The National Strategies Primary

Securing level 1 in mathematics





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Securing level 1 in mathematics

These materials are intended to support you in ensuring that as many children as possible make the progress necessary to reach level 1 well before the end of Key Stage 1. The guidance identifies key areas of learning that children need to secure to attain level 1 in mathematics. While you will integrate the ideas from these materials into your ongoing planning, you could also use them to plan targeted support for particular groups of children. There is a double-page spread for each of the six areas of mathematics:

- Reading, writing and ordering numbers
- Counting and comparing numbers of objects and events
- Understanding addition and subtraction
- Using known number facts, properties and relationships
- Describing shape, position and movement
- Measuring and ordering objects, using comparison

Remember

Every day is a mental mathematics day – ensure that all children engage in mental work each day to secure and develop knowledge, skills and understanding in mathematics, such as counting what they can hear or to carry out a calculation, describing an object they can imagine or idea they can hold in their heads. *Children won't develop confidence in working mentally if practice and repetition have not taken place*.

Hands-on learning is essential – children need to use and manipulate both everyday and mathematical practical resources, to help them to explore how and why things work and to learn to visualise, describe and represent what is in front of them, such as fitting shapes together to identify their features and properties. *Using apparatus is better than imagining how it works*.

Seeing mathematics through models and images supports learning – help children to see how mathematics works and can be represented with physical objects, structured apparatus, such as bead frames and a range of number lines, pictures or diagrams. *Children learn to visualise and 'see' how something works if they have models and images to draw from*.

Talking mathematics clarifies and refines thinking – model the vocabulary and language of mathematics; provide activities and time for them to use this language to discuss mathematics. Encourage children to be precise in the use of language, for example, using: greater than, in front of, the same as, and teach them how to express their reasoning, using language such as: if...then..., because, cannot be, none, some, all. *Children should be given the opportunity to explain or provide reasons and develop and refine the language they need to do this.*

Make mathematics interesting – encourage an interest in mathematics and give children practical opportunities that engage them in exploring mathematics; for example, ask them to find out: how many cups of water they drink in a week and how many juice bottles this will fill; how many types of shape they can find around the school; which numbers up to 100 include the digit 6 and to see if this is the same for the other digits. *Children will be interested in mathematics if their imagination is kindled and they can explore the use of practical apparatus and contexts.*

Learning from mistakes should build up children's confidence – look out for common or frequently made mistakes and talk to the children about what they might do differently. Encourage children to work with a partner and talk about the methods they used. *Correct responses and mistakes should inform assessment for learning, help children to see what went right and identify when something went wrong.*

Reading, writing and ordering numbers

Level 1 standards to be achieved:

Recite the number names to 20, in order, forwards and backwards

Read and write the numbers 0 to 20

Use the numbers to 20 to represent the number of objects in a group

Given two numbers in the range 0 to 20, identify the bigger or smaller number

Order a small group of numbers in the range 0 to 20

Use numbers to label items and find items by reference to these numbers

Order events and items, using the vocabulary first, second, third...

Say the number that is one more or one less than a number in the range 0 to 20

For children to attain level 1, they need to:

- recognise the number names to 20, say them clearly and record and read them
- continue a count, forwards or backwards, from any point in the sequence 0 to 20
- know that numbers greater than 9 are formed by combining more than one digit and that the 'teens' numbers start with the digit 1
- see and use the patterns in numbers to 20
- understand that, as you count on, the quantity represented by the number becomes larger, and becomes smaller when counting back
- position numbers onto partially completed number tracks and lines and use this to identify the number before or after a given number and to order numbers
- use the language of ordinal numbers in a range of contexts

Make sure that:

children see numerals displayed, particularly where used for a purpose, for example, to show how many children can work on the computers at any one time

children are given frequent opportunities to count backwards and forwards in different contexts, including number rhymes and stories, and when sorting and ordering objects

children play games that involve counting on and back from different starting points

you use models and images to support counting, for example, pointing to each number on a number track as it is said, or using a number line to order, add or subtract numbers

children read numbers aloud, including those that they or a peer have recorded

children develop the skill of visualising a number track in their heads, share with others what they see and record this to show and explain what it looked like

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Teaching and learning resources



Assessment checklist

'l can' statements	Assessment examples
l can count forwards and backwards to and from 20	Count up from one as far as you can, saying each number clearly. Carry this on backwards, count until you get to zero: 17, 16, 15 Numbers in this count are mixed up. Can you put them in order? 18, 16, 17, 15, 13, 14, 12, 10, 11
l can read and write numbers to 20	Look at the grid. Point to 16, 20 and 12.131416Which number is in the middle of the grid?121719Write the number 15 into the empty box.2018
l can use numbers to label and find objects	Find the 10p coin in this purse. What coins could I use to pay 15p?
l can put numbers in order	Look at these number cards. Which card shows the smallest number? Put the numbers in order, from smallest to largest.
l can say the number that is one more or one less than a number to 20	What numbers are missing from this number track? Explain how you know. What number is one more than 11, one less than nine?
l can use the words first, second and third	Here is a row of four coloured counters. Which coloured counter is the first, third, etc.

