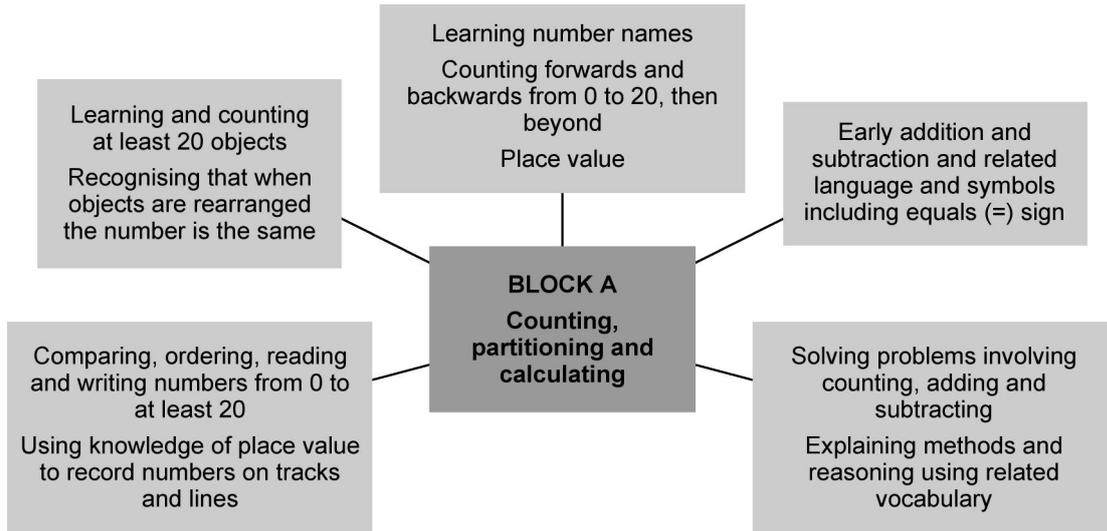


Counting, partitioning and calculating



Objectives	Units		
	1	2	3
End-of-year expectations (key objectives) are highlighted			
• 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 ways of solving puzzles and problems, explaining choices and decisions orally or using pictures	✓	✓	✓
• Count reliably at least 20 objects, recognising that when rearranged the number of objects stays the same; estimate a number of objects that can be checked by counting	✓	✓	
• Compare and order numbers, using the related vocabulary; use the equals (=) sign	✓	✓	✓
• Read and write numerals from 0 to 20, then beyond; use knowledge of place value to position these numbers on a number track and number line	✓	✓	✓
• Say the number that is 1 more or less than any given number, and 10 more or less for multiples of 10	✓	✓	✓
• Relate addition to counting on; recognise that addition can be done in any order; use practical and informal written methods to support the addition of a one-digit number or a multiple of 10 to a one-digit or two-digit number	✓	✓	✓
• Understand subtraction as 'take away' and find a 'difference' by counting up; use practical and informal written methods to support the subtraction of a one-digit number from a one-digit or two-digit number and a multiple of 10 from a two-digit number	✓	✓	✓
• Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences	✓	✓	✓

Speaking and listening objectives for the block

Objectives	Units		
	1	2	3
• Ask and answer questions, make relevant contributions, offer suggestions	✓		
• Listen to and follow instructions accurately, asking for help if necessary		✓	
• Describe incidents or tell stories from their own experience, in an audible voice			✓

Opportunities to apply mathematics in science

Activities		Units		
		1	2	3
1c	Sorting and using materials: When sorting a collection of objects, identify which of two sets contains more and count the number in each set.	✓	✓	
1e	Pushes and pulls: Count more than 20 cars in a traffic survey.			✓

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

pattern, answer, number sentence, sign, operation, explain, show me, read, write, record, count, compare, order

the same number as, as many as, equal to, equals (=), sign, more, most, less, least, greater, greatest, larger, largest, bigger, biggest, fewer, fewest, smaller, smallest, before, after, halfway
 add, plus (+), makes, sum, total, altogether, subtract, minus (–), take away, leaves, difference
 one, two, three, ..., hundred; first, second, third, ...; ones, tens, ‘teens’ number, exchange, digit
 how many ...?, how many more to make ...?, how many more is ... than ...?, how much more is ...?,
 how many fewer is ... than ...?, how much less is ...?, what is the difference between ...?

odd, even, pair, double, near double, half, halve

Building on previous learning

Check that children can already:

