)	Add three 1-digit numbers
	Thu	Compare + and – (a + b > c + d)	Mini-assessment
	Fri	Mini-assessment	Recognising coins and notes

Year 1/2 – Autumn Term

Lesson by lesson overview 2020/21

Week	Day	Y1 Topic	Y2 Topic
10 16/11/20	Mon	Recognise and name 3-D shapes	Count money - pence
	Tue	Sort 3-D shapes	Count money - pounds (notes and coins)
	Wed	Recognise and name 2-D shapes	Count money - notes and coins
	Thu	Sort 2-D shapes	Select money
	Fri	Patterns with 3-D and 2-D shapes	Make the same amount
11 23/11/20	Mon	Count forwards and backwards and write numbers to 20	Compare money
	Tue	Numbers from 11 to 20	Find the total
	Wed	Tens and ones	Find the difference
	Thu	Tens and ones	Find change
	Fri	Count one more one less	Two-step problems
12 30/11/20	Mon	Compare groups of objects	Make equal groups activity (R)
	Tue	Compare numbers	Make equal groups (R)
	Wed	Order groups of objects	Redistribute from unequal to equal groups activity
	Thu	Order numbers	Add equal groups (R)
	Fri	Mini assessment	Make arrays (R)
13 07/12/20	Consolidation week. Use this week to recap and consolidate learning from this term. For additional challenge – check out our problems of the day.		
14 14/12/20	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

Year 1/2 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y1 Topic	Y2 Topic
1 04/01/21	Mon	Consolidation week. Use this week to recap and consolidate learning from the Autumn term. For additional challenge – check out our problems of the day.	Recognise equal groups
	Tue		Make equal groups
	Wed		Add equal groups
	Thu		Multiplication sentencesusing the x symbol
	Fri		Multiplication sentences from pictures
2 11/01/21	Mon	Add by counting on within 20 activity	Use arrays
	Tue	Add by counting on within 20	Make doubles (R)
	Wed	Add ones using number bonds activity	2 times-table
	Thu	Add ones using number bonds	5 times-table
	Fri	Find and make number bonds to 20	10 times-table
3 18/01/21	Mon	Add by making 10 activity	Make equal groups - sharing (R)
	Tue	Add by making 10	Make equal groups - sharing
	Wed	Subtraction - not crossing 10	Make equal groups - grouping (R)
	Thu	Subtraction - not crossing 10 (counting back)	Make equal groups - grouping
	Fri	Subtraction - crossing 10 (counting back)	Sharing and grouping activity
4 25/01/21	Mon	Subtraction - crossing 10 (1)	Divide by 2
	Tue	Subtraction - crossing 10 (2)	Odd and even numbers
	Wed	Related facts	Divide by 5
	Thu	Compare number sentences	Divide by 10
	Fri	Mini assessment	Mini-assessment

Year 1/2 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y1 Topic	Y2 Topic
5 01/02/21	Mon	Counting to 50 by making 10s activity	Make tally charts activity
	Tue	Numbers to 50	Make tally charts
	Wed	Counting forwards and backwards within 50	Draw pictograms (1-1) activity
	Thu	Tens and ones	Draw pictograms (1-1)
	Fri	Represent numbers to 50	Interpret pictograms (1-1)
6 08/02/21	Mon	One more one less activity	Draw pictograms (2, 5 and 10) activity
	Tue	One more one less	Draw pictograms (2, 5 and 10)
	Wed	Compare objects within 50	Interpret pictograms (2, 5 and 10)
	Thu	Compare numbers within 50	Block diagrams
	Fri	Order numbers within 50	Mini-assessment
7 22/02/21	Mon	Count in 2s activity	Recognise 2-D and 3-D shapes
	Tue	Count in 2s	Make 2-D and 3-D shapes activity
	Wed	Count in 5s activity	Count sides on 2-D shapes
	Thu	Count in 5s	Count vertices on 2-D shapes
	Fri	Mini-assessment	Draw 2-D shapes
8 01/03/21	Mon	Compare lengths activity	Lines of symmetry (1)
	Tue	Compare heights activity	Lines of symmetry (2)
	Wed	Compare lengths & heights	Sort 2-D shapes
	Thu	Measuring lengths (non-standard units) activity	Make patterns with 2-D shapes
	Fri	Measure length (1)	Count faces on 3-D shapes

Year 1/2 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y1 Topic	Y2 Topic
9 08/03/21	Mon	Introducing the ruler activity	Count edges on 3-D shapes
	Tue	Measure length (2)	Count vertices on 3-D shapes
	Wed	Adding length problems	Sort 3-D shapes
	Thu	Subtracting length problems	Make patterns with 3-D shapes
	Fri	Mini-assessment	Mini-assessment
10 15/03/21	Mon	Introducing weight and mass activity	Working with parts and wholes activity
	Tue	Introducing weight and mass	Make equal parts
	Wed	Measure mass	Recognise a half
	Thu	Compare mass	Find a half
	Fri	Weight and mass problems	Recognise a quarter
11 22/03/21	Mon	Introduce capacity and volume activity	Find a quarter
	Tue	Introduce capacity and volume	Recognise a third
	Wed	Measure capacity	Find a third
	Thu	Compare capacity	Unit fractions
	Fri	Mini-assessment	Non-unit fractions
12 29/03/21	Mon	Activity week. This week we will be providing some themed activities linking to the learning from this term.	Equivalence of a half and 2 quarters
	Tue		Find three quarters
	Wed		Count in fractions
	Thu		Problem solving with fractions
	Fri		Mini-assessment

Year 1/2 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y1 Topic	Y2 Topic
1 12/04/21	Mon	Consolidation week. Use this week to recap & consolidate learning on addition & subtraction within 10 and 20	Compare lengths and heights (R)
	Tue		Measure lengths (1) (R)
	Wed		Measure lengths (2) (R)
	Thu		Measure length (cm)
	Fri		Measure length (m)
2 19/04/21	Mon	Count in 2s	Compare lengths
	Tue	Count in 5s	Order lengths
	Wed	Count in 10s activity	Four operations with lengths
	Thu	Count in 10s	Problem solving with lengths
	Fri	Make equal groups activity	Mini-assessment
3 26/04/21	Mon	Make equal groups	Describe position (1) (R)
	Tue	Add equal groups	Describe position (2) (R)
	Wed	Make arrays activity	Problem solving with position
	Thu	Make arrays	Describe movement activity
	Fri	Make doubles	Describe movement
4 03/05/21	Mon	Bank holiday	Bank holiday
	Tue	Make equal groups – grouping	Describe turns
	Wed	Make equal groups – sharing activity	Describe turns and movement activity
	Thu	Make equal groups – sharing	Describe movement and turns
	Fri	Mini-assessment	Making patterns with shapes

Year 1/2 – Summer Term

Lesson by lesson overview 2020/21

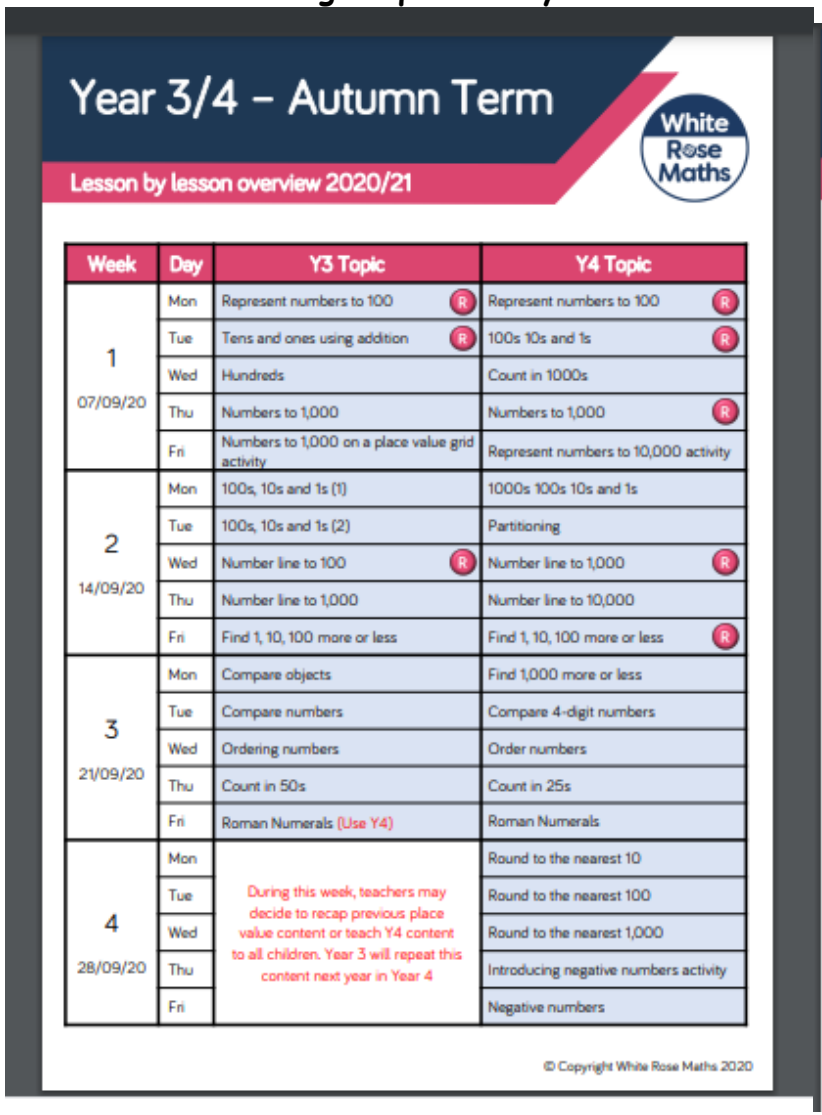
Week	Day	Y1 Topic	Y2 Topic
5 10/0521	Mon	Making half activity	Consolidation and problem solving
	Tue	Making a whole activity	
	Wed	Find a half (1)	
	Thu	Find a half of a quantity activity	
	Fri	Find a half (2)	
6 12/10/20	Mon	Make a quarter activity	
	Tue	Find a quarter (1)	
	Wed	Find a quarter of a quantity activity	
	Thu	Find a quarter (2)	
	Fri	Mini-assessment	
7 19/10/20	Mon	Describe turns activity	Telling the time to the hour (R)
	Tue	Describe turns	Telling the time to the half hour (R)
	Wed	Describe position (1)	O'clock and half past
	Thu	Describe position (2)	Quarter past an quarter to
	Fri	Mini-assessment	Telling the time to 5 minutes
8 02/11/20	Mon	Counting to 100 by making 10s activity	Writing time (R)
	Tue	Counting to 100	Hours and days
	Wed	Counting forwards and backwards within 100	Find durations of time
	Thu	Introducing the 100 square activity	Compare durations of time
	Fri	Partitioning numbers	Mini-assessment
9 09/11/20	Mon	Comparing numbers (1)	Introduce weight and mass (R)
	Tue	Comparing numbers (2)	Measure mass (R)
	Wed	Ordering numbers	Compare mass
	Thu	One more, one less	Measure mass in grams
	Fri	Mini-assessment	Measure mass in kilograms

Year 1/2 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y1 Topic	Y2 Topic
10 16/11/20	Mon	Recognising coins	Introduce capacity and volume (R)
	Tue	Recognising notes	Measure capacity (R)
	Wed	Counting in coins activity	Compare capacity
	Thu	Counting in coins	Millilitres
	Fri	Mini-assessment	Litres
11 23/11/20	Mon	Before and after activity	Four operations with mass
	Tue	Before and after	Four operations with volume
	Wed	Dates	Temperature activity
	Thu	Time to the hour activity	Temperature
	Fri	Time to the hour	Mini-assessment
12 30/11/20	Mon	Time to the half hour activity	Consolidation week
	Tue	Time to the half hour	
	Wed	Writing time	
	Thu	Comparing time	
	Fri	Mini-assessment	
13 12/07/21	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

