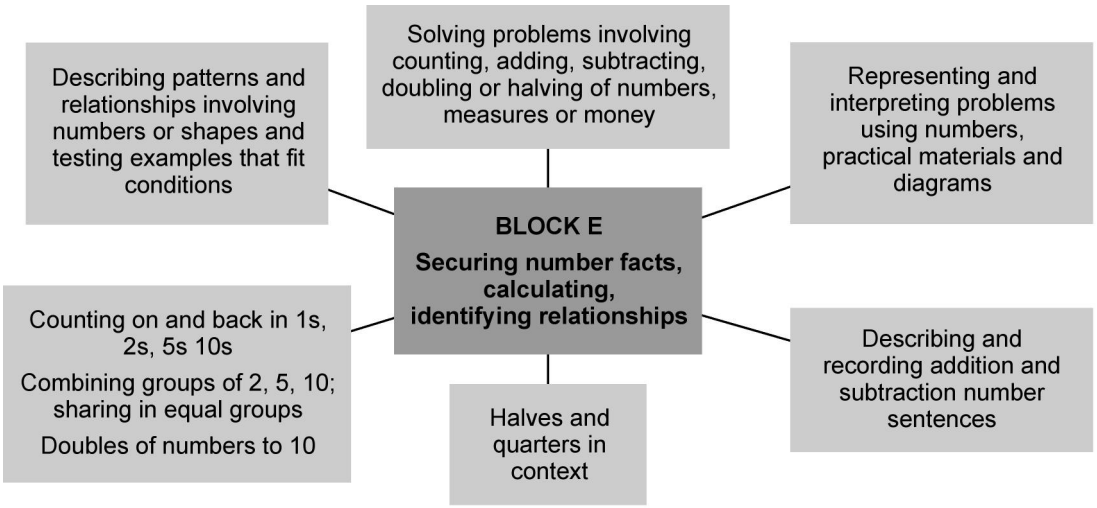
Year 1: Block E — Three 3-week units

Securing number facts, calculating, identifying relationships



Objectives End-of-year expectations (key objectives) are highlighted	Units 1	 2	 3
• Describe a puzzle or problem using numbers, practical materials and diagrams; use these to solve the problem and set the solution in the original context	✓	✓	✓
• Solve problems involving counting, adding, subtracting, doubling or halving in the context of numbers, measures or money, for example to 'pay' and 'give change'		✓	
• Describe simple patterns and relationships involving numbers or shapes; decide whether examples satisfy given conditions			✓
• Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences	✓	✓	
• Count on or back in ones, twos, fives and tens and use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple	✓	✓	✓
• Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups		✓	✓
• Recall the doubles of all numbers to at least 10	✓	✓	✓
• Use the vocabulary of halves and quarters in context	✓	✓	✓

Speaking and listening objectives for the block

Objectives	Units 1	 2	 3
• Retell stories, ordering events using story language	✓		
• Listen to tapes or videos and express views about how a story or information has been presented		✓	
• Explain their views to others in a small group, and decide how to report the group's views to the class			✓

Opportunities to apply mathematics in science

Activities		Units		
		1	2	3
1a	Ourselves: Sort children themselves according to their choice of criterion, for example food preferences, favourite colours. Line up in rows and count the number in each group.	✓		
1f	Sound and hearing: Use charts to group musical instruments.		✓	
1c	Sorting and using materials: Use Venn and Carroll diagrams to sort materials into groups.			✓

Key aspects of learning: focus for the block

Enquiry	**Problem solving**	Reasoning	Creative thinking
Information processing	Evaluation	Self-awareness	Managing feeling
Social skills	Communication	**Motivation**	**Empathy**

Vocabulary

problem, solution, calculate, calculation, number sentence, answer, method, explain, pattern, order

count, count up to, count on from, count on to, count in ones, twos, fives, tens, odd, even

compare, more, less, how many more/less?

add, subtract, double, group, groups of, share, sum, total, altogether, difference, plus (+), minus (–), equals (=)

fraction, half, halfway between, halve, quarter, whole,

Building on previous learning

Check that children can already:

