Year 3 Autumn Term	
Block 1 Place Value	
Step 1 Representing number to 100	Children have already represented numbers to 100 in Year 2. This small step provides the opportunity to revisit and consolidate their learning before moving on to numbers beyond 100 The main focus of this step is to ensure that children get a sense of the size of numbers to 100 and can see clearly the number of tens and ones each number is made up of. Children should be confident using a range of manipulatives, such as straws, a bead string and base 10, alongside their own drawings and jottings. Place value counters are not used in this particular small step, as they do not show the relative sizes of numbers, and children cannot see that 1 ten is made up of 10 ones.
Step 2 Partition numbers to 100	In this small step, children learn what each digit represents when partitioning a number. Concrete resources are useful to help children physically explore this, as they can break a number apart and put it back together. Part-whole models can be used alongside these resources, to represent the number and its parts. It is important that children can partition numbers into tens and ones, for example 58 has 5 tens and 8 ones. They should be able to write this as an addition sentence such as 58 = 50 + 8 Children who are confident with partitioning in this way could begin to partition flexibly, for example 58 is made up of 5 tens and 8 ones, or 4 tens and 18 ones, or 2 tens and 38 ones, and so on.
Step 3 Number line to 100	In this small step, children revisit learning from Year 2, looking at the number line to 100 It is important that children explore a variety of examples within 100, including number lines that do not start from zero and number lines with increments other than 1 or 10 Children identify or estimate the position of a given number on a number line, understanding why they can accurately position numbers that lie exactly on a division, but the position of numbers within an interval can only be estimated. When children are identifying and/or estimating the position of a number on a number line, encourage them to label the divisions to support their thinking.
Step 4 Hundreds	In Year 2, and previous small steps, children have counted in tens within 100. This small step provides the opportunity to explore 100 explicitly for the first time. Children should be able to confidently count in 100s before looking at the structure of 100 By the end of this small step, children should understand that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10. They will then use this knowledge to explore other multiples of 100 within 1,000 By unitising the hundred, children should be able to state the number of tens that make up any 3-digit multiple of 100. Base 10 can be used to support understanding, allowing children to see the tens making up each hundred.
Step 5 Represent numbers to 1000	In this small step, children build on their learning from Year 2, and the earlier steps in this block, to represent numbers to 1,000 They use base 10 as the main concrete representation, along with a variety of pictorial representations. Using base 10 helps children to see that hundreds are 10 times the size of tens, in the same way that tens are 10 times the size of ones. Building numbers in a variety of ways emphasises these relationships. Children need to see numbers with zeros in different columns and be able to represent these using both concrete and pictorial representations. The idea of a placeholder is explicitly addressed in the next small step.
Step 6 Partition numbers to 1000	In this small step, children partition numbers to 1,000 into hundreds, tens and ones. Children represent numbers in a part-whole model and identify missing parts and wholes. They write numbers in expanded form, using a part-whole model as support where needed, and identify the number of hundreds, tens and ones in a 3-digit number. Examples that include zero as a placeholder should be explicitly looked at to build on learning from the previous step. Children should be able to identify the value of any given digit in a 3-digit number. Base 10 can be used to support children's understanding.
Step 7 Flexibly partition numbers to 1000	In the previous step, children partitioned numbers up to 1,000 in the standard way, considering how many hundreds, tens and ones were in each number. In this small step, children build on this understanding and begin to partition numbers flexibly. Children learn that a number can be broken apart, or partitioned, in a variety of different ways. Base 10 and part-whole models are particularly useful here, as children can experiment with different ways of partitioning and record their results. Challenge children to partition the same number in two, three, four and five parts. Being able to flexibly partition a number will support children later in the year when performing calculations that require an exchange.
Step 8 Hundreds, tens and ones	In this small step, children look at the structure of a number by considering how many hundreds, tens and ones it is made up of. As part of this, they are introduced to place value counters for the first time. Children should be encouraged to consider the similarities and differences between more familiar concrete resources, such as base 10, and place value counters. By describing numbers such as 253 as being made up of 2 hundred counters, 5 ten counters and 3 one counters, children can more easily begin to think of this as 2 hundreds, 5 tens and 3 ones. This is the first time children will see a place value chart that has a hundreds column, so this will need formally introducing.