2.17 Maths Teaching Sequences by Class: Class 3

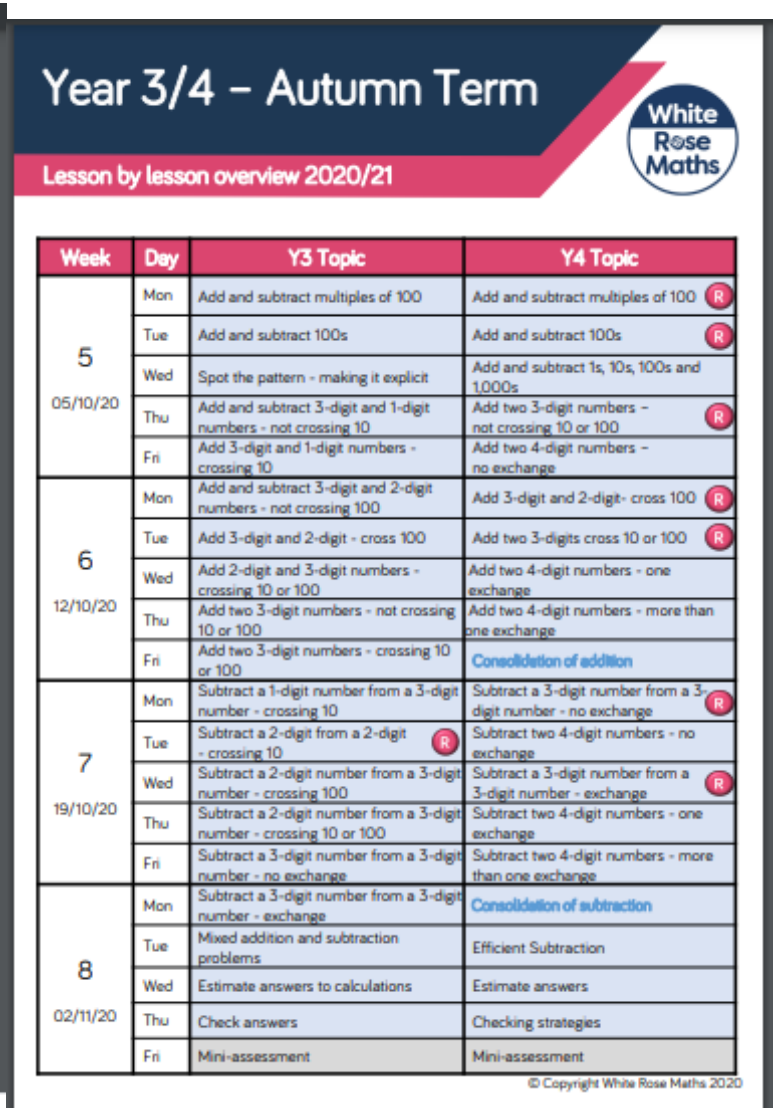


Year 3/4 – Autumn Term

White Rose Maths

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
1 07/09/20	Mon	Represent numbers to 100 (R)	Represent numbers to 100 (R)
	Tue	Tens and ones using addition (R)	100s 10s and 1s (R)
	Wed	Hundreds	Count in 1000s
	Thu	Numbers to 1,000	Numbers to 1,000 (R)
	Fri	Numbers to 1,000 on a place value grid activity	Represent numbers to 10,000 activity
2 14/09/20	Mon	100s, 10s and 1s (1)	1000s 100s 10s and 1s
	Tue	100s, 10s and 1s (2)	Partitioning
	Wed	Number line to 100 (R)	Number line to 1,000 (R)
	Thu	Number line to 1,000	Number line to 10,000
	Fri	Find 1, 10, 100 more or less	Find 1, 10, 100 more or less (R)
3 21/09/20	Mon	Compare objects	Find 1,000 more or less
	Tue	Compare numbers	Compare 4-digit numbers
	Wed	Ordering numbers	Order numbers
	Thu	Count in 50s	Count in 25s
	Fri	Roman Numerals (Use Y4)	Roman Numerals
4 28/09/20	Mon	During this week, teachers may decide to recap previous place value content or teach Y4 content to all children. Year 3 will repeat this content next year in Year 4	Round to the nearest 10
	Tue		Round to the nearest 100
	Wed		Round to the nearest 1,000
	Thu		Introducing negative numbers activity
	Fri		Negative numbers



Year 3/4 – Autumn Term

White Rose Maths

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
5 05/10/20	Mon	Add and subtract multiples of 100	Add and subtract multiples of 100 (R)
	Tue	Add and subtract 100s	Add and subtract 100s (R)
	Wed	Spot the pattern - making it explicit	Add and subtract 1s, 10s, 100s and 1,000s
	Thu	Add and subtract 3-digit and 1-digit numbers - not crossing 10	Add two 3-digit numbers – not crossing 10 or 100 (R)
	Fri	Add 3-digit and 1-digit numbers - crossing 10	Add two 4-digit numbers – no exchange
6 12/10/20	Mon	Add and subtract 3-digit and 2-digit numbers - not crossing 100	Add 3-digit and 2-digit- cross 100 (R)
	Tue	Add 3-digit and 2-digit - cross 100	Add two 3-digits cross 10 or 100 (R)
	Wed	Add 2-digit and 3-digit numbers - crossing 10 or 100	Add two 4-digit numbers - one exchange
	Thu	Add two 3-digit numbers - not crossing 10 or 100	Add two 4-digit numbers - more than one exchange
	Fri	Add two 3-digit numbers - crossing 10 or 100	Consolidation of addition
7 19/10/20	Mon	Subtract a 1-digit number from a 3-digit number - crossing 10	Subtract a 3-digit number from a 3-digit number - no exchange (R)
	Tue	Subtract a 2-digit from a 2-digit - crossing 10 (R)	Subtract two 4-digit numbers - no exchange
	Wed	Subtract a 2-digit number from a 3-digit number - crossing 100	Subtract a 3-digit number from a 3-digit number - exchange (R)
	Thu	Subtract a 2-digit number from a 3-digit number - crossing 10 or 100	Subtract two 4-digit numbers - one exchange
	Fri	Subtract a 3-digit number from a 3-digit number - no exchange	Subtract two 4-digit numbers - more than one exchange
8 02/11/20	Mon	Subtract a 3-digit number from a 3-digit number - exchange	Consolidation of subtraction
	Tue	Mixed addition and subtraction problems	Efficient Subtraction
	Wed	Estimate answers to calculations	Estimate answers
	Thu	Check answers	Checking strategies
	Fri	Mini-assessment	Mini-assessment

Year 3/4 – Autumn Term

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
9 09/11/20	Mon	Multiplication- equal groups	Multiplication- equal groups (R)
	Tue	Using arrays (R)	Using arrays (R)
	Wed	2 times-table (R)	2 times-table (R)
	Thu	5 times-table (R)	5 times-table (R)
	Fri	10 times-table (R)	10 times-table (R)
10 16/11/20	Mon	Make equal groups - sharing (R)	Multiply by 10
	Tue	Make equal groups - grouping (R)	Multiply by 100
	Wed	Divide by 2 (R)	Divide by 10
	Thu	Divide by 5 (R)	Divide by 100
	Fri	Divide by 10 (R)	Multiply by 1 and 0
11 23/11/20	Mon	Multiply by 3	Divide by 1 and itself
	Tue	Divide by 3	Multiply and divide by 3 (R)
	Wed	The 3 times-table	The 3 times-table (R)
	Thu	Multiply by 4	Multiply and divide by 6
	Fri	Divide by 4	6 times-table and division facts
12 30/11/20	Mon	The 4 times-table	Multiply and divide by 9
	Tue	Multiply by 8	9 times-table and division facts
	Wed	Divide by 8	Multiply and divide by 7
	Thu	The 8 times-table	7 times-table and division facts
	Fri	Mini assessment	Mini assessment
13 07/12/20	Consolidation week. Use this week to recap and consolidate learning from this term. For additional challenge – check out our problems of the day.		
14 14/12/20	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

Year 3/4 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
1 04/01/21	Mon	Consolidate 2, 4 and 8 times-tables	11 and 12 times-table
	Tue	Comparing statements	Multiply 3 numbers
	Wed	Related calculations	Factor pairs
	Thu	Multiply 2-digits by 1-digit - no exchange - activity	Efficient multiplication
	Fri	Multiply 2-digits by 1-digit (1)	Written methods
2 11/01/21	Mon	Multiply 2-digits by 1-digit - exchange - activity	Multiply 2-digits by 1-digit
	Tue	Multiply 2-digits by 1-digit (2)	Multiply 2-digits by 1-digit
	Wed	Scaling	Multiply 3-digits by 1-digit
	Thu	Divide 2-digits by 1-digit (1)	Divide 2-digits by 1-digit
	Fri	Divide 2-digits by 1-digit (2)	Divide 2-digits by 1-digit (1)
3 18/01/21	Mon	Divide 100 into 2, 4, 5 and 10 equal parts - activity	Divide 2-digits by 1-digit
	Tue	Divide with remainders activity	Divide 2-digits by 1-digit (2)
	Wed	Divide 2-digits by 1-digit (3)	Divide 3-digits by 1-digit
	Thu	How many ways?	Correspondence problems
	Fri	Mini-assessment	Mini-assessment
4 25/01/21	Mon	Equivalent lengths (m and cm)	Equivalent lengths (m and cm) (R)
	Tue	Equivalent lengths (mm and cm)	Equivalent lengths (mm and cm) (R)
	Wed	Measure length	Kilometres
	Thu	Measure length (m) (R)	What is area? Counting squares
	Fri	Compare lengths (R)	Making shapes

Year 3/4 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
5 01/02/21	Mon	Compare lengths	Comparing area
	Tue	Add lengths	Add lengths (R)
	Wed	Subtract lengths	Subtract lengths (R)
	Thu	What is perimeter? Activity	Measure perimeter (R)
	Fri	Measure perimeter	Perimeter on a grid
6 08/02/21	Mon	Calculate perimeter	Perimeter of a rectangle
	Tue	Calculate perimeter	Perimeter of rectilinear shapes
	Wed	Mini-assessment	Mini-assessment
	Thu	Unit fractions (R)	Unit and non-unit fractions (R)
	Fri	Non-unit fractions (R)	What is a fraction?
7 22/02/21	Mon	Tenths	Tenths (R)
	Tue	Count in tenths	Count in tenths (R)
	Wed	Equivalence of a half and 2 quarters (R)	Equivalent fractions (1) (R)
	Thu	Equivalent fractions (1)	Equivalent fractions (2) (R)
	Fri	Equivalent fractions (2)	Equivalent fractions (1)
8 01/03/21	Mon	Equivalent fractions (3)	Equivalent fractions (2)
	Tue	Count in fractions (R)	Fractions greater than 1
	Wed	Fractions on a number line	Count in fractions
	Thu	Add fractions	Add fractions (R)
	Fri	Making the whole	Add 2 or more fractions

Year 3/4 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
9 08/03/21	Mon	Subtract fractions	Subtract fractions (R)
	Tue	Compare fractions	Subtract 2 fractions
	Wed	Order fractions	Subtract from whole amounts
	Thu	Fractions of a set of objects (1)	Fractions of a set of objects (1)
	Fri	Fractions of a set of objects (2)	Fractions of a set of objects (2)
10 15/03/21	Mon	Fractions of a set of objects (3)	Calculate fractions of a quantity
	Tue	**Consolidation of Fractions**	Problem solving - calculate quantities
	Wed	Mini-assessment	Mini-assessment
	Thu	**Consolidation of Fractions**	Tenths and hundredths activity
	Fri		Recognise tenths and hundredths
11 22/03/21	Mon	Tenths as decimals (Use Y4)	Tenths as decimals
	Tue	Tenths on a place value grid (Use Y4)	Tenths on a place value grid
	Wed	Tenths on a number line (Use Y4)	Tenths on a number line
	Thu	Consolidation- time to consolidate the learning from the term	Divide 1-digit by 10
	Fri		Divide 2-digits by 10
12 29/03/21	Mon	Activity week- This week we will be providing some themed activities linking to the learning from this term.	Hundredths
	Tue		Hundredths as decimals
	Wed		Hundredths on a place value grid
	Thu		Divide 1 or 2-digits by 100
	Fri		Mini-assessment

Year 3/4 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
1 12/04/21	Mon	Measure mass (1)	Bonds to 10 and 100 (R)
	Tue	Measure mass (2)	Make a whole
	Wed	Compare mass	Write decimals activity
	Thu	Add and subtract mass	Write decimals
	Fri	Measure capacity (1)	Compare decimals
2 19/04/21	Mon	Measure capacity (2)	Order decimals
	Tue	Compare capacity	Round decimals activity
	Wed	Add and subtract capacity	Round decimals
	Thu	Temperature	Halves and quarters
	Fri	Mini-assessment	Mini-assessment
3 26/04/21	Mon	Count money – pence (R)	Pounds and pence
	Tue	Count money – pounds (R)	Ordering money
	Wed	Pounds and pence	Estimating money
	Thu	Convert pounds and pence	Convert pounds and pence (R)
	Fri	Add money	Add money (R)
4 03/05/21	Mon	Bank holiday	Bank holiday
	Tue	Subtract money	Subtract money (R)
	Wed	Give change	Find change (R)
	Thu	Working with money activity (Use Y4)	Four operations
	Fri	Mini-assessment	Mini-assessment