- solve practical problems involving counting, including counting on, measuring, comparing, ordering, adding, subtracting or partitioning objects
- say and use the number names in order in familiar contexts and recognise numerals 1 to 9
- know that numbers identify how many objects are in a set and match sets of objects to numerals
- count aloud in ones, twos, fives or tens
- find one more or one less than a number from 1 to 10
- 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’

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning																				
<ul style="list-style-type: none"> Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures <i>I can talk about how I solve problems using counting</i> 	<p>How did you find out how many more pencils were needed so that the children had one each? What did you have to do to check that we had the same number of coins before and after the children worked with the till?</p> <p>What did you need to know? How did you work it out? What did you use to help?</p>																				
<ul style="list-style-type: none"> Count reliably at least 20 objects, recognising that when rearranged the number of objects stays the same; estimate a number of objects that can be checked by counting <i>I can count up to 20 objects</i> <i>I know that the number of objects does not change even if I move the objects around</i> 	<p>How many 10-pence coins are in the purse?</p> <p>How do you know you have that number?</p> <p>How do you know you have counted every coin?</p> <p>How could you check your answer?</p>																				
<ul style="list-style-type: none"> Compare and order numbers, using the related vocabulary; use the equals (=) sign <i>I can compare numbers up to 20 and say which number is bigger</i> 	<p>Would you rather have 9 pence or 15 pence? Why?</p> <p>Look at these numbers: 3 12</p> <p>Which number is bigger? Can you use objects/a number track to show how you know? What other numbers are bigger than 3 but not as big as 12?</p>																				
<ul style="list-style-type: none"> Read and write numerals from 0 to 20, then beyond; use knowledge of place value to position these numbers on a number track and number line <i>I know how to write numbers up to 20</i> <i>I can read numbers on a number track</i> 	<p>Can you think of a number that has a straight line in it? Write it in the air. Do you know any more? Which numbers less than 20 are formed from only straight lines?</p> <p>Look at the number grid:</p> <table border="1" data-bbox="657 1126 925 1294"> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Write the number 14 in the correct place. How did you know? What will the largest number on this grid be? How do you write that?</p>	1	2	3	4	5	6	7	8	9											
1	2	3	4	5																	
6	7	8	9																		
<ul style="list-style-type: none"> Say the number that is 1 more or less than any given number, and 10 more or less for multiples of 10 <i>I can work out the number that is one more or one less than numbers up to 20</i> 	<p>There are seven beads in this pot. I am putting one more bead in the pot. How many are in there now? How did you know? How can you check?</p> <p>This time there are ten beads in the pot. I take out one bead. How many beads are left in the pot? How did you know? How can you check?</p> <p>Start with a different number of beads in the pot. Ask your partner to put another bead in or take one out and then say how many there are in the pot. How will you know if your partner is right?</p>																				
<ul style="list-style-type: none"> Relate addition to counting on; recognise that addition can be done in any order; use practical and informal written methods to support the addition of a one-digit number or a multiple of 10 to a one-digit or two-digit number <i>I can add two one-digit numbers</i> 	<p>How many ways can you show me that 3 add 5 is 8?</p> <p>Can you show me using counters? Can you put something on paper to show it? How can you show it using a number track?</p> <p>There are six pencils in this paper bag. Put three more in the bag. Can you say how many there are in the bag now, without looking inside? How could you check your answer?</p>																				

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> Understand subtraction as 'take away' and find a 'difference' by counting up; use practical and informal written methods to support the subtraction of a one-digit number from a one-digit or two-digit number and a multiple of 10 from a two-digit number <i>I can use objects to take away a small number from any number up to 20</i> 	<p>Here are some cubes. Show me how to use them to work out 9 take away 4. How could you record that as a number sentence? Make up a 'take away'/subtraction question and show me how to do it. Use number cards 1 to 10. Choose a card and pick up that number of cubes. Can you work out how many more cubes you need to make 10? How did you work it out? Can you put something on paper to check your answer? Can you use a number track to show that you are right?</p>
<ul style="list-style-type: none"> Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences <i>I can talk about adding/subtracting I can record additions/subtractions</i> 	<p>Use five toy cars and a garage to make different number stories like this: 1 car is in the garage and 4 cars outside, which is 5 altogether 1 add 4 makes 5 $1 + 4 = 5$ Now use five cars to make stories like this: 5 cars are in the garage. One drives away, which leaves 4 cars 5 take away 1 leaves 4 $5 - 1 = 4$</p>
<ul style="list-style-type: none"> Ask and answer questions, make relevant contributions, offer suggestions <i>I can ask and answer questions about counting, adding and taking away</i> 	<p>What could you do to find out which of these two rods has more cubes, and how many more cubes it has? Change the number of cubes in the rods and ask you partner to work out which has more. How will you know if your partner is right?</p>