Step 9	In Year 2, children found 1 more and 1 less than a given number. In this small step, they find 1, 10 or 100 more or less than a given number. The use of concrete resources supports understanding, as children can see "more" or "less" as physically adding or removing pieces of equipment. Take this opportunity to revisit place

Find 1, 10 or 100 more or less	value counters and charts that were introduced earlier in the block, in order for children to recognise the effect that finding 1, 10 or 100 more or less has on this representation.
Step 10 Number line to 1000	In this small step, children build on their understanding of number lines and focus on using the number line to 1,000 Children read and interpret exact values positioned along the number line. There is no need at this stage to estimate the position or value of numbers on a number line, as this will be covered in the next small step. Children are exposed to a variety of number lines, both to and within 1,000 and with different start and end point values, and can work confidently with these. Remind children of the benefit of always starting by labelling the divisions on their number line.
Step 11 Estimate numbers on a number line to 1000	Building on the previous small step, children estimate the position of numbers on number lines within and up to 1,000 Children use their existing number sense to complete their estimates and can explain their thinking. Initially, they consider key intervals that are factors of 1,000, including but not limited to multiples of 100. Thinking beyond this, they should try to be as accurate as possible, using their knowledge of the midpoint of intervals and which of the two divisions a number is closer to. Children should understand that their answer might not be exactly the same as their partner's, as they are only able to estimate the positions or values.
Step 12 Compare numbers to 1000	In this small step, children compare numbers using concrete resources, pictorial representations, words and symbols. When given two numbers represented by objects, children use comparative language and symbols to determine which is greater/ smaller. Encourage children to use prior learning to help them choose an efficient method to compare. For example, children may choose to place the numbers on a number line, make them using concrete resources or draw them in a place value chart. By the end of this step, children can explain why they always start with the highest place value when comparing numbers.
Step 13 Order numbers to 1000	In this small step, children order a set of numbers up to 1,000 Children order numbers from smallest to greatest, and from greatest to smallest. For consistency, use the word "greatest" rather than "biggest" or "largest" when describing numbers. Children are also introduced to the language "ascending" and "descending". A secure understanding of place value is vital for this step, as children need to understand that a digit in the hundreds column, for example, is worth more than a digit in the tens column. Children can continue to use concrete resources, such as base 10, to justify their decisions.
Step 14 Count in 50s	In this small step, children count in 50s for the first time. Children use their knowledge of the 5 times-table to support their understanding when counting in 50s and recognise that when counting in 50s, each number they say is 10 times the size of the corresponding number when counting in 5s. Children start by counting up in 50s from zero, and by the end of the step they can count both forwards and backwards, starting at any multiple of 50 without going beyond 1,000 Number lines and number tracks are used to support counting, and this is also a good opportunity to revisit contexts such as money and measures.
Block 2 Addition and Subtraction	
Step 1 Apply number bongs within 10	In Year 2, children learnt to add and subtract two 2-digit numbers, including with exchanges. Throughout this block children build on that knowledge, working towards adding and subtracting 2-digit and 3-digit numbers with exchanges. To be successful with this, it is essential that children are confident in both using and applying their number bonds to and within 10 and this small step provides opportunity to consolidate this. By the end of this small step, children should be more confident at recalling all the number bonds up to 10 in a variety of contexts. They will then apply this knowledge to number bonds to 100, for example: 3 + 2 = 5, so 30 + 20 = 50 Children use a variety of representations, including base 10, place value counters, double-sided counters, number lines, part-whole models and bar models.
Step 2 Add and subtract 1s	In Year 2, children mentally added and subtracted 1s to and from a 2-digit number. In this small step, this skill is developed and extended to include 3-digit numbers. At this stage of the block, there are no exchanges and therefore the tens and hundreds columns do not change. Using a place value chart alongside their calculations, children see that when 1s are added to or subtracted from a 3-digit number, the ones column changes every time. Although the examples in this small step involve a change to the ones column only, it is worth asking the question, "Do you have enough ones to make an exchange?" This provides opportunity to reinforce the fact that 1 ten is made up of 10 ones, and since none of the ones columns in this step have more than 9 ones, there are no exchanges, so the tens and hundreds columns do not change.