Year 3/4 – Summer Term

Lesson by lesson overview 2020/21

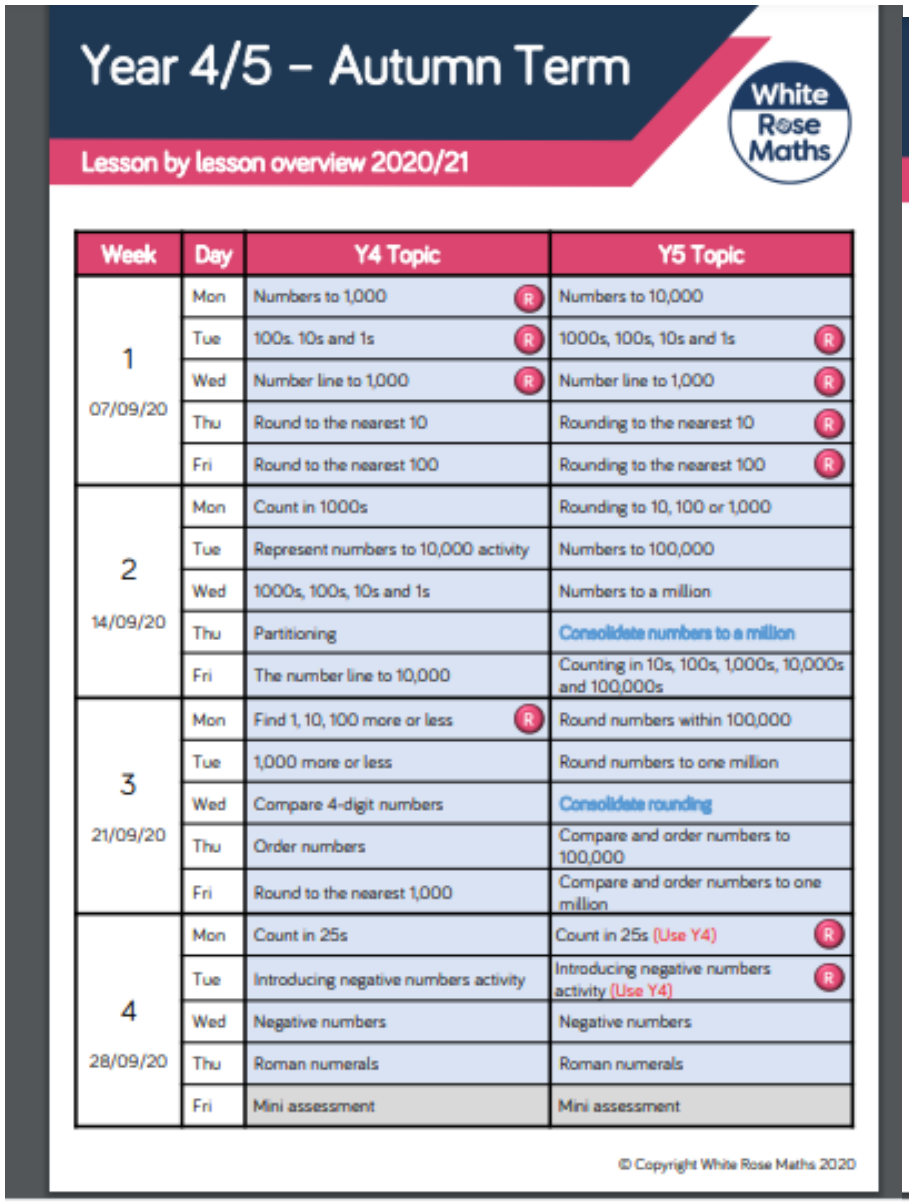
Week	Day	Y3 Topic	Y4 Topic
5 10/05/21	Mon	Consolidation week	Symmetry activity
	Tue		Horizontal and vertical (R)
	Wed		Lines of symmetry
	Thu		Complete a symmetric figure
	Fri		Mini-assessment
6 17/05/21	Mon	O'clock and half past (R)	Describe position
	Tue	Quarter past and quarter to (R)	Draw on a grid
	Wed	Months and years	Move on a grid
	Thu	Hours in a day	Describe movement on a grid
	Fri	Telling time to 5 minutes (R)	Mini-assessment
7 24/05/21	Mon	Telling the time to 5 minutes	Telling the time to 5 minutes (R)
	Tue	Telling the time to the nearest minute	Telling the time to the minute (R)
	Wed	Using a.m. and p.m.	Using a.m. and p.m. (R)
	Thu	24-hour clock	24-hour clock (R)
	Fri	Finding the duration	Hours, minutes and seconds
8 07/06/21	Mon	Comparing durations	Years, months, weeks and days
	Tue	Start and end times	Analogue to digital – activity
	Wed	Measuring time in seconds	Analogue to digital – 12 hour
	Thu	Problem solving with time	Analogue to digital – 24 hour
	Fri	Mini-assessment	Mini-assessment
9 14/06/21	Mon	Interpret pictograms (R)	Interpret charts
	Tue	Draw bar charts – activity	Comparison, sum and difference
	Wed	Bar charts	Introducing line graphs
	Thu	Tables	Line graphs
	Fri	Mini-assessment	Mini-assessment

Year 3/4 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y3 Topic	Y4 Topic
10 21/06/21	Mon	Turns and angles	Turns and angles (R)
	Tue	Right angles in shapes	Right angles in shapes (R)
	Wed	Compare angles	Compare angles (R)
	Thu	Draw accurately	Identify angles
	Fri	Horizontal and vertical	Compare and order angles
11 28/06/21	Mon	Parallel and perpendicular	Triangles activity
	Tue	Recognise and describe 2-D shapes	Triangles
	Wed	Recognise and describe 3-D shapes	Quadrilaterals activity
	Thu	Make 3-D shapes	Quadrilaterals
	Fri	Mini-assessment	Mini-assessment
12 05/06/21	Mon	**Consolidation week**	
	Tue		
	Wed		
	Thu		
	Fri		
13 12/07/21	Mon	Activity week. This week we will be providing some themed activities linked to the learning from this term.	
	Tue		
	Wed		
	Thu		
	Fri		

2.18 Maths Teaching Sequences by Class: Class 4

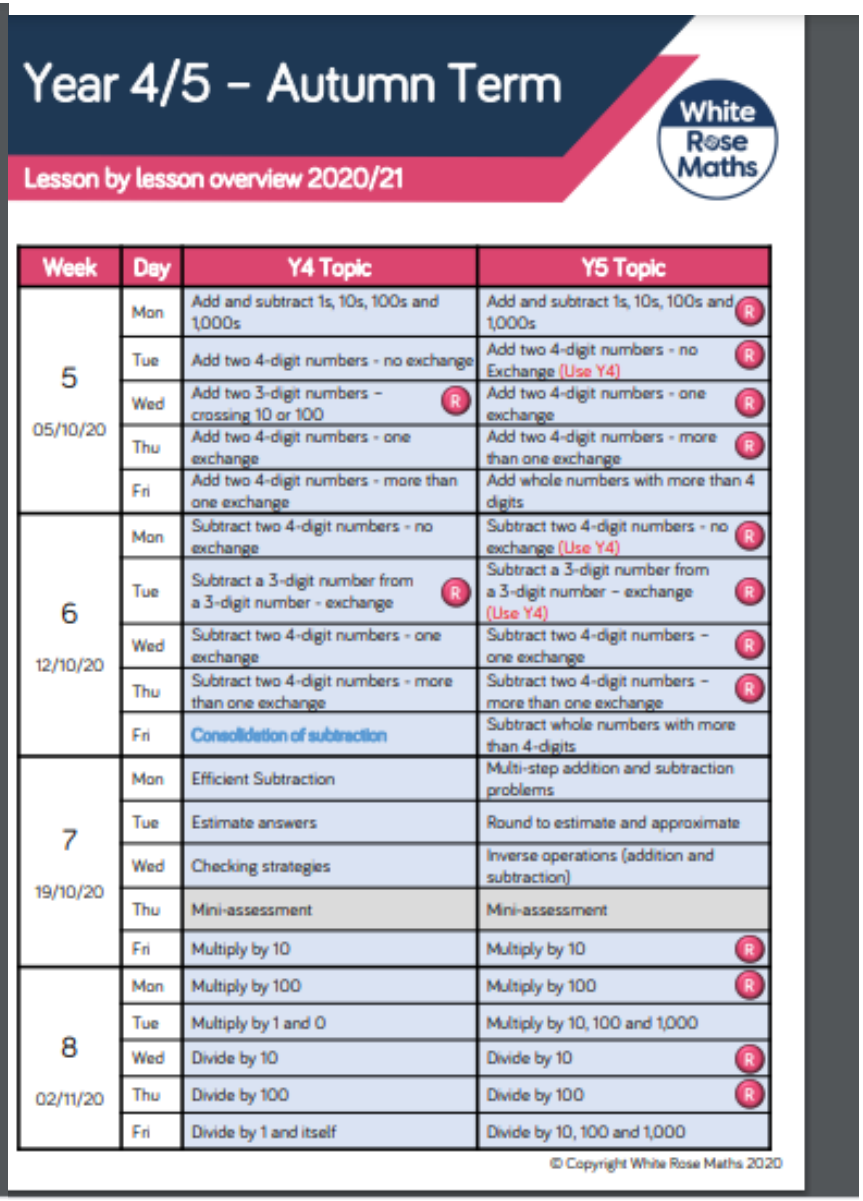


Year 4/5 – Autumn Term

White Rose Maths

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
1 07/09/20	Mon	Numbers to 1,000 (R)	Numbers to 10,000
	Tue	100s, 10s and 1s (R)	1000s, 100s, 10s and 1s (R)
	Wed	Number line to 1,000 (R)	Number line to 1,000 (R)
	Thu	Round to the nearest 10	Rounding to the nearest 10 (R)
	Fri	Round to the nearest 100	Rounding to the nearest 100 (R)
2 14/09/20	Mon	Count in 1000s	Rounding to 10, 100 or 1,000
	Tue	Represent numbers to 10,000 activity	Numbers to 100,000
	Wed	1000s, 100s, 10s and 1s	Numbers to a million
	Thu	Partitioning	Consolidate numbers to a million
	Fri	The number line to 10,000	Counting in 10s, 100s, 1,000s, 10,000s and 100,000s
3 21/09/20	Mon	Find 1, 10, 100 more or less (R)	Round numbers within 100,000
	Tue	1,000 more or less	Round numbers to one million
	Wed	Compare 4-digit numbers	Consolidate rounding
	Thu	Order numbers	Compare and order numbers to 100,000
	Fri	Round to the nearest 1,000	Compare and order numbers to one million
4 28/09/20	Mon	Count in 25s	Count in 25s (Use Y4) (R)
	Tue	Introducing negative numbers activity	Introducing negative numbers activity (Use Y4) (R)
	Wed	Negative numbers	Negative numbers
	Thu	Roman numerals	Roman numerals
	Fri	Mini assessment	Mini assessment



Year 4/5 – Autumn Term

White Rose Maths

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
5 05/10/20	Mon	Add and subtract 1s, 10s, 100s and 1,000s	Add and subtract 1s, 10s, 100s and 1,000s (R)
	Tue	Add two 4-digit numbers - no exchange	Add two 4-digit numbers - no Exchange (Use Y4) (R)
	Wed	Add two 3-digit numbers – crossing 10 or 100 (R)	Add two 4-digit numbers - one exchange (R)
	Thu	Add two 4-digit numbers - one exchange	Add two 4-digit numbers - more than one exchange (R)
	Fri	Add two 4-digit numbers - more than one exchange	Add whole numbers with more than 4 digits
6 12/10/20	Mon	Subtract two 4-digit numbers - no exchange	Subtract two 4-digit numbers - no exchange (Use Y4) (R)
	Tue	Subtract a 3-digit number from a 3-digit number - exchange (R)	Subtract a 3-digit number from a 3-digit number – exchange (Use Y4) (R)
	Wed	Subtract two 4-digit numbers - one exchange	Subtract two 4-digit numbers – one exchange (R)
	Thu	Subtract two 4-digit numbers - more than one exchange	Subtract two 4-digit numbers – more than one exchange (R)
	Fri	Consolidation of subtraction	Subtract whole numbers with more than 4-digits
7 19/10/20	Mon	Efficient Subtraction	Multi-step addition and subtraction problems
	Tue	Estimate answers	Round to estimate and approximate
	Wed	Checking strategies	Inverse operations (addition and subtraction)
	Thu	Mini-assessment	Mini-assessment
	Fri	Multiply by 10	Multiply by 10 (R)
8 02/11/20	Mon	Multiply by 100	Multiply by 100 (R)
	Tue	Multiply by 1 and 0	Multiply by 10, 100 and 1,000
	Wed	Divide by 10	Divide by 10 (R)
	Thu	Divide by 100	Divide by 100 (R)
	Fri	Divide by 1 and itself	Divide by 10, 100 and 1,000

Year 4/5 – Autumn Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
9 09/11/20	Mon	Factor Pairs	Factors
	Tue	Multiply and divide by 3 (R)	Common factors
	Wed	The 3 times-table (R)	Multiples
	Thu	Multiply and divide by 6	Multiples of 10, 100 and 1,000
	Fri	6 times-table and division facts	Consolidate factors and multiples
10 16/11/20	Mon	Multiply and divide by 9	Prime numbers activity
	Tue	9 times-table and division facts	Prime numbers
	Wed	Multiply and divide by 7	Square numbers
	Thu	7 times-table and division facts	Cube numbers
	Fri	Mini-assessment	Mini-assessment
11 23/11/20	Mon	Equivalent lengths - m and cm (R)	Equivalent lengths - m and cm (Use Y4) (R)
	Tue	Equivalent lengths - mm and cm (R)	Equivalent lengths - mm and cm (Use Y4) (R)
	Wed	Kilometres	Kilometres (Use Y4) (R)
	Thu	Measure perimeter	Measure perimeter
	Fri	Perimeter on a grid (R)	Perimeter on a grid (R)

Year 4/5 – Autumn Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
12 30/11/20	Mon	Perimeter of a rectangle	Perimeter of a rectangle (R)
	Tue	Perimeter of rectilinear shapes	Perimeter of rectilinear shapes (R)
	Wed	What is area?	Calculate perimeter
	Thu	Counting squares	Counting squares (R)
	Fri	Making shapes	Area of rectangles
13 7/12/20	Mon	Comparing area	Area of compound shapes
	Tue	Consolidate area and perimeter	Area of irregular shapes
	Wed	Mini assessment	Mini assessment
	Thu	Consolidation. Use this time to recap and consolidate learning from this term. For additional challenge – check out our problems of the day.	
	Fri		
14 14/12/20	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