- use developing mathematical ideas and methods to solve practical problems involving counting, measuring, comparing, ordering, adding, subtracting or partitioning objects
- describe solutions to practical problems, talking about their own ideas, methods and choices
- talk about, recognise and recreate simple patterns
- count aloud in ones, twos, fives or tens
- select two groups of objects to make a given total of objects
- relate addition to combining two groups of objects and subtraction to 'taking away', and use the related vocabulary
- count repeated groups of the same size
- share objects into equal groups and count how many in each group

Unit 1E1 3 weeks

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Describe a puzzle or problem using numbers, practical materials and diagrams; use these to solve the problem and set the solution in the original context *I can talk about how I solved a problem using numbers and objects to help me*	Look at this puzzle (or problem). What do you have to find out or do? What does your drawing tell us? I have three green grapes and two red grapes. How many grapes do I have altogether? Show me how you worked it out. If I wanted ten grapes altogether, how many more grapes would I need? Look at the grapes on your plate and on mine. How many more grapes do you have than me? Make up another problem using grapes. Now tell me how to work it out. There are six people on the bus. Three more get on. How many people are on the bus now? Use these cubes. Show me how to work out the answer.
• Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences *I can describe an addition or subtraction using mathematical words* [in a practical context]	How would you show someone else an easy way to find three more than a number? What about three less? Is there another way? How many are there altogether? What is the sum/total of these two numbers? What is the difference between these two numbers? Make up a 'take away' question and show me how to do it.
• Count on or back in ones, twos, fives and tens and use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple *I can count on and back in ones and tens* *I am beginning to count in fives*	How far can you count in fives? 20, 30, 40, … Count on to 70. I know a secret sequence. It has these numbers in it: 30, 40, 50, 60. What numbers come next in the sequence? What if I say the numbers backward: 60, 50, 40, 30 – what comes next? I will clap where a number is missing: 10 20 30 [one clap] 50 60 Tell me the missing number.
• Recall the doubles of all numbers to at least 10 *I can recall or work out doubles of numbers to 5 + 5*	Roll this dice and double your number. What score do you get? Look at these domino doubles. How many spots are there altogether?
• Use the vocabulary of halves and quarters in context *I can find half of a piece of paper or string, or half a shape* *I can find half of a small number of objects*	Show me half a page, half a ribbon, half of these six eggs. Give me half of the pencils in the pot.
• Retell stories, ordering events using story language *I can describe step by step how I did a calculation or solved a problem. I use mathematical words in my description*	Tell me how you solved this problem. What did you do first? And then what did you do?

Learning overview

Children extend their understanding of 'one more' and 'one less' to finding the number that is two or three more or less than a given number. They associate finding numbers that are, say, 'three more' with addition and finding numbers that are, say, 'two less' with subtraction. They record the practical situation on a number track and by using **addition and subtraction statements** such as 5 + 3 = 8,

9 – 2 = 7. They are given a number sentence such as 5 + 6 = 11 and are asked to think of a story to describe it, for example: 'In a field, there are 5 brown cows and 6 black cows. There are 11 cows altogether.' They solve 'missing-number' problems using objects to help them, such as: *There are four horses in a field. How many more horses are needed to make nine horses altogether?*

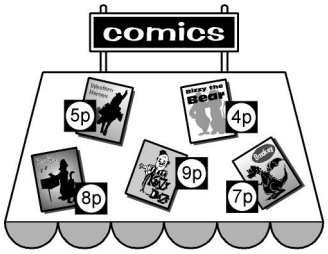
In practical contexts throughout this unit, children **describe and extend number sequences** by counting on or back in repeated steps of the same size, including 2, 5 and 10. Children count on in tens from zero and then back to zero. They use practical equipment such as 10p coins or straws bundled into tens, or a number line or 100-square, to consolidate the count. These help them to form mental images, to recognise the numbers in the count, and to identify patterns. They learn to recognise the difference between 'ty' and 'teen' numbers.