Learning overview

Children **recite number names in order** from 0 to 20 or more, forwards and backwards, using objects, number tracks and number lines. They use the sequence of number names to count a small set of objects reliably by touching or moving each object in turn, recognising that the number of objects does not change if the set is rearranged. Children identify which of two sets contains more objects, by matching the objects and **counting** the number in each set. They compare the numbers using their positions on a number track or number line.

Using appropriate language and symbols in context, children **read and write numerals from 0 to 10, then to 20**. They understand that, for example, the number 12 is written with two digits. They know that as they count from zero along a number track each number is one more and the numbers get bigger. As they count back, each number is one less and the numbers get smaller. They find missing or covered numbers on a number track.

As they develop their **understanding of addition and subtraction**, children find the number that is one more or one less than a given number practically by adding another object or removing one object from a set then counting the new number. They use their knowledge of the counting sequence and number tracks to predict what number is **one more or one less** than a given number before checking using practical equipment. They relate addition to counting on and use the vocabulary of addition in practical activities. For example, they respond to instructions such as:

Put three more pencils on the table.

Add three spots to the ladybird.

When children use a number track to find the number that is one more than 7, they describe it as '7 add 1 is 8' or '7 plus 1 is 8' and record it in a **number sentence** as $7 + 1 = 8$.

Children relate subtraction to taking away objects from a set and to counting back. They use the vocabulary of subtraction in practical activities; for example, they respond to instructions such as: *Take away three spots*. When they use a number track to find, say, the number that is one less than 8, they describe this as '8 take away 1 is 7' or '8 minus 1 is 7' and record it as $8 - 1 = 7$.

Throughout the unit, children **solve problems involving counting**. For example: they work out whether there are enough pairs of scissors for everyone on the table to have a pair; they predict then check which of two containers will hold more pine cones; they make a collection of their ten favourite items for a display. Children describe how they solved the problem to the class. They listen to and ask questions about other children's descriptions.

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> 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>I can solve a problem or puzzle using adding/subtracting</i> 	<p>Which dominoes in the set have a total of six spots? How can you solve this puzzle? I think of a number and add 2. My answer is 14. What was my number? How do you know you need to add/subtract? How could you work it out? What could you use to help? Could you put something on paper to help you remember? How could you check your answer?</p>
<ul style="list-style-type: none"> Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures <i>I can talk about how I solve problems using adding/subtracting</i> 	<p>How did you solve the problem? Why did you decide to add/subtract? How did the apparatus/your recording help you? How do you know that your answer makes sense?</p>
<ul style="list-style-type: none"> Count reliably at least 20 objects, recognising that when rearranged the number of objects stays the same; estimate a number of objects that can be checked by counting <i>I can estimate the number in a group of up to 20 objects I can check the number by counting</i> 	<p>How many crayons do you think there are in the tub? Now count them carefully. Are there more or fewer than you thought? How could you check the number of crayons? How do you know you have counted every crayon just once?</p>
<ul style="list-style-type: none"> Compare and order numbers, using the related vocabulary; use the equals (=) sign <i>I can put numbers up to 20 or more in order</i> 	<p>Look at these numbers: 8 3 12 20 Which of the numbers is largest? Are any of the numbers larger than 10? Which number is smallest? Put the numbers in order, starting with the smallest. How can you check the order?</p>
<ul style="list-style-type: none"> Read and write numerals from 0 to 20, then beyond; use knowledge of place value to position these numbers on a number track and number line <i>I know how to write numbers up to 20 I know where numbers up to 20 or more belong on a number track</i> 	<p>Pick up a bundle of ten straws and three single straws. Can you say how many you are holding without counting them all? Look at these numbers: 13 14 15 <input type="checkbox"/> <input type="checkbox"/> 18 Which numbers are covered? How do you know? As these numbers get bigger, which digits are changing and which digits stay the same? Which other numbers do you know that have 1 as the first digit? Where are the numbers that start with 'twenty' on the 100-square?</p>
<ul style="list-style-type: none"> Say the number that is 1 more or less than any given number, and 10 more or less for multiples of 10 <i>I know the number that is one more or one less than any number up to 20 or more</i> 	<p>Use the numbers 15 to 20. Choose a pair of numbers to make this sentence true: <input type="checkbox"/> is one more than <input type="checkbox"/> How many different pairs can you find that make the sentence true? Can you make the sentence true with other numbers?</p>
<ul style="list-style-type: none"> Relate addition to counting on; recognise that addition can be done in any order; use practical and informal written methods to support the addition of a one-digit number or a multiple of 10 to a one-digit or two-digit number <i>I can add 1, 2, 3, 4, 5, 6, 7, 8 or 9 to numbers up to 20 or more</i> 	<p>What is 19 add 5? What can you use to help you find the answer? Someone said 19 plus 5 makes 23. Can you show how you know that is not the right answer?</p>