Year 4/5 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
1 04/01/21	Mon	11 and 12 times-table	Multiply 2-digits by 1-digit (R)
	Tue	Multiply 3 numbers	Multiply 3-digits by 1-digit (R)
	Wed	Efficient multiplication	Multiply 4-digits by 1 digit
	Thu	Written methods	Multiply 2-digits (area model)
	Fri	Multiply 2-digits by 1-digit (R)	Multiply 2-digits by 2-digits
2 11/01/21	Mon	Multiply 2-digits by 1-digit	Multiply 3-digits by 2-digits
	Tue	Multiply 3-digits by 1-digit	Multiply 4-digits by 2-digits (basic practice)
	Wed	Consolidation of multiplication	Multiply 4-digits by 2-digits
	Thu	Divide 2-digits by 1-digit (R)	Divide 2-digits by 1-digit (1) (R)
	Fri	Divide 2-digits by 1-digit (1)	Divide 2-digits by 1-digit (2) (R)
3 18/01/21	Mon	Divide 2-digits by 1-digit (2)	Divide 3-digits by 1-digit (R)
	Tue	Divide 3-digits by 1-digit	Divide 4-digits by 1-digit
	Wed	Correspondence problems	Divide with remainders
	Thu	Mini-assessment	Mini-assessment
	Fri	Unit and non-unit fractions (R)	Unit and non-unit fractions (Use Y4) (R)
4 25/01/21	Mon	What is a fraction?	What is a fraction? (R)
	Tue	Equivalent fractions (1) (R)	Equivalent fractions (1) (Use Y4) (R)
	Wed	Equivalent fractions (1)	Equivalent fractions (1) (R)
	Thu	Equivalent fractions (2)	Equivalent fractions
	Fri	Fractions greater than 1	Fractions greater than 1 (R)

Year 4/5 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
5 01/02/21	Mon	Consolidation of fractions greater than 1	Improper fractions to mixed numbers
	Tue	Count in fractions	Mixed numbers to improper fractions
	Wed	Fractions on a number line (Use Y3) (R)	Number sequences
	Thu	Compare fractions (Use Y3) (R)	Compare fractions less than 1
	Fri	Order fractions (Use Y3) (R)	Order fractions less than 1
6 08/02/21	Mon	Consolidation of comparing and ordering fractions	Order fractions greater than 1
	Tue	Making the whole (Use Y3) (R)	Add and subtract fractions
	Wed	Add fractions (R)	Add fractions within 1
	Thu	Add 2 or more fractions	Add 3 or more fractions
	Fri	Consolidation of adding fractions	Add fractions
7 22/02/21	Mon	Subtract fractions (R)	Add mixed numbers
	Tue	Subtract 2 fractions	Subtract fractions
	Wed	Subtract from whole amounts	Subtract mixed numbers
	Thu	Consolidation of subtracting fractions	Subtraction – breaking the whole
	Fri	Add and subtract fractions (Use Y5)	Subtract 2 mixed numbers
8 01/03/21	Mon	Tenths	Multiply unit fractions by an integer
	Tue	Count in tenths	Multiply non-unit fractions by an integer
	Wed	Fractions of a set of objects (1) (R)	Multiply mixed numbers by integers
	Thu	Fractions of a set of objects (2) (R)	Using fractions as operators
	Fri	Calculate fractions of a quantity	Fractions of an amount

Year 4/5 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
9 08/03/21	Mon	Problem solving – calculate quantities	Fraction problem solving
	Tue	Mini-assessment	Mini-assessment
	Wed	Tenths and hundredths activity	Tenths and hundredths activity (Use Y4) R
	Thu	Recognise tenths and hundredths	Recognise tenths and hundredths (Use Y4) R
	Fri	Tenths are decimals	Tenths are decimals (Use Y4) R
10 15/03/21	Mon	Tenths on a place value grid	Tenths on a place value grid (Use Y4) R
	Tue	Tenths on a number line	Decimals up to 2 d.p.
	Wed	Divide 1-digit by 10	Decimals as fractions (1)
	Thu	Divide 2-digits by 10	Decimals as fractions (2)
	Fri	Hundredths	Understand thousandths
11 22/03/21	Mon	Hundredths as decimals	Thousandths as decimals
	Tue	Hundredths on a place value grid	Understand percentages
	Wed	Divide 1 or 2-digits by 100	Percentages as fractions and decimals
	Thu	Consolidation of decimals	Equivalent F.D.P
	Fri	Mini-assessment	Mini-assessment
12 29/03/21	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

Year 4/5 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
1 12/04/21	Mon	Bonds to 10 and 100 R	Bonds to 10 and 100 (Use Y4) R
	Tue	Make a whole	Complements to 1
	Wed	Write decimals activity	Adding decimals within 1
	Thu	Write decimals	Subtracting decimals within 1
	Fri	Compare decimals	Compare decimals (Use Y4) R
2 19/04/21	Mon	Order decimals	Order and compare decimals
	Tue	Round decimals activity	Round decimals
	Wed	Round decimals	Adding decimals – crossing the whole
	Thu	Halves and quarters	Adding decimals with the same number of decimal places
	Fri	Mini-assessment	Subtracting decimals with the same number of decimal places
3 26/04/21	Mon	Pounds and pence	Add & subtract decimals, same number of decimal places – problem solving
	Tue	Ordering money	Adding decimals with a different number of decimal places
	Wed	Estimating money	Subtracting decimals with a different number of decimal places
	Thu	Convert pounds and pence R	Adding and subtracting decimals with different number of decimal places
	Fri	Add money R	Adding and subtracting wholes and decimals
4 03/05/21	Mon	Bank holiday	Bank holiday
	Tue	Subtract money R	Decimal sequences
	Wed	Find change R	Multiplying decimals by 10, 100 and 1,000
	Thu	Four operations	Dividing decimals by 10, 100 and 1,000
	Fri	Mini-assessment	Mini-assessment

Year 4/5 – Summer Term

Lesson by lesson overview 2020/21

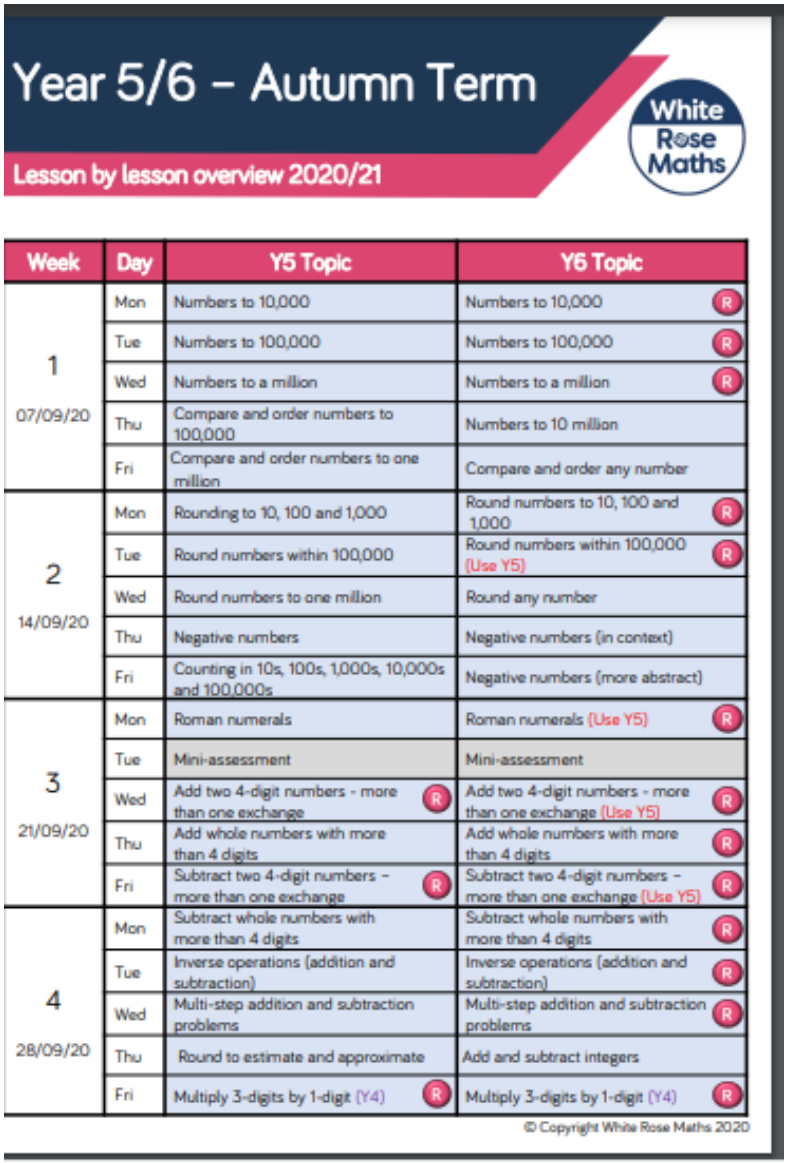
Week	Day	Y4 Topic	Y5 Topic
5 10/05/21	Mon	Interpret charts	Interpret charts (R)
	Tue	Comparison, sum and difference	Comparison, sum and difference (R)
	Wed	Introducing line graphs	Introducing line graphs (R)
	Thu	Line graphs	Read and interpret line graphs
	Fri	Mini-assessment	Draw line graphs
6 17/05/21	Mon	Telling the time to 5 minutes (R)	Use line graphs to solve problems
	Tue	Telling the time to the minute (R)	Read and interpret tables
	Wed	Using a.m. and p.m. (R)	Two-way tables
	Thu	24-hour clock (R)	Timetables
	Fri	Hours, minutes and seconds	Mini-assessment
7 24/05/21	Mon	Years, months, weeks and days	Converting units of time
	Tue	Analogue to digital - activity	Timetables
	Wed	Analogue to digital - 12 hour	Kilograms and kilometres
	Thu	Analogue to digital - 24 hour	Millimetres and millilitres
	Fri	Consolidation of time	Metric units
8 07/06/21	Mon	Mini-assessment	Imperial units
	Tue	Identify angles	Identify angles (R)
	Wed	Compare and order angles	Compare and order angles (R)
	Thu	Turns and angles (R)	Measuring angles in degrees
	Fri	Right angles in shapes (R)	Measuring with a protractor (1)
9 14/06/21	Mon	Recognise & describe 2-D shapes (R)	Measuring with a protractor (2)
	Tue	Recognise & describe 3-D shapes (R)	Drawing lines and angles accurately activity
	Wed	Draw accurately (R)	Drawing lines and angles accurately
	Thu	Triangles activity	Calculating angles on a straight line
	Fri	Quadrilaterals activity	Calculating angles around a point

Year 4/5 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y4 Topic	Y5 Topic
10 21/06/21	Mon	Triangles	Triangles (R)
	Tue	Quadrilaterals	Quadrilaterals (R)
	Wed	**Consolidation of angles**	Calculating lengths & angles in shapes
	Thu		Regular and irregular polygons
	Fri		Reasoning about 3-D shapes
11 28/06/21	Mon	Describe position	Describe position (R)
	Tue	Draw on a grid	Draw on a grid (R)
	Wed	Move on a grid	Position in the first quadrant
	Thu	Describe movement on a grid	Translation
	Fri	Mini-assessment	Translation with coordinates
12 05/07/21	Mon	Lines of symmetry	Lines of symmetry (R)
	Tue	Complete a symmetric figure	Complete a symmetric figure (R)
	Wed	Symmetry activity	Reflection
	Thu	Horizontal and vertical (R)	Reflection with coordinates
	Fri	Mini-assessment	Mini-assessment
13 12/07/21	Mon	Activity week. This week we will be providing some themed activities linking to the learning from this term.	What is volume?
	Tue		Compare volume
	Wed		Estimate volume
	Thu		Estimate capacity
	Fri		Mini-assessment