Step 3 Add and subtract 10s	Building on the small step in Year 2, when children added or subtracted 10s to and from a 2-digit number, children now extend this learning to 3-digit numbers. In this step, this does not require any crossing of the next or previous hundred. Children use a range of models and representations, including place value charts, to explore the effect of adding or subtracting multiples of 10. Children should see that in these examples only the tens column changes, with the hundreds and ones columns remaining the same. It is also important to highlight to children how they can use number bonds both to and within 10 to support this step. For example, 2 + 3 = 5, so 20 + 30 = 50. Using the language of "2 ones/tens plus 3 ones/tens is equal to 5 ones/tens" can support this.
Step 4 Add and subtract 100s	Building on the previous small steps, children now explore adding and subtracting multiples of 100. This will not require any crossing of the thousands. Again, children use a range of models and representations, including place value charts, to explore the effect of adding or subtracting multiples of 100. Children recognise

	from the examples in this small step that only the hundreds place value column changes and the tens and ones columns remain the same. It is also important to highlight to children how they can use number bonds to and within 10 to support in this step. For example, 8 – 5 = 3, so 800 – 500 = 300. Using the language of "8 ones/hundreds subtract 5 ones/hundreds is equal to 3 ones/ hundreds" can support this.
Step 5 Spot the pattern	In this small step, children consolidate their learning from the previous three steps, exploring the effect of adding or subtracting 1s, 10s or 100s to or from any 3-digit number. As with the examples in previous steps, there are no exchanges. Children explore what changes and what stays the same when adding multiples of 1, 10 or 100, for example: "If we add/subtract 10s, only the tens place value column changes." It is important to highlight why this is the case, by noting that the additions in this step always use bonds of less than 10, 100 or 1,000; in the subtractions, the digits in the number subtracted are always smaller than digits in the original number. Children also explore performing multiple calculations to a starting number using a combination of the skills covered in the previous steps. Function machines are a useful representation.
Step 6 Add 1s across a 10	In Year 2 addition and subtraction, children explored strategies to add 1-digit numbers to a 2-digit number crossing 10. Children build on this to add a 1-digit number to a 3-digit number. Children may initially rely on counting on in 1s, but the aim of this step is to build towards mental strategies for crossing the 10 It is vital that children are fluent in bonds to 10, so that they are able to identify the jump to the next multiple of 10. They also need to be fluent in their bonds within 10 to allow them to flexibly and efficiently partition numbers to work out how much further they need to jump from a multiple of 10 Number lines are a useful representation to model the process of jumping to and from the next multiple of 10.
Step 7 Add 10s across a 100	Children build on previous steps to add multiples of 10 to any 3-digit number where they are required to cross the next hundred. This small step focuses on mental strategies. It is vital that children are fluent in their bonds to 100 so that they are able to identify the jump to the next multiple of 100. They also need to be fluent in their bonds within 100, for example 70 = 30 + 40, to allow them to efficiently and flexibly partition numbers to work out how much further they need to jump after reaching the next 100 It is important to explore with children which place value columns always/sometimes/never change when adding a multiple of 10.
Step 8 Subtract 1s across a 10	In Year 2, children covered strategies to subtract a 1-digit number from a 2-digit number crossing a 10. Children build on this, working towards subtracting a 1-digit number from a 3-digit number. They focus on mental strategies for crossing a 10 Children may start by counting back in 1s, but it is important to try to move towards the more efficient strategy of jumping to and from the previous multiple of 10 Children need to be fluent in their recall of number bonds to 10 and in applying them, so that they can subtract from a multiple of 10, for example 10 – 3 = 7, so 480 – 3 = 477. They also need to be fluent in their bonds within 10 to allow them to efficiently and flexibly partition numbers to work out how much further they need to jump back from a multiple of 10.