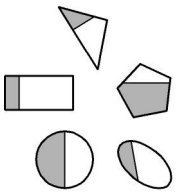
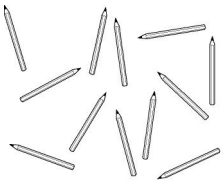
Children **count on from zero in twos, and then back to zero**, using objects such as pairs of socks to answer questions such as: *I have three pairs of socks in the bag. How many socks is this?* They check the answer by counting the socks in ones and then in twos. They count 2p coins, for example by tapping the coin twice on the table to remember that it is worth 2p. They listen as 2p coins are dropped into a tin one by one, keeping a count and saying how much money is in the tin. They mark repeated hops of 2 or 3 or 5 on a number track to at least 20, saying the numbers they land on. They use patterns in the numbers to identify missing numbers in the sequence, for example identifying the missing number when they hear a clap: 28, 27, 26, [one clap], 24, 23, or 5, 10, 15, [one clap], 25, [one clap].

Children develop their understanding of **doubling**. They make two identical sets of objects and find the total. For example, they place an equal number of bug counters onto two leaves. They record this in the number sentence 3 + 3 = 6. They understand that they are finding the sum of two threes, or 'doubling three', and that double 3 is 6 because 3 + 3 = 6.

Throughout the unit, children use **halves and quarters in context**. For example, they cut objects such as apples or balls of Plasticine in half to make two identical pieces. They find half the length of pieces of string or ribbon, or half a piece of paper by folding one half on top of the other. They count half the number of eggs in a box of six eggs, and put half of the eight cubes on their table into a box. Practical experiences, such as folding and cutting shapes and pictures in half, help to consolidate their understanding.

Unit 1E2 3 weeks

Objectives *Children's learning outcomes in italic*	**Assessment for learning**
• Describe a puzzle or problem using numbers, practical materials and diagrams; use these to solve the problem and set the solution in the original context *I can show how I solved a problem using drawings or objects to help me*	Give me a number between 6 and 12. Is it closer to 6 or 12? Show me how you know using this number line. How many animals altogether are there in the three fields? Explain how you worked out your answer.
• Solve problems involving counting, adding, subtracting, doubling or halving in the context of numbers, measures or money, for example to 'pay' and 'give change' *I can count and calculate to solve measurement problems*	What do you need to find out? How do you know you need to add/subtract/double/halve? What clues are there? What helped you to decide how to do this calculation? Could you do it another way? How many different pairs of numbers can you remember that have a total of 10? How can you be sure you have told me them all? There were 24 biscuits in a packet. Jack put 7 biscuits on a plate. How many biscuits were left in the packet? How did you work it out?
• Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences *I can record an addition or subtraction number sentence and tell you what it means*	Tell me a story to go with this number sentence. Using a number line, show me two numbers that have a difference of 2. How might you write that? Tell me what numbers to put in the boxes to make these statements true: ☐ is 1 more than ☐ ☐ is 1 less than ☐ ☐ is 10 more than ☐ ☐ is 10 less than ☐ How did you decide what numbers can be put in the boxes?  Buy two different comics and spend 16p. Tick the two comics. Write an addition to show what you did. There are four fewer boys than girls in Mr Hill's class. There are 18 girls. How many boys are there in Mr Hill's class? Write a number sentence to show me how you worked out the answer.
• Count on or back in ones, twos, fives and tens and use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple *I can count on and back in ones, fives and tens*	Is there a quick way of finding a number that is 10 more than a number? What about 10 less than a number? What comes next? 25, 26, 27, … 22, 21, 20, … 90, 80, 70, … Make up another counting pattern for others to solve.

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups *I can share objects into equal groups and work out how many in one group*	How many socks are there altogether in these eight pairs? How many fingers are there altogether on six hands? There are 10 crayons in each box.  How many crayons are there altogether? How many 2p coins make 20p?
• Recall the doubles of all numbers to at least 10 *I can recall or work out doubles of all numbers to 10*	What is 6 + 6? What is double 6? What number must I double to get 10?
• Use the vocabulary of halves and quarters in context *I can make whole, half and quarter turns on the spot* *I can fold a piece of paper into halves and quarters* *I can find half of a number of objects by sharing them into two equal groups*	How will you find half of that circle? How will you find half of these counters? Which shape is more than half shaded?  Here is a set of 12 pencils. How many is half the set? 
• Listen to tapes or videos and express views about how a story or information has been presented *I can listen carefully to other children describing their ideas and say what I found helpful*	Let's watch this TV broadcast. What was the man counting? How many were there? How many pairs of socks did he make?