2.19 Maths Teaching Sequences by Class: Class 5

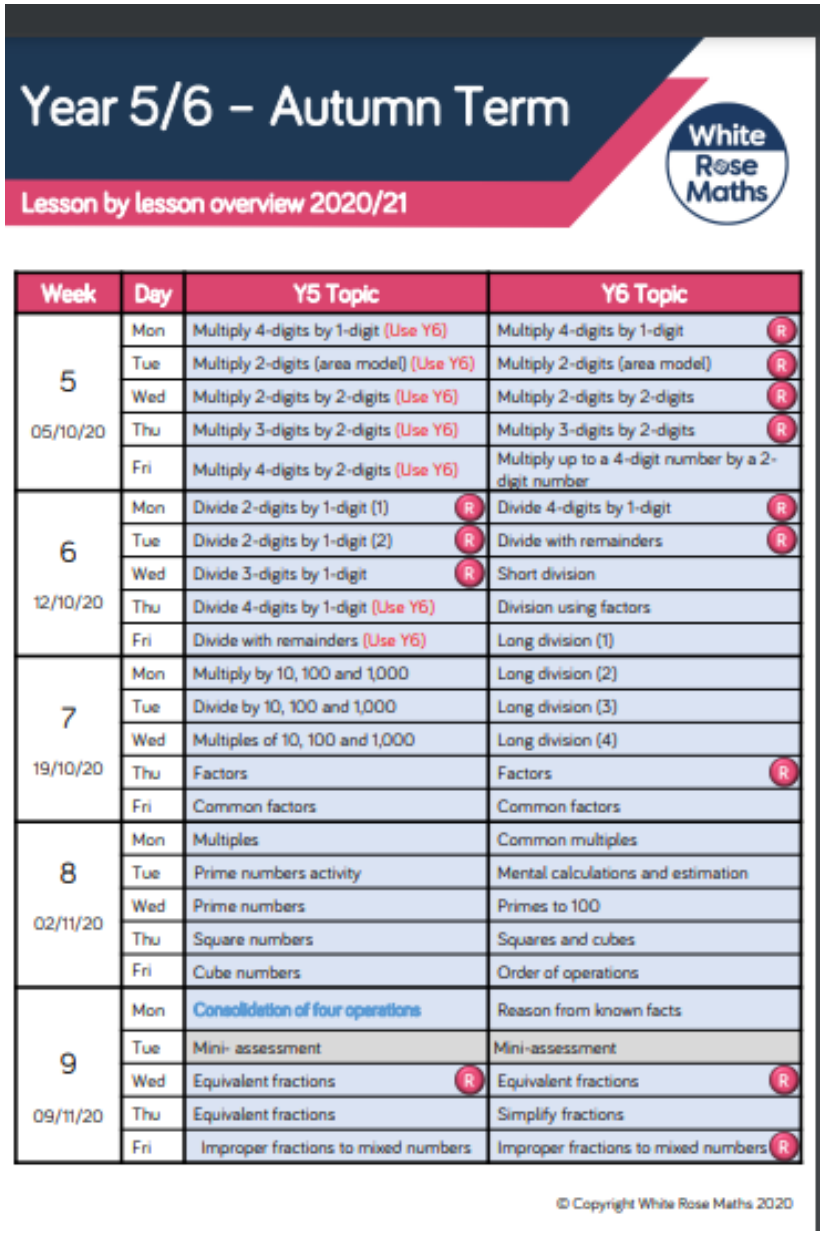


Year 5/6 – Autumn Term

White Rose Maths

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
1 07/09/20	Mon	Numbers to 10,000	Numbers to 10,000 (R)
	Tue	Numbers to 100,000	Numbers to 100,000 (R)
	Wed	Numbers to a million	Numbers to a million (R)
	Thu	Compare and order numbers to 100,000	Numbers to 10 million
	Fri	Compare and order numbers to one million	Compare and order any number
2 14/09/20	Mon	Rounding to 10, 100 and 1,000	Round numbers to 10, 100 and 1,000 (R)
	Tue	Round numbers within 100,000	Round numbers within 100,000 (Use Y5) (R)
	Wed	Round numbers to one million	Round any number
	Thu	Negative numbers	Negative numbers (in context)
	Fri	Counting in 10s, 100s, 1,000s, 10,000s and 100,000s	Negative numbers (more abstract)
3 21/09/20	Mon	Roman numerals	Roman numerals (Use Y5) (R)
	Tue	Mini-assessment	Mini-assessment
	Wed	Add two 4-digit numbers - more than one exchange (R)	Add two 4-digit numbers - more than one exchange (Use Y5) (R)
	Thu	Add whole numbers with more than 4 digits	Add whole numbers with more than 4 digits (R)
	Fri	Subtract two 4-digit numbers – more than one exchange (R)	Subtract two 4-digit numbers – more than one exchange (Use Y5) (R)
4 28/09/20	Mon	Subtract whole numbers with more than 4 digits	Subtract whole numbers with more than 4 digits (R)
	Tue	Inverse operations (addition and subtraction)	Inverse operations (addition and subtraction) (R)
	Wed	Multi-step addition and subtraction problems	Multi-step addition and subtraction problems (R)
	Thu	Round to estimate and approximate	Add and subtract integers
	Fri	Multiply 3-digits by 1-digit (Y4) (R)	Multiply 3-digits by 1-digit (Y4) (R)



Year 5/6 – Autumn Term

White Rose Maths

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
5 05/10/20	Mon	Multiply 4-digits by 1-digit (Use Y6)	Multiply 4-digits by 1-digit (R)
	Tue	Multiply 2-digits (area model) (Use Y6)	Multiply 2-digits (area model) (R)
	Wed	Multiply 2-digits by 2-digits (Use Y6)	Multiply 2-digits by 2-digits (R)
	Thu	Multiply 3-digits by 2-digits (Use Y6)	Multiply 3-digits by 2-digits (R)
	Fri	Multiply 4-digits by 2-digits (Use Y6)	Multiply up to a 4-digit number by a 2-digit number
6 12/10/20	Mon	Divide 2-digits by 1-digit (1) (R)	Divide 4-digits by 1-digit (R)
	Tue	Divide 2-digits by 1-digit (2) (R)	Divide with remainders (R)
	Wed	Divide 3-digits by 1-digit (R)	Short division
	Thu	Divide 4-digits by 1-digit (Use Y6)	Division using factors
	Fri	Divide with remainders (Use Y6)	Long division (1)
7 19/10/20	Mon	Multiply by 10, 100 and 1,000	Long division (2)
	Tue	Divide by 10, 100 and 1,000	Long division (3)
	Wed	Multiples of 10, 100 and 1,000	Long division (4)
	Thu	Factors	Factors (R)
	Fri	Common factors	Common factors
8 02/11/20	Mon	Multiples	Common multiples
	Tue	Prime numbers activity	Mental calculations and estimation
	Wed	Prime numbers	Primes to 100
	Thu	Square numbers	Squares and cubes
	Fri	Cube numbers	Order of operations
9 09/11/20	Mon	Consolidation of four operations	Reason from known facts
	Tue	Mini- assessment	Mini-assessment
	Wed	Equivalent fractions (R)	Equivalent fractions (R)
	Thu	Equivalent fractions	Simplify fractions
	Fri	Improper fractions to mixed numbers	Improper fractions to mixed numbers (R)

Year 5/6 – Autumn Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
10 16/11/20	Mon	Mixed numbers to improper fractions	Mixed numbers to improper fractions (R)
	Tue	Number sequences	Fractions on a number line
	Wed	Compare fractions less than 1	Compare and order (denominator)
	Thu	Order fractions less than 1	Compare and order (numerator)
	Fri	Compare fractions greater than 1	Compare fractions greater than 1 (Y5) (R)
11 23/11/20	Mon	Order fractions greater than 1	Order fractions greater than 1 (Y5) (R)
	Tue	Add and subtract fractions	Add and subtract fractions (1)
	Wed	Add fractions within 1	Add and subtract fractions activity
	Thu	Add 3 or more fractions	Add and subtract fractions (2)
	Fri	Add mixed numbers	Add mixed numbers (R)
12 30/11/20	Mon	Add fractions	Add fractions
	Tue	Subtract fractions	Subtract fractions (Y5) (R)
	Wed	Subtract mixed numbers	Subtract mixed numbers (R)
	Thu	Subtraction - breaking the whole	Subtract fractions
	Fri	Subtract 2 mixed numbers	Mixed addition and subtraction
13 07/12/20	Mon	Multiply unit fractions by an integer	Multiply fractions by integers
	Tue	Multiply non-unit fractions by an integer	Multiply fractions by fractions
	Wed	Multiply mixed numbers by integers	Divide fractions by integers (1)
	Thu	Calculate fractions of a quantity (R)	Divide fractions by integers (2)
	Fri	Fraction of an amount	Fraction of an amount
14 14/12/20	Mon	Using fractions as operators	Fraction of an amount - find the whole
	Tue	Fraction problem solving	Four rules with fractions
	Wed	Mini-assessment	Mini-assessment
	Thu	Activity days. We will be providing some themed activities linking to the learning from this term.	
	Fri		

Year 5/6 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
1 04/01/21	Mon	Decimals up to 2 d.p.	Decimals up to 2 d.p. (R)
	Tue	Decimals as fractions (1)	Decimals as fractions
	Wed	Decimals as fractions (2)	Decimals as fractions (2) (R)
	Thu	Understand thousandths	Understand Thousandths (R)
	Fri	Thousandths as decimals	Three decimal places
2 11/01/21	Mon	Rounding decimals	Rounding decimals (R)
	Tue	Order and compare decimals	Fractions to decimals (1)
	Wed	Understand percentages	Fractions to decimals (2)
	Thu	Fractions to percentages (Use Y6)	Fractions to percentages
	Fri	Percentages as fractions and decimals	Percentages as fraction & decimals (R)
3 18/01/21	Mon	Equivalent FDP	Equivalent FDP
	Tue	Adding decimals within 1	Order FDP
	Wed	Subtracting decimals within 1	Percentage of an amount (1)
	Thu	Compliments to 1	Percentage of an amount (2)
	Fri	Add decimals - crossing the whole	Percentage (missing value)
4 25/01/21	Mon	Add decimals with same number of decimal places	Add decimals with same number of decimal places (R)
	Tue	Subtract decimals with same number of decimal places	Subtract decimals with same number of decimal places (R)
	Wed	Add decimals with a different number of decimal places	Add decimals with a different number of decimal places (R)
	Thu	Subtract decimals with different number of decimal places	Subtract decimals with different number of decimal places (R)
	Fri	Add and subtract wholes as decimals	Add and subtract wholes as decimals (R)

Year 5/6 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
5 01/02/21	Mon	Multiply decimals by 10,100 and 1,000	Multiply by 10, 100 and 1,000
	Tue	Divide decimals by 10, 100 and 1,000	Divide by 10, 100 and 1,000
	Wed	Decimal sequences	Multiply decimals by integers
	Thu	Consolidations of FDP	Divide decimals by integers
	Fri	Mini-assessment	Division to solve problems
6 08/02/21	Mon	Kilometres (Use Y4) R	Metric measures
	Tue	Kilograms and kilometres	Convert metric measures
	Wed	Millimetres and millilitres	Calculate with metric measures
	Thu	Metric units	Miles and kilometres
	Fri	Imperial units	Imperial measures
7 22/02/21	Mon	Converting units of time	Find a rule – one step
	Tue	Timetables	Find a rule – two step
	Wed	Consolidation of multiplication and division	Forming expressions
	Thu		Substitution
	Fri		Formulae
8 01/03/21	Mon	Consolidation of Fractions, Decimals and Percentages	Forming equations
	Tue		Solve simple one- step equations
	Wed		Solve two-step equations
	Thu		Find pairs of values (1)
	Fri		Find pairs of values (2)

Year 5/6 – Spring Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
9 08/03/21	Mon	Measure perimeter	Area and perimeter
	Tue	Perimeter on a grid R	Shapes – same area
	Wed	Perimeter of rectangles R	Area of a triangle (1)
	Thu	Perimeter of rectilinear shapes R	Area of a triangle (2)
	Fri	Calculate perimeter	Area of a triangle (3)
10 15/03/21	Mon	Counting squares R	Area of a parallelogram
	Tue	Area of rectangles	Using ratio language
	Wed	Area of compound shapes	Ratio and fractions
	Thu	Area of irregular shapes	Introducing the ratio symbol
	Fri	Mini-assessment	Calculating ratio activity
11 22/03/21	Mon	Interpret charts R	Calculating ratio
	Tue	Comparison, sum and difference R	Using scale factors
	Wed	Read and interpret tables	Calculating scale factors
	Thu	Two way tables	Ratio and proportion problems
	Fri	Timetables	Ratio and proportion problems (2)
12 29/03/21	Activity week. This week we will be providing some themed activities linking to the learning from this term.		

Year 5/6 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
1 12/04/21	Mon	Introduce line graphs (R)	Introduce line graphs (Use Y5)
	Tue	Read and interpret line graphs	Read and interpret line graphs
	Wed	Draw line graphs	Draw line graphs
	Thu	Use line graphs to solve problems	Use line graphs to solve problems
	Fri	Consolidation of statistics	Circles
2 19/04/21	Mon		Read and interpret pie charts
	Tue		Pie charts with percentages
	Wed		Draw pie charts
	Thu		The mean
	Fri	Mini-assessment	Mini-assessment
3 26/04/21	Mon	What is volume? (R)	What is volume? (R)
	Tue	Compare volume	Volume - counting cubes
	Wed	Estimate volume	Volume of a cuboid
	Thu	Estimate capacity	Consolidate volume
	Fri	Mini-assessment	Mini-assessment
4 03/05/21	Mon	Bank holiday	Bank holiday
	Tue	Measure with a protractor (1)	Measure with a protractor
	Wed	Identify angles (R)	Introduce angles
	Thu	Compare and order angles (R)	Calculate angles
	Fri	Calculate angles on a straight line	Vertically opposite angles

Year 5/6 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
5 10/05/21	Mon	Calculating angles around a point	Angles in a triangle
	Tue	Measure angles in degrees	Angles in a triangle – special cases
	Wed	Triangles (R)	Angles in a triangle – missing angles
	Thu	Quadrilaterals (R)	Angles in special quadrilaterals
	Fri	Draw lines and angles accurately	Angles in regular polygons
6 17/05/21	Mon	Regular and irregular polygons	Draw shapes accurately
	Tue	Reasoning about 3-D shapes	Draw nets of 3-D shapes
	Wed	Describe position (R)	The first quadrant
	Thu	Position in the first quadrant	Four quadrants
	Fri	Translation	Translations
7 24/05/21	Mon	Translation with coordinates	Translation with coordinates (Use Y5)
	Tue	Lines of symmetry (R)	Lines of symmetry (Use Y5)
	Wed	Complete a symmetric figure (R)	Complete a symmetric figure (Use Y5)
	Thu	Reflection	Reflections
	Fri	Reflection with coordinates	Reflection with coordinates (Use Y5)
8 07/06/21	Mon	Teachers may choose to use this time for consolidation of Y5 small steps	Themed projects supplied by White Rose Maths and consolidation
	Tue		
	Wed		
	Thu		
	Fri		
9 14/06/21	Mon		
	Tue		
	Wed		
	Thu		
	Fri		

Year 5/6 – Summer Term

Lesson by lesson overview 2020/21

Week	Day	Y5 Topic	Y6 Topic
10 21/06/21	Mon	Teachers may choose to use this time for consolidation of Y5 small steps	Themed projects supplied by White Rose Maths and consolidation
	Tue		
	Wed		
	Thu		
	Fri		
11 28/06/21	Mon		
	Tue		
	Wed		
	Thu		
	Fri		
12 05/07/21	Mon		
	Tue		
	Wed		
	Thu		
	Fri		
13 12/07/21	Mon		
	Tue		
	Wed		
	Thu		
	Fri		

2.20 Teaching of Times Tables

The 2014 Maths Curriculum placed greater emphasis on the acquisition of all times tables' facts by the end of Year 4. As a result of this and the planned introduction of formal Times Table Testing during 2020 the opportunity has been taken to review approaches to the teaching of times tables.