practical apparatus to model the problem or represent the problem in a drawing. Later, they count back using a number line, then count back mentally. They explain how they worked out the problem and record it using the – and = symbols.

Through a range of practical activities, children gain experience of '**difference**'. For example, they find out how many more beads are on a longer string than a shorter one, recognising that one way to answer such a question is to count the extra beads. They represent the problem on a number line, counting the 'extra' by counting up from the smaller to the larger number. They understand and use an **increasing range of vocabulary related to subtraction**.

Throughout the work children **solve problems involving addition and subtraction**, such as:

Break this rod of eight cubes into three pieces. How many cubes are in each piece? Can you do it in a different way?

Jane has six pencils. Tom has two pencils. How many pencils do Jane and Tom have altogether? How many more pencils has Jane than Tom?

Half of the ten apples in a bag have been eaten. How many apples are left in the bag?

Children describe how they solve problems and **explain their reasoning**.

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> 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>I can solve a problem or puzzle by using doubling and halving</i> 	<p>I picked up 12 beads with two hands. That was double the number that Hannah picked up on her first try. How many did Hannah pick up?</p> <p>Apples cost 6 pence each. How much do two apples cost altogether?</p> <p>How can you get started? What could you use to help you with the numbers? How do you know that you need to double/halve the number?</p> <p>Could you use beads/coins to show how you know you are right?</p> <p>Can you make up a problem where you would use 'double 10 = 20' to solve it?</p>
<ul style="list-style-type: none"> Describe ways of solving puzzles and problems, explaining choices and decisions orally or using pictures <i>I can explain how I solve problems</i> 	<p>How did you solve the problem? How did you get started? How did the apparatus/your recording help you? How did you check that your solution works?</p>
<ul style="list-style-type: none"> Compare and order numbers, using the related vocabulary; use the equals (=) sign <i>I know the order of numbers up to 20 and more</i> 	<p>Give me a number between 15 and 21. Is it closer to 15 or 21? Show me why on a blank number line. What number is half-way between 15 and 21? How did you work it out?</p>
<ul style="list-style-type: none"> Read and write numerals from 0 to 20, then beyond; use knowledge of place value to position these numbers on a number track and number line <i>I can write numbers up to 20 and more</i> <i>I can find them on a number line/100-square</i> 	<p>Put these numbers in order starting with the smallest: 15 19 12</p> <p>What did you look for in the numbers when you ordered them?</p> <p>Use these bundles of ten straws and single straws. Pick up 12 straws. How do you know you have 12?</p> <p>Look at these number cards:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">12</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">21</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">13</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">31</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">14</div> <div style="border: 1px solid black; border-radius: 10px; padding: 5px 15px; margin: 2px;">41</div> </div> <p>Pick up 21. How do you know it is 21? How do you tell the difference between 12 and 21?</p>
<ul style="list-style-type: none"> Say the number that is 1 more or less than any given number, and 10 more or less for multiples of 10 <i>I can say the number that is ten more or ten less than 10, 20, 30, ...</i> 	<p>Use these numbers: 10 20 30</p> <p>Choose two of the numbers to make this sentence true: <input type="checkbox"/> is 10 more than <input type="checkbox"/></p> <p>How many different sentences can you make? How do you know your sentences are true? Can you use other numbers to make the sentence true?</p> <p>Use one hand to pick up some 10-pence coins from this pile. How much did you pick up altogether? Put 10 pence back. How much do you have now? How did you work that out?</p>
<ul style="list-style-type: none"> Relate addition to counting on; recognise that addition can be done in any order; use practical and informal written methods to support the addition of a one-digit number or a multiple of 10 to a one-digit or two-digit number <i>I can add 10, 20, 30, ... to any number up to 50</i> 	<p>Look at these sums: $5 + 6 + 2 = 13$ $5 + 2 + 6 = \square$</p> <p>Will the answer to the second sum be smaller, the same as or bigger than the answer to the first? How do you know? How could you show someone who does not know?</p> <p>If I start at 37 and count 10 more squares along the number track, where will I stop? Can you use the number track to work out 37 add 20? Make up a problem about adding 10 or 20 to ask me. How will you know if I get the right answer?</p>