Learning overview

Children continue to **solve practical problems** involving **addition or subtraction, doubling or halving**, extending to situations involving *fewer than*, or *difference between*. They record their solutions using objects such as cubes, on a number line or in a **number sentence**.

Children continue to count on and back twos, fives and tens. They describe and extend number sequences such as 16, 14, 12, 10, … or 15, 17, 19, 21, … by responding to questions such as: *What numbers come next? Describe the pattern.* They fill in missing numbers in sequences such as 12, 14, ☐, 18, 20, ☐ or 25, 20, 15, ☐, ☐. When they count on or back in twos, fives and tens, children use number lines or the 100-square to see how the words they are saying connect with the structure of the number system. They respond to questions such as:

Count out 70 straws using bundles of ten. How many bundles of ten did you need?

If we count round the circle this way in tens, starting with Joe, who will say the number 40?

Will the number 81 appear in the count? Why not?

Children **double** numbers to 10 in practical situations. For example, they find the dominoes that show doubles and record these as addition statements, such as 3 + 3 = 6. They work with a partner

who chooses a number of counters for them both to take; they then work out how many counters they have altogether and record this pictorially, using the word ‘double’ or as an addition statement.

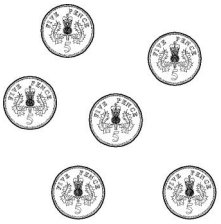
Children **count repeated groups of objects**. For example, they count the socks in nine pairs of socks and the number of pens in five packs of ten. They count 5p coins in a money box and work out how much money there is altogether. They work out where they will land after six hops of 5 from zero on a number line.

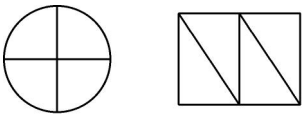
Children have plenty of practical experience of **sharing sets of objects into equal groups**. For example, they share a set of pencils equally among three pots and count how many pencils are in each pot. They record their solution by drawing or by modelling it using counters. They share 12 orange pieces on a plate fairly among four children and work out how many pieces each child gets. They respond to questions such as: *Show me 6p using 2p coins. How many 2p coins do you need?* recording answers to such problems using addition, for example 2p + 2p + 2p = 6p.

Children learn to recognise that sharing into **two equal groups** is the same as halving. For example, they find half of the bug counters by sharing them out equally between two leaves. They begin to link doubling and halving, for example by selecting all the dominoes showing doubles and explaining how many dots are on each half. They use this to say, for example, that half of 8 is 4.

Children begin to understand the idea of **odd and even numbers**. They count in twos from zero to 20 and beyond and colour every other number on a number track. They look at the numbers they have coloured and, from their work on fractions and halving, discover that each of these numbers can be divided into two equal halves. They begin to use the vocabulary *odd* and *even*.

Unit 1E3 3 weeks

Objectives *Children's learning outcomes in italic*	**Assessment for learning**
• Describe a puzzle or problem using numbers, practical materials and diagrams; use these to solve the problem and set the solution in the original context *I can work with a partner or in a small group to decide the best way to describe what we found out*	Are there any other resources or drawings that would help your description? Show me that 12 blocks plus 3 blocks is 15 blocks. Show me that 11 cubes minus 3 cubes is 8 cubes. Make up a story that would mean you need to work out 15 + 4, 19 – 3. I want to buy one banana. I have 20p. The banana costs 35p. How much more money do I need? Explain your method. I am going to choose two stickers for each of you to buy. Tell me how much it will cost to pay for both stickers. Now find the right coins to pay for the stickers.
• Describe simple patterns and relationships involving numbers or shapes; decide whether examples satisfy given conditions *I can describe a pattern made from shapes or numbers and tell you how it would continue*	What is special about the way I have ordered these counters? Can you make a different pattern using the same counters? Tell me how to continue this pattern. Can you make a pattern where the third counter is blue? Is that the only way it could be done? What is wrong with this pattern? Can you put it right?
• Count on or back in ones, twos, fives and tens and use this knowledge to derive the multiples of 2, 5 and 10 to the tenth multiple *I can count on from or back to zero in ones, twos, fives or tens*	I know a secret sequence. It has these numbers in it: 13, 15, 17, 19. What numbers come next in the sequence? What if I say the numbers backward: 19, 17, 15, 13 – what comes next? If you count in tens from 2, which digit changes? What do you notice about the ones digits when we count in fives?
• Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups *I can find how many there are in several groups of 2, 5 or 10* *I can share objects into equal groups and tell you how many there are in one group*	Count five hops of 2 along this number line. What number will you reach? Put these coins in this box. How much have you put in the box altogether?  How do you know you need to put the 20 animals in groups of 5? What clues are there? How many groups did you make? Here are 20 counters. Arrange them in equal rows. Is there a different way to arrange them in equal rows?
• Recall the doubles of all numbers to at least 10 *I can recall or work out doubles of numbers to at least 10* *I can use doubles I know to help me work out other doubles*	I'm thinking of a number. I've halved it and the answer is 8. What number was I thinking of? Explain how you know. I'm thinking of a number. I've doubled it and the answer is 18. What number was I thinking of? Explain how you know. I know that double 10 is 20. What is double 11? How could you work it out?