As we know there is no easy shortcut to the acquisition of table knowledge although it is accepted that some children seem to pick up the facts more easily and some children are more willing to put in the extra effort at home in order to acquire those skills.

Recent initiatives in school have sought to increase the profile of mental maths acquisition and include certificates of achievement in worship and inter class and inter team competitions on TT Rockstars. These initiatives have gone some way in driving up performance but now we need to take the next step and drive performance even further.

On this basis it is recommended that we trial a standard approach to the teaching of times tables. This will include:

- A recommended sequence of the order in which times tables are introduced from Year 1 – 4 (see attached).
- Weekly bespoke Times Tables teaching (which may or may not be part of the mental starter of a lesson).
- Weekly times tables' homework, supported by an appropriate test.
- TT Rockstars activities set weekly in Classes 2 upwards with continued competitions (perhaps allocated to one of the early morning slots).
- From the beginning of Year 4, fortnightly tests in line with the statutory tests.

It is acknowledged that not all children will progress at the same pace and that for some children catch up will continue well into Year 5 and 6.

The following pages identify a suggested sequence of teaching and suitable resources to use. Many experts still believe the chanting or singing of tables to be beneficial but also that the 2x table is the key table to learn properly as it is often the first one children are faced with and securing that is crucial to moving onto other tables.

Hanging Heaton C of E (VC) J & I School – Key Stage 1 sequence for teaching times tables

	Year 1	Year 2
Autumn 1	Count in 2's up to 24, linking with even numbers and supporting doubles. Count in multiples of 10 in order up to 120.	Consolidate counting in steps of 2, 5 and 10 in order from 0 up to 12x.
Autumn 2	Count in 2's up to 24, linking with even numbers and supporting doubles. Count in multiples of 10 in order up to 120.	Count in steps of 2 and 5 from 0 up to 12x fluently. Recall multiples of 10 up to 12x10 in any order, including missing numbers and related division facts with growing fluency.
Spring 1	Focus on counting in multiples of 5 up to 60, linking with knowledge of counting in 10s. Continue to develop fluency of counting in 2's and 10's.	Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts. ***Understanding of 2s critical to all other tables*** Recall multiples of 10 up to 12x10 fluently.
Spring 2	Focus on counting in multiples of 5 up to 60, linking with knowledge of counting in 10s. Continue to develop fluency of counting in 2's and 10's.	Recall multiples of 5 up to 12x5 in any order, including missing numbers and related division facts. Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts with growing fluency.
Summer 1	Count in multiples of 10, 2 and 5 in order with growing fluency.	Count in multiples of 3 to 12x3 in order from 0. Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts fluently. Recall multiples of 5 up to 12x5 in any order, including missing numbers and related division facts with growing fluency.
Summer 2	Count in multiples of 10, 2 and 5 in order fluently.	Count in multiples of 3 to 12x3 in order from 0 with growing fluency. Recall multiples of 5 up to 12x5 in any order, including missing numbers and related division facts fluently.
Teaching methodologies	• Sing counting songs • Hundred square • Number lines • Count pairs of objects • Count straws bundled in tens • Pictorial representations on display • Rolling numbers or alternative (chanting songs)	• Counting objects in groups of 2, 5, 10 & 3 • Sing counting songs • Hundred square • Number lines • Array with concrete resources • Pictorial representations on display • Rolling numbers or alternative (chanting songs)

Hanging Heaton C of E (VC) J & I School – Key Stage 2 sequence for teaching times tables

	Year 3	Year 4	Year 5
AUT 1	Count in multiples of 3 to 12x3 in order from 0 fluently.	Recall multiples of 3,4 and 8 up to 12x in any order, including missing numbers and related division facts fluently. Fluently count in 6's in order up to 12x6, using multiples of 3	Recall multiples of 12 in any order, including missing numbers and related division facts fluently. Recall multiples of all times tables up to 12x12 in any order, including missing numbers and related division facts with growing fluency
AUT 2	Recall multiples of 3 up to 12x3 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 4 to 12x4 in order from 0 with growing fluency. Introduce (relating to x4) and begin to count in multiples of 8 from 0 to 12x8.	Recall multiples of 6 in any order, including missing numbers and related division facts with growing fluency. Fluently count in 7's in order up to 12x7.	
SPR 1	Recall multiples of 3 up to 12x3 in any order, including missing numbers and related division facts fluently. Count in multiples of 4 to 12x4 in order from 0 with fluently. Count in multiples of 8 to 12x8 in order from 0 with growing fluency.	Recall multiples of 6 in any order, including missing numbers and related division facts fluently. Recall multiples of 7 in any order, including missing numbers and related division facts with growing fluency.	**Teaching Methodologies** <u>Year 3</u> • Counting objects in groups of 3, 4 and 8 • Hundred square • Number lines • Array with concrete resources • Pictorial representations on display • Rolling Numbers or alternative (chanting songs). <u>Year 4</u> • Hundred square • Number lines • Pictorial representations on display • Rolling Numbers or alternative (chanting songs).
SPR 2	Recall multiples of 4 up to 12x4 in any order, including missing numbers & related division facts with growing fluency. Count in multiples of 8 to 12x8 in order from 0 fluently.	Recall multiples of 7 in any order, including missing numbers and related division facts fluently. Fluently count in 9's in order up to 12x9. Fluently count in 11's in order up to 12x11.	
SUM 1	Recall multiples of 4 up to 12x4 in any order, including missing numbers and related division facts fluently. Recall multiples of 8 up to 12x8 in any order, including missing numbers & related division facts with growing fluency.	Recall multiples of 9 in any order, including missing numbers and related division facts with growing fluency (using 10x and adjusting by 1 group to find 9x as a strategy) Recall multiples of 11 in any order, including missing numbers and related division facts fluently. Fluently count in 12's in order up to 12x12.	
SUM 2	Recall multiples of 8 up to 12x8 in any order, including missing numbers and related division facts fluently.	Recall multiples of 9 in any order, including missing numbers and related division facts fluently. Recall multiples of 12 in any order, including missing numbers and related division facts with growing fluency (using 10x and adjusting by adding 2 more groups).	

2.21 Calculation Policy

Our aim: To develop a curriculum which develops lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future. Our Calculation Policy has been written in order to deliver the National Curriculum for mathematics which aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Our calculation policy incorporates the concept of Concrete, Pictorial, Abstract (CPA) which is a highly effective approach to teaching that develops a deep and sustainable understanding of maths in pupils and involves use of a number of manipulatives to support understanding and enables learners to demonstrate conceptual variation where mathematical concepts are displayed in a variety of ways. Use of manipulatives to be used at all stages of learning can be found in the following pages. Specific details of what is taught in each year group can be found in the Progression Maps by area, however where a child requires additional time on one approach this should be encouraged.

Our sequence of teaching enables us to revisit topics regularly and to build on prior learning. With this in mind, and to ensure learning is completely embedded and understood, it is recommended that learning should always start with an opportunity to demonstrate the Concrete method, although it is recognised that older children may not need to spend the same amount of time on the Concrete stage as younger ones. Use the opportunity to evidence this learning by taking photos and including them in Maths books.

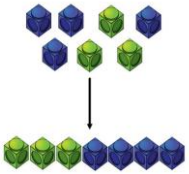
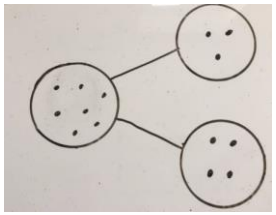
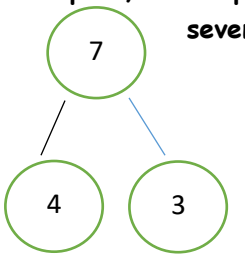
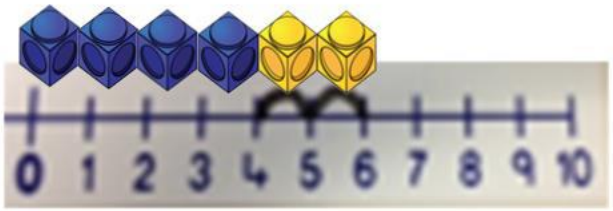
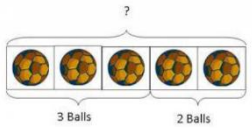
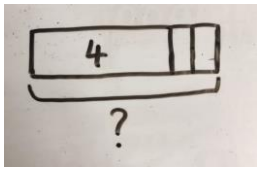
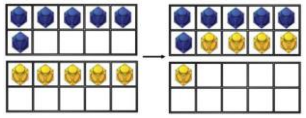
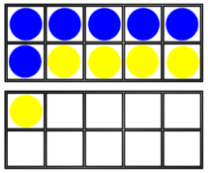
Although you must of course meet the needs of your class both ways and if you think they are ready for, e.g. Abstract earlier or need Concrete later than so be it and of course it is assumed that once this approach is embedded then as children are familiar with the concept then as children move through school less time will be spent on Concrete and more on Abstract and beyond.

Hanging Heaton C of E (VC) J & I School - Use of manipulatives

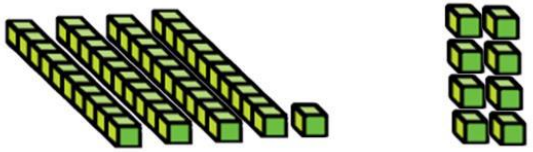
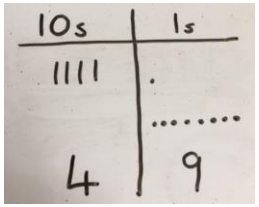
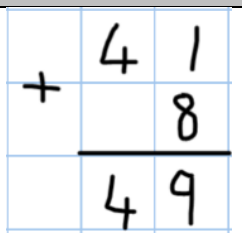
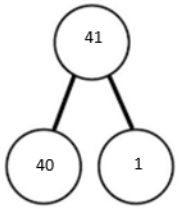
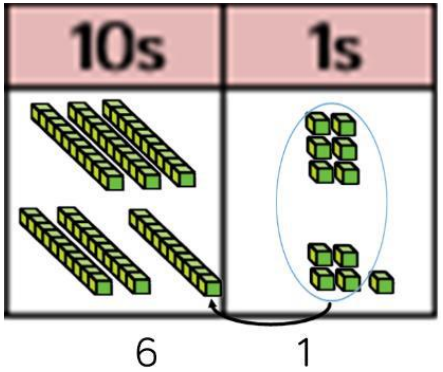
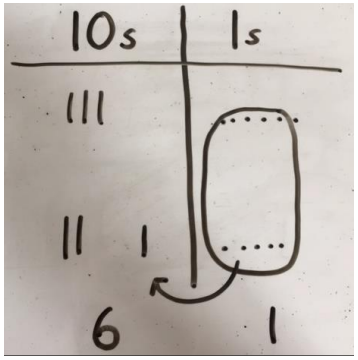
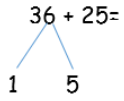
	EYFS/Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition	Combining two parts to make a whole: part whole model. Starting at the bigger number and counting on- using cubes or pegs on coat hangers. Regrouping to make 10 using ten frame.	Adding three single digits. Use of base 10 to combine two numbers.	Column method- regrouping. Using place value counters (up to 3 digits).	Column method- regrouping. (up to 4 digits)	Column method- regrouping. Use of place value counters for adding decimals.	Column method- regrouping. Abstract methods. Place value counters to be used for adding decimal numbers.
Subtraction	Taking away ones Counting back Find the difference Part whole model Make 10 using the ten frame	Counting back Find the difference – counting on using a number line. Part whole model Make 10 Use of base 10	Column method with regrouping. (up to 3 digits using place value counters)	Column method with regrouping. (up to 4 digits)	Column method with regrouping. Abstract for whole numbers. Start with place value counters for decimals	Column method with regrouping. Abstract methods. Place value counters for decimals- with different amounts of decimal places.
Multiplication	Recognising and making equal groups. Doubling Counting in multiples Use cubes and other objects in the classroom	Arrays- showing commutative multiplication	Arrays 2d × 1d using base 10 Grid method	Column multiplication- introduced with place value counters. (2 and 3 digit multiplied by 1 digit) Grid method	Column multiplication Abstract only but might need a repeat of year 4 first(up to 4 digit numbers multiplied by 1 or 2 digits)	Column
Division	Sharing objects into groups Division as grouping e.g. I have 12 sweets and put them in groups of 3, how many groups? Use cubes and draw round 3 cubes at a time.	Division as grouping Division within arrays- linking to multiplication Repeated subtraction	Division with a remainder-using lollipop sticks, times tables facts and repeated subtraction. 2d divided by 1d using base 10 or place value counters	Division with a remainder Short division (up to 3 digits by 1 digit- concrete and pictorial)	Short division (up to 4 digits by a 1 digit number including remainders)	Short division Long division with place value counters (up to 4 digits by a 2 digit number) Children should exchange into the tenths and hundredths column too