Step 9 Subtract 10s across 100	Children extend their knowledge of subtracting 10s from any 3-digit number to include crossing a 100, using similar mental strategies to those covered in the previous small step. Children may start by initially counting back in 10s, but it is important to try to move towards a more efficient strategy of jumping to and from the previous multiple of 100 Children need to be fluent in their bonds for multiples of 10 within 100 to allow them to efficiently and flexibly partition numbers to work out how much further they need to jump back from the multiple of 100, for example 50 = 30 + 20 and 40 + 10. Children also need to be fluent in their recall of number bonds to 100 and applying them so that they can subtract from a multiple of 100, for example 100 – 40 = 60, so 500 – 40 = 460 and 501 – 40 = 461
Step 10 Make connections	In this small step, children consolidate what they have learnt so far in this block by adding and subtracting 1s, 10s and 100s to/from 3-digit numbers, both with and without the need to cross a 10 or a 100 The focus is to develop number sense through explicitly exploring the connections between calculations. For example, if children know 5 + 7 = 12, then they also know that 12 – 5 = 7, 120 – 50 = 70 and 50 + 70 = 120 To support children in seeing these links, it is useful to use language such as "5 ones plus 7 ones is equal to 12 ones, so 5 tens plus 7 tens is equal to 12 tens." It is also vital that children have a strong understanding of the fact that 10 tens are equivalent to 1 hundred.
Step 11 Add two numbers (no exchange)	So far in this block, children have mentally added and subtracted 1s, 10s and 100s with 3-digit numbers. The focus now moves to written addition and subtraction. By the end of this small step, children will be able to add two numbers, either both 2-digit or both 3-digit, using the formal written method. Children should be confident at placing 3-digit numbers into a place value chart before attempting to add and subtract numbers using the written method. Base 10 and place value counters are used in a place value chart alongside the written method. No exchanges take place in this step, but it is a good idea to ask, "Do you have enough ones/tens to exchange for a ten/hundred?" as this will support their learning in future steps.
Step 12 subtract two numbers (no exchange)	In the previous step, children used base 10 and place value counters in place value charts to add two 2-digit or 3-digit numbers. In this small step, they explore subtraction of 2-digit numbers and 3-digit numbers. It is important that children continue to work with concrete resources alongside the formal written method. When using concrete resources, the key difference in this step is that they do not need to make the number they are subtracting, but instead physically remove it

	from the representation of the number they are subtracting from. There are no exchanges in this step, but it is still worth asking the children, "Do you need to make an exchange?" in order to support future learning. The next few small steps involve addition and subtraction where exchanges are necessary.
Step 13 Add two numbers (across a 10)	Children have already used the formal written method to add and subtract 2- and 3-digit numbers with no exchanges. In this small step, they again add two numbers, but now with exchanges into the tens: when the ones are added together, they will (sometimes) total more than 9 Both numbers are made using base 10 or place value counters in a place value chart. Children need to begin adding in the ones column, working from right to left. The use of manipulatives helps children to understand that if they have 10 or more ones, they can exchange them for a ten, which is added to the tens column. Exchanging with base 10 in a place value chart alongside the formal written calculation helps children to understand the value of the 1 that has been added to the tens column in the written method.
Step 14 Add two numbers (across 100)	In Year 2, children added two 2-digit numbers, exchanging 10 ones for 1 ten. In the previous small step, they did the same with 3-digit numbers. In this small step, they exchange 10 tens for 1 hundred. Children make both numbers using base 10 or place value counters. They need to begin adding in the ones column, working from right to left. After adding each column, ask whether they need to make an exchange. Seeing 10 tens physically swapped for 1 hundred, alongside the formal written method, will deepen children's understanding of this step. The main focus is on exchanging into the hundreds column, but children should continue to check for any exchanges from the ones into the tens column.
Step 15 Subtract two numbers (across a 10)	So far in this block, children have completed the formal written method for addition with exchanges in both the tens and hundreds columns. They now move on to the written method for subtraction with exchanges. In Year 2, they subtracted a 2-digit number from a 2-digit number, exchanging 1 ten for 10 ones. In this small step, they subtract both 2- and 3-digit numbers, exchanging 1 ten for 10 ones. As with addition in the previous steps, they use base 10 alongside the written calculation, but for subtraction they only need to make the number being subtracted from. For each calculation, prompt children to think about whether they need to make an exchange or not, and why.