Objectives <i>Children's learning outcomes in italic</i>	Assessment for learning
<ul style="list-style-type: none"> Understand subtraction as 'take away' and find a 'difference' by counting up; use practical and informal written methods to support the subtraction of a one-digit number from a one-digit or two-digit number and a multiple of 10 from a two-digit number <i>I can add or subtract 20 to a number and tell you the answer</i> 	<p>What is 37 take away 10? How did you work that out? How could you show that using cubes/a number line/a 100-square? What would 37 take away 20 be?</p> <p>Make up some difference questions with the answer 5. Can you show how to solve them using counters? Can you show how to find the answer on a number line?</p>
<ul style="list-style-type: none"> Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences <i>I can ask addition and subtraction questions in different ways</i> <i>I can use the signs +, - and = when I write addition and subtraction sentences</i> 	<p>Make up some additions with the answer 15. Try to put them in different ways, like this: $10 + 5 = 15$ The total of 10 and 5 is 15. 10 and 5 more makes 15. How many ways can you show me that 9 subtract 3 is 6?</p> <p>Make up some subtractions with the answer 5. Try to put them in different ways, like this: $11 - 6 = 5$ The difference between 6 and 11 is 5.</p>
<ul style="list-style-type: none"> Describe incidents or tell stories from their own experience, in an audible voice <i>I can tell a number story to my group to show when to add or take away</i> 	<p>What number story could you think of for these?</p> $5 + 4 = 9 \qquad 12 - 3 = 9$ $\square + 3 = 5 \qquad 8 - \square = 6$

Learning overview

Children continue to consolidate and extend their counting and calculating skills. They learn to **count on and back in ones from any two-digit number** and to **count in tens** from and back to zero. They state the number that is one more or one less than a given two-digit number, and the number that is ten more or ten less than a multiple of 10. They use their knowledge to respond to questions such as:

Rajid is 17 years old. How old will he be next year? How old will he be in 10 years' time?

I have 80p in my purse. Dad gives me another 10p. How much do I have now?

Children **read and write two-digit numbers** and partition two-digit numbers into a multiple of ten and ones, for example $56 = 50 + 6$. They investigate the number of numbers containing the digit 2 they can find in a 100-square, and explain their findings. They use their understanding of place value to **order a set of numbers**, explaining how they made their decisions by referring to a number line or 100-square.

Children extend their understanding of **addition and subtraction**. They add and subtract 10 to any two-digit number, initially using equipment such as bundles of ten and single art-straws or 10p and 1p coins. They record additions such as $32 + 10 = 42$. They recognise patterns as they repeatedly add 10, identifying the digits that change and those that remain the same. They continue to use a 100-square to rehearse counting on and back in tens from any starting number. They solve addition calculations by counting on, recording their calculations using number sentences. They add one multiple of ten to another. They investigate adding, say, $8 + 6 + 4$ then $6 + 8 + 4$, and recognise that changing the order of numbers in an addition does not change the answer. They use mathematical vocabulary to explain how they found their answer.

Children solve subtraction calculations by taking away or counting back and record their answers in number sentences. They understand that the order of numbers in a subtraction sentence matters.

They use practical and informal methods to support the subtraction of one-digit numbers and subtract multiples of ten using their knowledge of counting in tens.

They begin to relate addition and subtraction, noticing the effect of adding a number and then subtracting the same number:

Begin with 12 and add 5. Record the addition sentence $12 + 5 = 17$. Now take away 5. What is left? How do you know? Record the subtraction sentence $17 - 5 = 12$. What do you notice about the two calculations?

Children answer questions such as:

There are 10 pegs on the coat hanger. I have covered some up. How many can you see? How many have I hidden?

They solve a range of puzzles and problems involving addition and subtraction, such as:

Find different ways of putting 11 counters in three pots.

What number is two less than 57?

They explain how they worked out their solutions, using the language of addition and subtraction.