Calculation policy: Addition

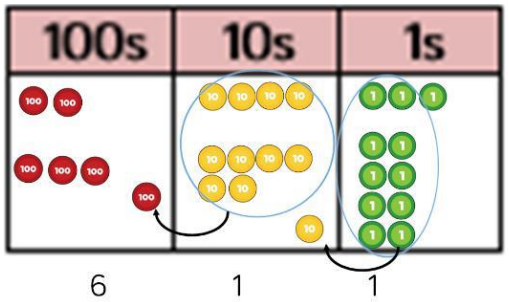
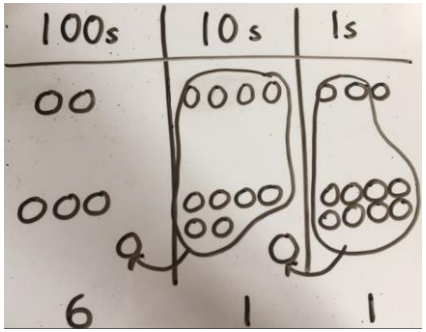
Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

Concrete	Pictorial	Abstract
Combining two parts to make a whole (use other resources too e.g. eggs, shells, teddy bears, cars). 	Children to represent the cubes using dots or crosses. They could put each part on a part whole model too. 	4 + 3 = 7 Four is a part, 3 is a part and the whole is seven. 
Counting on using number lines using cubes.  Or use pegs on a coat hanger. 	A bar model which encourages the children to count on, rather than count all.   Or use a numberline start at the larger number on the number line and count on in ones or in one jump to find the answer. Develop to counting on in H's T's and U's 543+243 = 543 + 200 + 40 + 3	The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? 4 + 2  Place the larger number in your head & count on the smaller number to find your answer.
Regrouping to make 10; using ten frames and counters/cubes. 6 + 5 	Children to draw the ten frame and counters/cubes. 	Children to develop an understanding of equality e.g. 6 + □ = 11 6 + 5 = 5 + □ 6 + 5 = □ + 4

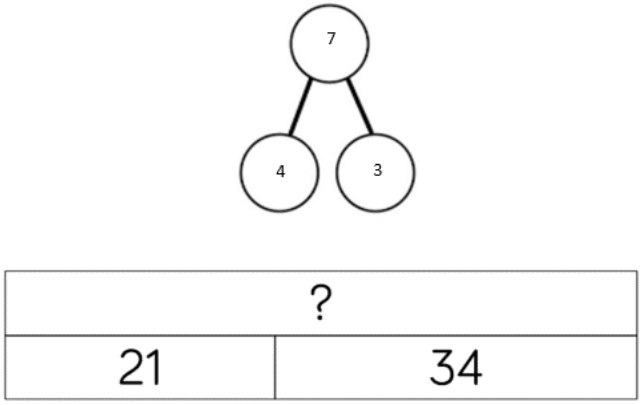
Addition

Concrete	Pictorial	Abstract
TO + O using base 10. Continue to develop understanding of partitioning and place value. **41 + 8** 	**Children to represent the base 10 e.g. lines for tens and dot/crosses for ones.** 	  **41 + 8** **1 + 8 = 9** **40 + 9 = 49**
TO + TO using base 10. Continue to develop understanding of partitioning and place value. **36 + 25** 	**Children to represent the base 10 in a place value chart.** 	**Looking for ways to make 10.**  **30 + 20 = 50** **5 + 5 = 10** **50 + 10 + 1 = 61** 36 +25 61 1 **Formal method:**

Addition

Concrete	Pictorial	Abstract
Use of place value counters to add HTO + TO, HTO + HTO etc. When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.  	Children to represent the counters in a place value chart, circling when they make an exchange.  	243 +368 611 1 1 Start by partitioning the numbers before moving on to clearly show the exchange below the addition. 20 + 5 40 + 8 60 + 13 = 73 As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here. 72.8 +54.6 127.4 1 1 2 3 . 3 6 1 9 . 0 8 0 5 9 . 7 7 0 + 1 . 3 0 0 9 3 . 5 1 1 2 1 2 £ 2 3 . 5 9 + £ 7 . 5 5 £ 3 1 . 1 4 1 1 1

Conceptual variation; different ways to ask children to solve 21 + 34

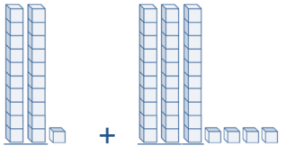


Word problems:
In year 3, there are 21 children and in year 4, there are 34 children.
How many children in total?
21 + 34 = 55. Prove it

21 + 34 =
= 21 + 34

21
+34
____

Calculate the sum of twenty-one and thirty-four.

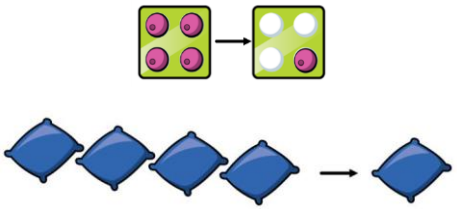
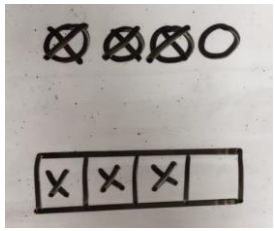
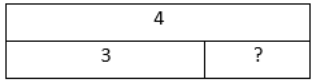
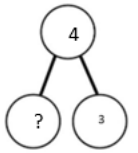
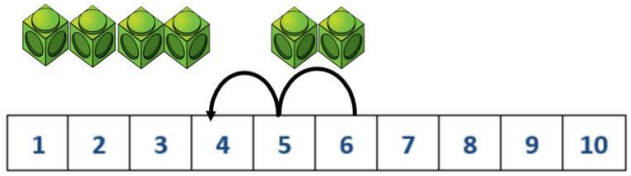
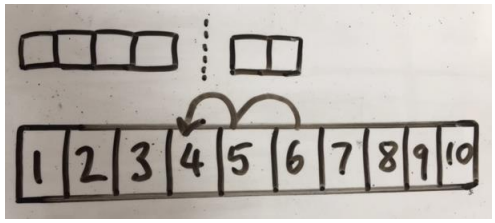
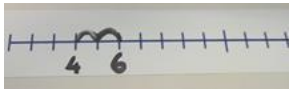


Missing digit problems:

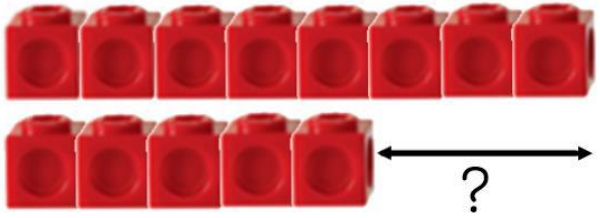
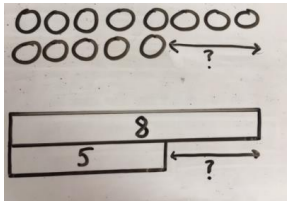
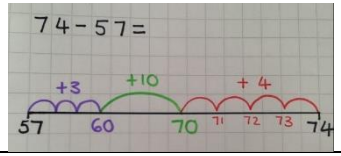
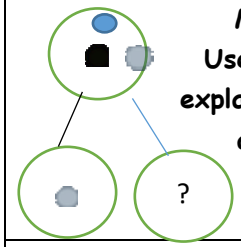
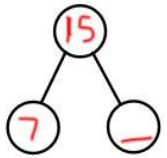
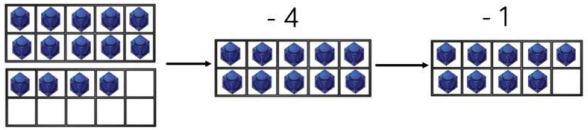
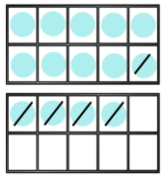
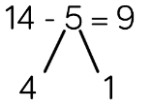
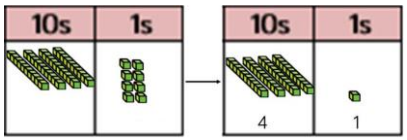
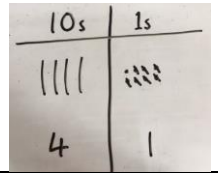
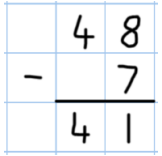
10s	1s
10 10	1
10 10 10	?
?	5

Calculation policy: Subtraction

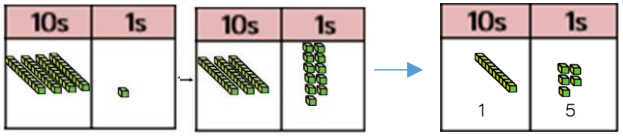
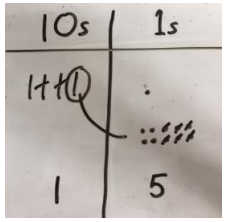
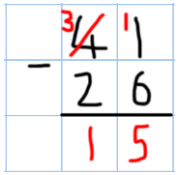
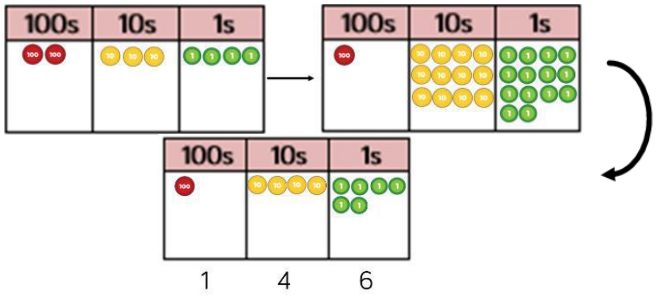
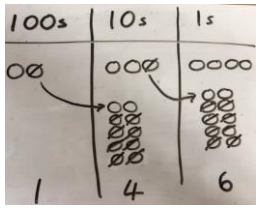
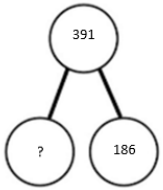
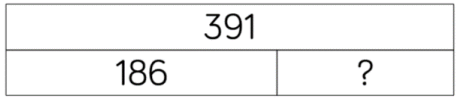
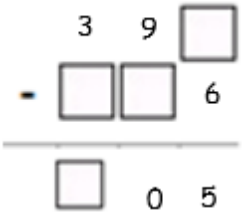
Key language: take away, less than, the difference, subtract, minus, fewer, decrease.

Concrete	Pictorial	Abstract
Physically taking away and removing objects from a whole (ten frames, cubes and other items such as beanbags could be used). 4 – 3 = 1 	Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used. 	4- 3 =? ? = 4 – 3   18 -3= 15 8 – 2 = 6
Counting back (using number lines, number tracks, or pegs on coat hangers) children start with 6 and count back 2. 6 – 2 =  	 Children to represent what they see pictorially	Put 13 in your head, count back 4. What number are you at? Use your fingers to help. Children to represent the calculation on a number line or number track and show their jumps. Encourage children to use an empty number line  

Subtraction

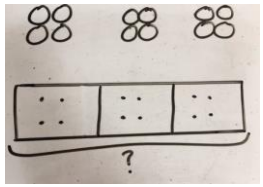
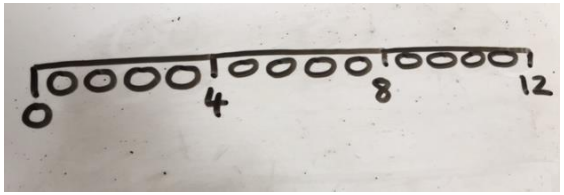
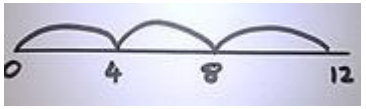
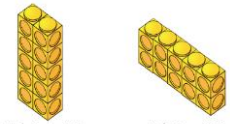
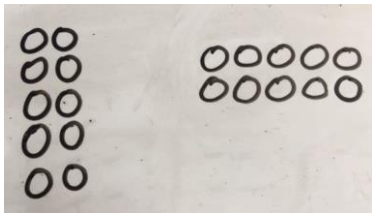
Concrete	Pictorial	Abstract
Finding the difference (using cubes or Base 10, other objects can also be used). 	Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.  Count on to find the difference. 	Find the difference between 8 and 5. 8 – 5, the difference is ? Children to explore why 9 - 6 = 8 – 5 = 7 – 4 have the same difference. Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the numbers of sandwiches.
 Missing number calculations. Use the part whole model to help explain the inverse between addition and subtraction.	If 15 is the whole and 7 is one of the parts. What is the other part? 15 - 7 = Using a drawn PPW with marks in it	 
Making 10 using ten frames. 14 – 5 	Children to present the ten frame pictorially and discuss what they did to make 10. 	Children to show how they can make 10 by partitioning the subtrahend.  14-4= 10 10 – 1 = 9
Column method using base 10. 48-7 = 	Children to represent the base 10 pictorially. 	Column method or children could count back 7. 