Step 16 Subtract two numbers (across 100)	This small step will be children's first experience of subtraction across a 100, and they will use base 10 and place value counters to represent calculations alongside the written method. At each step of the subtraction, children should be asking whether they need to make an exchange. This will be the first time children have seen multiple subtraction exchanges in the same calculation and extra care should be taken when modelling this. At this stage, both numbers are 3-digit numbers. In this small step, avoid subtracting from a number with no tens (causing an exchange from the hundreds down to the ones) as this will be covered later in the block.
Step 17 Add 2DN from 3DN	Children should now be confident with the formal written method of addition of numbers with up to three digits and exchanges taking place from the ones and the tens. So far in this block, the numbers have all been both 2-digit or both 3-digit numbers. In this small step, children add a 2-digit number to a 3-digit number. The different sizes of numbers can sometimes confuse children, especially when lining up the digits in place value columns. Some children may find it helpful to write a zero placeholder in the absence of any hundreds. As before, the written calculation is done alongside concrete representations. When forming the 2-digit number with concrete resources, make sure children do not assume the greatest digit is in the hundreds column.
Step 18 Subtract a 2DN from a 3DN	Children should now be confident with the formal written method of subtraction of numbers with up to three digits and exchanges from the tens and hundreds. So far when subtracting in this block, the numbers have all been both 2-digit or both 3-digit numbers. In this small step, children subtract 2-digit numbers from 3-digit numbers. The different sizes of numbers can sometimes confuse children, especially when lining up the digits in place value columns. Some children may find it helpful to write a zero placeholder. This step will also be the first time that children exchange from the hundreds column to the ones column in a two-part exchange because there are no tens in the original number. Make sure children exchange 1 hundred for 10 tens before exchanging one of those tens for 10 ones.
Step 19 Completements to 100	In this small step, children focus on fluently finding complements to 100 Previously in this block and in Year 2, children covered number bonds for ones to 10 and tens to 100, and this understanding can support finding complements to 100 A common misconception when finding a complement to 100 is to think that the ones digits bond to 10 and the tens digits bond to 100, which leads to a total of 110 rather than 100, for example 36 + 74. Using a hundred square can help children to avoid this misconception and to identify that they actually need to find a bond to 10 and a bond to 90. A number line can also support the development of efficient mental strategies to find complements to 100 This small step provides a good opportunity to recap prior learning on money, specifically the fact that there are 100p in £1
Step 20 Estimate answers	Although children have not explicitly been introduced to rounding, they have explored estimating the position of numbers on number lines in both Year 2 and Year 3 and will use this knowledge to support the learning in this small step. Discuss with children why estimates are important, particularly in real-life situations such as population statistics. They allow us to quickly and easily get an idea of what an answer should be near to, or if an already calculated answer is appropriate. It is important to discuss whether an actual answer will be greater or less than an estimate. For example, 33 + 54 may be estimated as 30 + 50, and we would expect the precise answer to be greater than the estimate because the actual numbers from the calculation are both greater than the "near numbers" used in the estimate.

Step 21 Inverse operations	In this small step, children explore the inverse relationship between addition and subtraction and how both relate to the part-whole structure. In addition to part-whole models, bar models are excellent for highlighting these relationships. It is important to draw children's attention to the fact that they can perform two different subtractions as the inverse to an addition, due to addition's commutative property, but there is only one possible addition as the inverse to a subtraction. Building on the previous small step, where children began to look at strategies to check answers using estimation, they can now use inverse operations as another method of checking, rather than simply redoing the same calculation and potentially repeating the same error.
Step 22 Make decisions	This small step provides the opportunity to consolidate and bring together all the learning from this block. Children are asked to make decisions about what operation and what method is appropriate to solve a problem. Word problems, including multi-step problems, can be used to assess whether children are able to successfully identify the correct operation and information to use. Bar models can be an excellent tool to support children in this process, encouraging children to think about what is the whole and what are the parts. It is also important to encourage children to make decisions around what is the most appropriate method to find an answer once the correct operation has been identified. The skills developed in the previous small steps should be revisited for children to check their answers.