Objectives *Children's learning outcomes in italic*	Assessment for learning
• Use the vocabulary of halves and quarters in context *I can find half of the water in a jug by pouring it into two glasses so that each glass has the same amount* *I can tell you when the clock says half past 2* *I can find a quarter of a number of objects by sharing them into four equal groups*	How can I find a quarter of this strip of paper? Shade one quarter of each shape.  There are twenty children in a classroom. Half of them are girls. How many are boys? Explain how you worked it out. What number is halfway between 6 and 12? How did you work it out?
• Explain their views to others in a small group, and decide how to report the group's views to the class *I can explain my ideas and methods to a group* *I can work with a group to decide the best way to show our information*	Explain to the group how to set the hands of the clock at half past 9. Explain to the group how to put these five numbers in order.

Learning overview

Children continue to **solve practical problems involving addition and subtraction**. For example, they explore different ways of making 20p using 2p, 5p and 10p coins, or the different sums that can be made from picking three cards from a set of 1 to 5 number cards. They record the solutions in number sentences and consider the question: *How do you know that you have found them all?* They find the total amount of a small number of coins, answering questions such as: *Amy has these coins in her purse. How much is in Amy's purse?*

They **count repeated groups** of objects by counting in 2s, 5s or 10s, for example, the amount of money in a line of 2p coins. They explore what numbers they can land on by starting at zero on a number line then jumping along in jumps of 2, 5 or 10.

Children investigate the statement 'Tens numbers (multiples of 10) are even', finding **examples where this is true** and exploring whether it is possible to find an example where it is not true. They test a number such as 30 for evenness by finding out whether 30 counters can be shared into two equal groups. They write down the first ten multiples of 10 and the first ten multiples of 5 and comment on what they notice. They sort a set of 1 to 50 number cards according to a given criterion such as 'is a multiple of 5', recording their classification in a diagram. Children suggest criteria of their own for sorting the cards.

Children become more proficient with doubles. They remember and **recall doubles** of numbers initially to 5, then to 10. They link doubling and halving, for example, using pictures of ladybirds with

the same number of spots on each wing to show that double 8 is 16, then folding the ladybird to show that half of 16 is 8. They use doubles that they know to work out more doubles, such as double 11 is double 10 plus double 1.

Children secure their understanding that sharing a set of objects between two is equivalent to finding **one half** of the original set. They extend their understanding to sharing among four and understand that they have found **one quarter** of the original set. For example, they take 24 counters and share them onto four sheets of coloured paper, recognising that one quarter of the counters are on the red paper, one quarter are on the blue paper, and so on. They fold squares, rectangles and circles into half and then half again, cutting the shapes along the folds and recognising that this gives four equal pieces. They make whole, half and quarter turns in PE, and recognise half past the hour on a clock with hands.

Children **solve practical problems** involving repeated groups, for example:

Find out how many sides there are on five triangles.

How many bicycles have a total of 12 wheels?

They describe the problem using **practical materials, diagrams or numbers**, explaining what has been found using the context of the original problem. They solve problems involving sharing, for example: *15 children sit at 3 tables. There is the same number of children at each table. How many children sit at each table?* They choose whether to solve the problem practically, using apparatus to represent the children, or through drawing a diagram. They explain the answer to the problem and know that when they 'share' equally into two or more groups there will be the same number in each group.