Subtraction

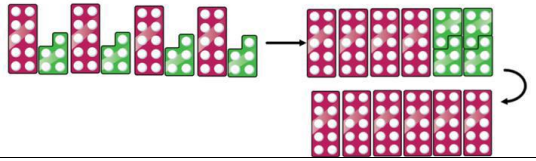
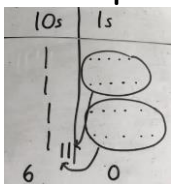
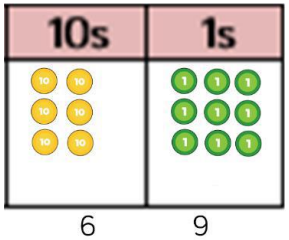
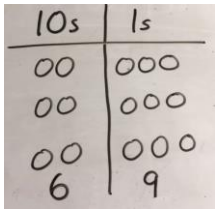
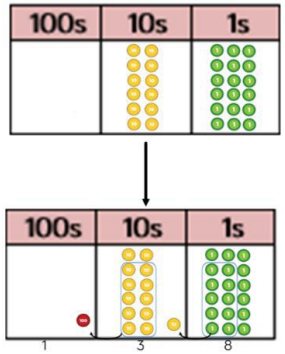
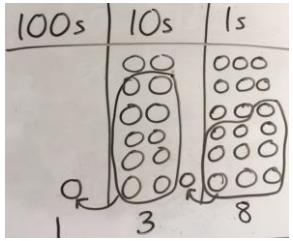
Concrete	Pictorial	Abstract
Column method using base 10 and having to exchange. - 41 – 26 = 	Represent the base 10 pictorially, remembering to show the exchange. 	Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because 41 = 30 + 11. 
Column method using place value counters.234 – 88= 	Represent the place value counters pictorially; remembering to show what has been exchanged. 	Formal column method. Children must understand what has happened when they have crossed out digits. 2 1 2 3 4 - 8 8 1 4 6
Conceptual variation; different ways to ask children to solve 391 - 186			
 	Raj spent £391, Timmy spent £186. How much more did Raj spend? Calculate the difference between 391 and 186.	? – 391 = 186 What is 186 less than 391? 391 -186 _____	Missing digit calculations 

Calculation policy: Multiplication

Key language: double, times, multiplied by, the product of, groups of, lots of, equal groups.

Concrete	Pictorial	Abstract
Repeated grouping/repeated addition 3 × 4 4 + 4 + 4 There are 3 equal groups, with 4 in each group. 	Children to represent the practical resources in a picture and use a bar model. 	3 × 4 = 12 4 + 4 + 4 = 12
Number lines to show repeated groups- 3 × 4 	Represent this pictorially alongside a number line e.g.: 	Abstract number line showing three jumps of four. 3 × 4 = 12 
Use arrays to illustrate commutativity counters and other objects can also be used. 2 × 5 = 5 × 2 	Children to represent the arrays pictorially. 	Children to be able to use an array to write a range of calculations e.g. 10 = 2 × 5 5 × 2 = 10 2 + 2 + 2 + 2 + 2 = 10 10 = 5 + 5

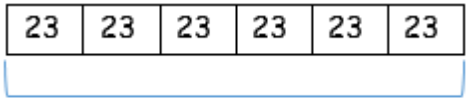
Multiplication

Concrete	Pictorial	Abstract
Partition to multiply using base 10 **4 × 15 =** 	**Children to represent the concrete manipulatives pictorially.** 	4 x 15 10 5 10 x 4 = 40 5 x 4 = 20 40 + 20 = 60 **Children to be encouraged to show the steps they have taken.** **A number line can also be used**
Formal column method with place value counters (base 10 can also be used.) 3 × 23 	**Children to represent the counters pictorially.** 	**Children to record what it is they are doing to show understanding by grid method** **With this: 23 x 3 = 69** **60 + 9 = 69**
Formal column method with place value counters. **6 x 23** 	**Children to represent the counters/base 10, pictorially e.g. the image below.** 	**Formal written method** 6 x 23 = 23 × 6 138 1 1

Multiplication

<table>
<tr><th>Concrete</th><th>Pictorial</th><th colspan="2">Abstract</th></tr>
<tr><td colspan="2">When children start to multiply 3d × 3d and 4d × 2d etc., they should be confident with the abstract:

To get 744 children have solved 6 × 124.

To get 2480 they have solved 20 × 124.</td><td colspan="2">1 2 4
× 2 6
7 4 4
2 4 8 0
3 2 2 4
Answer: 3224</td></tr>
<tr><th colspan="4">Conceptual variation; different ways to ask children to solve 6 × 23</th></tr>
<tr><td> 
</td><td>Mai had to swim 23 lengths, 6 times a week.

How many lengths did she swim in one week?

With the counters, prove that 6 x 23 = 138</td><td>Find the product of 6 and 23

6 × 23 =

? = 6 × 23

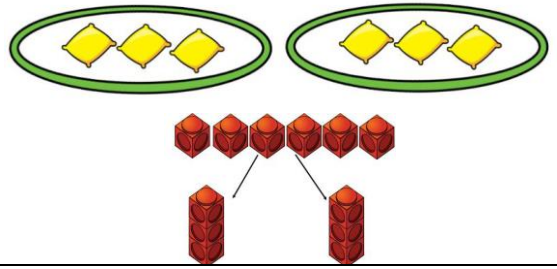
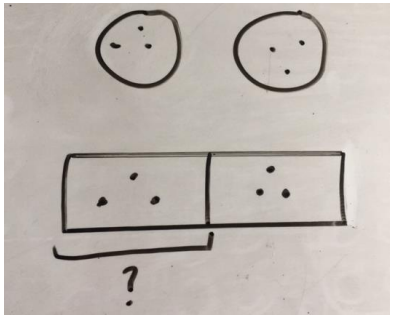
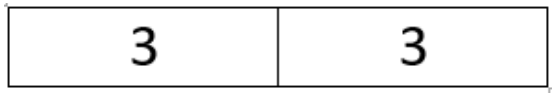
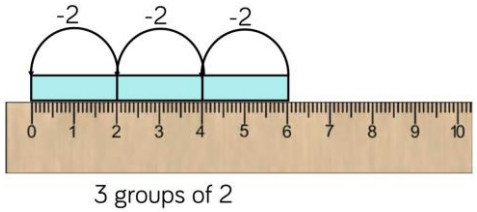
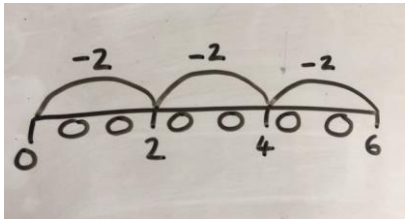
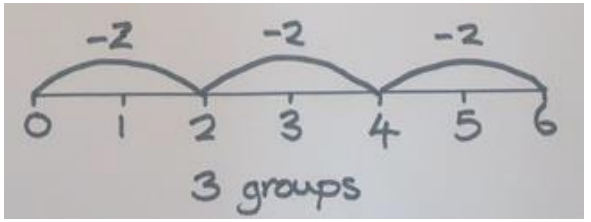
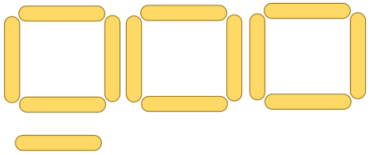
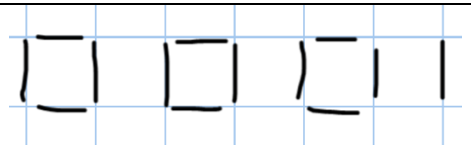
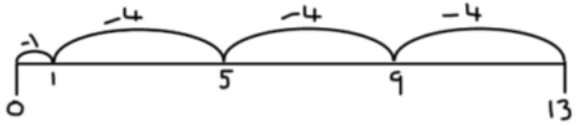
6 × 23
23 × 6</td><td>What is the calculation?

What is the product?

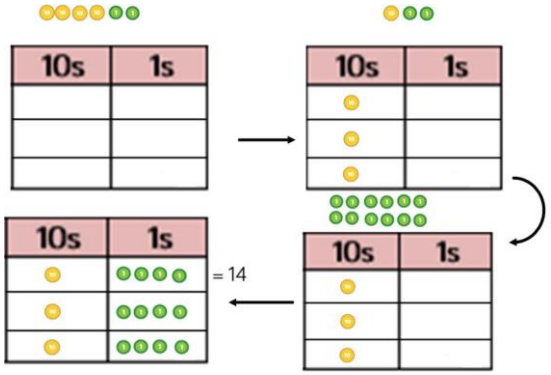
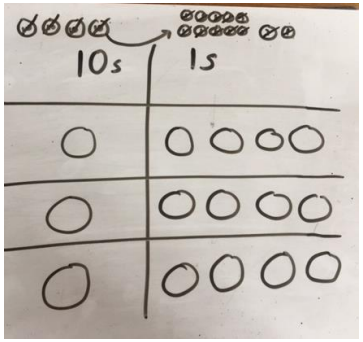
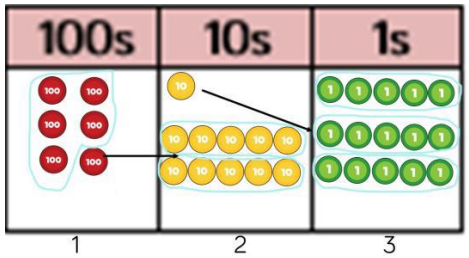
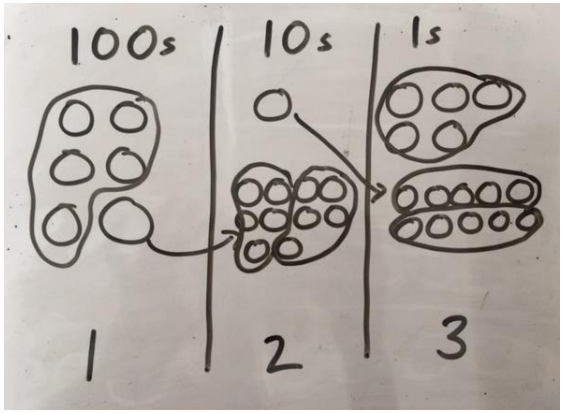
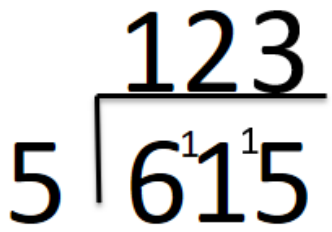
 
</td></tr>
</table>

Calculation policy: Division

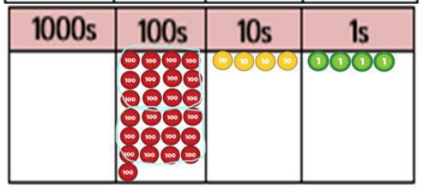
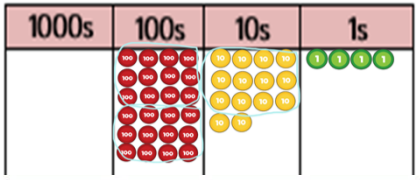
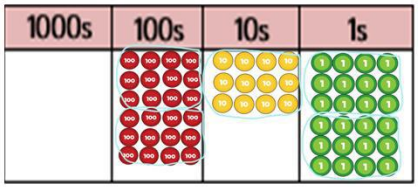
Key language: share, group, divide, divided by, half.

Concrete	Pictorial	Abstract
Sharing using a range of objects. 6 ÷ 2 	Represent the sharing pictorially. 	6 ÷ 2 = 3 Children should also be encouraged to use their 2 times table's facts. 
Repeated subtraction using base 10 or cubes above a ruler. 6 ÷ 2 	Children to represent repeated subtraction pictorially. 	Abstract number line to represent the equal groups that have been subtracted. 
2d ÷ 1d with remainders using lollipop sticks. 13 ÷ 4 Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.  There are 3 whole squares, with 1 left over.	 Children to represent the lollipop sticks pictorially. There are 3 whole squares, with 1 left over.	13 ÷ 4 – 3 remainder 1 Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line '3 groups of 4, with 1 left over' 

Division

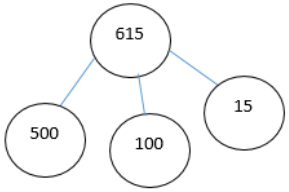
Concrete	Pictorial	Abstract
Sharing using place value counters. 42 ÷ 3 = 14 	Children to represent the place value counters pictorially. 	Children to be able to make sense of the place value counters and write calculations to show the process. 42 ÷ 3 42 = 30 + 12 30 ÷ 3 = 10 12 ÷ 3 = 4 10 + 4 = 14
Short division using place value counters to group. 615 ÷ 5  1. Make 615 with place value counters. 2. How many groups of 5 hundreds can you make with 6 hundred counters? 3. Exchange 1 hundred for 10 tens. 4. How many groups of 5 tens can you make with 11 ten counters? 5. Exchange 1 ten for 10 ones. 6. How many groups of 5 ones can you make with 15 ones?	Represent the place value counters pictorially. 	Children to the calculation using the short division scaffold. 

Division

Concrete	Pictorial	Abstract
Long division using place value counters - 2544 ÷ 12	 We can't group 2 thousands into groups of 12 so will exchange them.	
	 We can group 24 hundreds into groups of 12 which leaves with 1 hundred.	$\begin{array}{r} 02 \\ 12\overline{)2544} \\ 24 \\ \hline 1 \end{array}$
	 After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.	$\begin{array}{r} 021 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 2 \end{array}$
	 After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder.	$\begin{array}{r} 0212 \\ 12\overline{)2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 24 \\ 24 \\ \hline 0 \end{array}$

Conceptual variation; different ways to ask children to solve 615 ÷ 5

Using the part whole model below, how can you divide 615 by 5 without using short division?



I have £615 and share it equally between 5 bank accounts. How much will be in each account?

615 pupils need to be put into 5 groups. How many will be in each group?

$5\overline{)615}$

615 ÷ 5 =

= 615 ÷ 5

What is the calculation?

What is the answer?