Block 3 Multiplication and Division	
Step 1 Multiplication-equal groups	In Year 2, children recognised, made and added equal groups. This small step revisits and consolidates this learning in order to prepare children for the next steps. It is important that children understand the word "equal" and the use of stem sentences can support this. Concrete resources and images can be used to support understanding when explaining the link between repeated addition and multiplication. Ensure children are exposed to examples where groups are equal but look different, such as a series of objects that are spaced differently. The examples included in this small step refer only to the times-table facts that children will have learned in Year 2.
Step 2 Use arrays	In this small step, children build and use arrays to enhance their knowledge of the link between repeated addition and multiplication and to explore commutativity. For example, they recognise that 3 lots of 5 is equal to 5 lots of 3 As this small step appears at the start of the Year 3 multiplication block, the only examples included refer to the times-table facts that children should know from Year 2, but can be revisited later in the block as children are introduced to more times-table facts. The use of arrays will be built on in future steps to help children complete multiplications. When teaching multiplication, the multiplication symbol and language such as "lots of" and "groups of" should be used interchangeably to support children's understanding.
Step 3 Multiples of 2	In Year 2, children explored the link between counting in 2s and the 2 times-table. This small step provides the opportunity to revisit and consolidate this learning while focusing on multiples of 2 Children should be able to identify whether or not a number is a multiple of 2. They should understand that, by definition, multiples of 2 are numbers that can be divided into two equal groups. Children use their knowledge of multiples of 2 to decide if a number is even or odd. They learn to recognise that a whole number is even if it has an even number of ones, regardless of whether the tens and hundreds digits are odd. For example, 576 is even because there are 6 ones and 6 is even.
Step 4 Multiples of 5 and 10	In Year 2, children counted in 5s and 10s and looked at these multiplication times-tables. In this small step, they revisit and consolidate this learning by focusing on multiples of 5 and 10 and the connections between them. Children should recognise that a whole number is a multiple of 5 if the ones digit is either 5 or 0. Similarly, they should recognise that a whole number is a multiple of 10 if the ones digit is 0 Children could use arrays or hundred squares to help them if needed, but they should be moving towards fluency with the facts in these times-tables.
Step 5 Sharing and grouping	In Year 2, children experienced division as both sharing and grouping. For example, they shared 10 counters equally into 2 groups, but also grouped 10 counters into 2s. In this step, children revisit and consolidate their understanding of these key skills. Children identify whether the question involves sharing or grouping and use appropriate concrete manipulatives or pictorial representations to support their understanding. A bar model is a particularly useful pictorial representation when sharing and grouping and can help children make sense of what the question is asking, as well as what the answer represents. The examples in this small step use the 2, 5 and 10 times-tables, as the children should be familiar with these from Year 2.
Step 6 Multiply by 3	Children use their knowledge of counting in 3s from Year 2 to make the link between repeated addition and multiplication and begin to calculate multiples of 3 They apply their knowledge of equal groups and use a range of concrete and pictorial representations to deepen their understanding of multiplying by 3. Initially, this is through counting in multiples of 3. They then draw on ideas from previous steps to explore flexible partitioning to show, for example, $7 \times 3 = 5 \times 3 + 2 \times 3$
Step 7 Divide by 3	Building on the previous small step, children explore dividing by 3 through sharing into 3 equal groups and by grouping into 3s. Using learning from previous steps, children identify whether a question involves sharing or grouping and use appropriate concrete manipulatives or pictorial representations to support their understanding. Encourage children to check their answers using inverse operations. This small step will help children to become more familiar with the numbers that are multiples of 3.

Step 8 The 3 times-table	In this small step, children bring together their knowledge of multiplying and dividing by 3 in order to become more fluent in the 3 times-table. They construct fact families and use manipulatives and pictorial representations to make links between multiplication and division. It is important that children understand the structure of the times-table and can derive unknown facts from known facts by using strategies such as doubling/halving and partitioning, as well as using commutativity and the inverse operation. Examples focus on number facts up to 3 × 12, although this may be extended to other 2-digit numbers, such as 3 × 17, when exploring strategies, if appropriate.
Step 9 Multiply by 4	In this small step, children build on their knowledge of the 2 times-table to multiply by 4. They draw arrays to recognise that multiplying by 4 is the same as doubling then doubling again. They could also use arrays to make links between the 4 times-table and the 5 times-table, recognising that, for example, 4 lots of 7 is 5 lots of 7 minus 7 Throughout this step, children apply their knowledge of equal groups and use concrete manipulatives and pictorial representations to explain the link between counting in 4s and multiplying by 4. They also explore the commutativity of multiplication, understanding, for example, that 4 groups of 6 is equal to 6 groups of 4.
Step 10 Divide by 4	From previous steps, children should be confident with the understanding of division as sharing and grouping. In this small step, they apply this knowledge and explore dividing by 4 through sharing into 4 equal groups and grouping into 4s. Children identify whether the question involves sharing or grouping and use appropriate concrete manipulatives or pictorial representations to support their understanding. Encourage children to explain what their answer represents to support understanding of the differences between sharing and grouping. Children build on their knowledge from the previous step and recognise that if multiplying by 4 is the same as doubling the number and then doubling again, then dividing by 4 is the same as halving the number and halving it again.
Step 11 The 4 times-tables	In this small step, children draw together their knowledge of multiplying and dividing by 4 in order to deepen their understanding of the 4 times-table. Children continue to use concrete manipulatives and pictorial representations within this step. They use arrays to support their understanding of partitioning, for example 13 × 4 = 10 × 4 + 3 × 4. Children continue to explore the commutativity of multiplication: if 3 × 4 = 12, then 4 × 3 = 12 As in earlier steps, links could be made between the 4 times-table and the 5 times-table. Children should recognise that multiplying a number by 4 is the same as multiplying that number by 5 and then subtracting 1 lot of it.
Step 12 Multiply by 8	In this small step, children build on their knowledge of the 4 times-table to multiply by 8 Children apply their knowledge of equal groups and use concrete manipulatives and pictorial representations to explain the link between counting in 8s and multiplying by 8 Through this, children should recognise that each multiple of 8 is double its equivalent multiple of 4, and may take this further to realise that multiplying by 8 is the same as doubling three times. Children may also recognise that calculating 8 lots of a number is the same as calculating 10 lots of the same number and subtracting 2 lots of it. Children also explore the commutativity of multiplication. For example, they should have an understanding that 8 groups of 6 is equal to 6 groups of 8.
Step 13 Divide by 8	From previous steps, children will be confident with the understanding of division as sharing and grouping. In this small step, children apply this knowledge and explore dividing by 8 through sharing into 8 equal groups and grouping into 8s. Children identify whether the question involves sharing or grouping and use appropriate concrete manipulatives or pictorial representations to support their understanding. Encourage children to discuss what their answers represent and to interpret them in context. Children build on their knowledge from previous steps and recognise that dividing by 8 is the same as dividing by 2 three times, or halving three times.
Step 14 The 8 times table	In this small step, children draw together their knowledge of multiplying and dividing by 8 in order to deepen their understanding of the 8 times-table. Children continue to use concrete manipulatives and pictorial representations within this step. They use arrays to support their understanding of partitioning, for example 7 × 8 = 5 × 8 + 2 × 8. Children continue to explore the commutativity of multiplication: if 3 × 8 = 24, then 8 × 3 = 24 Children could be stretched to consider finding numbers in the 8 times-table that are greater than 96. They should use their understanding of partitioning to support them with this, for example 10 × 8 + 6 × 8 = 128 so 128 is in the 8 times-table.
Step 15 The 2, 4 and 8 times-tables	So far, children have explored multiplying by 2, 4 and 8 in detail, but focused on one particular skill at a time. Although they may have begun to make links between them, this small step provides children with explicit opportunities to make connections between the 2, 4 and 8 times-tables. They link multiplying by 4 to doubling then doubling again, and multiplying by 8 to doubling three times. They should also recognise that dividing by 4 is the same as halving then halving again, and dividing by 8 is the same as halving three times. By the end of this step, children will be able to apply their knowledge of known facts to support them; for example, to work out 7 × 8, children can do 7 × 2 × 2 × 2, or to calculate 56 ÷ 8, they can do 56 ÷ 2 ÷ 2 ÷ 2