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Counting and comparing numbers of objects and events

Level 1 standards to be achieved:

Count reliably a small group of objects, saying one number name for each object, and recognising that the last number name represents how many objects are in the group

Recognise that the number of objects in a group stays the same when the objects are rearranged, but changes if objects are removed from or added to the group

Count in twos and use this to count up to 20 objects organised into pairs

Compare two or more groups of objects by matching objects, to identify which group has the smallest or greatest number of objects

Count objects in each of two groups and compare the totals to identify the smaller or larger group

Count events, actions and objects that can be heard or seen, but cannot be touched

For children to attain level 1, they need to:

- use strategies, such as placing objects in a line, to help them count accurately and to compare the numbers of objects in small groups of objects
- represent groups of objects, particularly those that can be seen and heard, but not touched, using
 equipment, fingers, drawing, marks and numerals, etc. and explain why they chose to represent the
 group this way
- demonstrate understanding of one-to-one correspondence, to make an accurate comparison when matching objects in two sets
- use counting to compare the number of items in two small sets, identifying the two totals and saying which is the larger and which the smaller of the two totals
- use strategies that involve the keeping of a tally that they can refer to and count

Make sure that:

you model strategies for successful counting of objects, actions and sounds that children can rehearse and apply to solve problems involving finding totals and comparisons

children count groups of objects, rearrange them and then recount to confirm that number is conserved when objects in a group are rearranged

children engage physically in counting tasks, for example, striding around the edge of the outdoor area while calling out one number word for each stride

children place small numbers of objects in unfamiliar arrangements and compare these with familiar patterns, such as spots on dice and dominoes

children count in twos when finding how many items there are in paired items, for example, in pairs of shoes or gloves, hands or eyes

you model the language of comparison and encourage children to use it, ensuring that they can identify which group contains fewer objects as well as which contains more



'l can' statements	Assessment examples
l can count how many objects are in a group	Count these shells carefully. How could you make sure that you have counted them correctly?
I know that the number of objects in a group does not change if they are moved around but does change if any are added or taken away	Pick up a handful of large buttons and put them down on the table. Count them to see how many you picked up. Put all your buttons into a pot. How many buttons are in the pot? Put another button in the pot. How many buttons are in the pot?
l can count in twos up to 20 and use this to count objects in pairs	Continue this count. Stop when you get to 20: 2, 4, 6 Count in twos to find how many socks are on the washing line.
I can match objects to find which group contains more or fewer objects	Look at the toys. Are there more cars or trains? How can you find out? Count the wheels on these trains. Write the numbers down. Are there the same number of wheels?
I can find which group of objects contains most or least by counting	Which ladybird has fewer spots? How do you know? Do the ladybirds have the same number of legs?
l can count sounds, actions and objects that I cannot touch	I am going to drop some coins into a tin one at a time. Count how many coins I drop in. Look around the room. How many lights can you see?

Understanding addition and subtraction

Level 1 standards to be achieved:

Recognise and use the mathematical language associated with addition and subtraction

Work out addition calculations involving numbers to 10 by combining sets of objects

Work out addition calculations involving numbers to 10 by counting on

Work out subtraction calculations involving numbers to 10 by taking away objects from a set and counting how many remain

Work out subtraction calculations involving numbers to 10 by counting back

Recognise that when you add numbers the order does not matter, while for subtraction order is important

Record calculations, using number sentences that include the appropriate symbols

For children to attain level 1, they need to:

- become familiar with, understand and use vocabulary such as: *add*, *plus*, *sum*, *total*, *take away*, *increase*, *decrease*, *on*, *back*, *subtract*, *equals*, *less than*, *more than*
- associate addition with counting on and combining groups of objects into one group
- associate subtraction with taking away objects, counting those remaining and counting back
- use a range of practical equipment, fingers, cards, grids, number tracks and number lines to support addition and subtraction
- recognise and use appropriate notation in addition and subtraction number sentences, accurately
 interpreting the symbols +, and =
- begin to draw on known addition and subtraction facts to work out a calculation

Make sure that:

children have access to a wide range of practical resources, models and images that support addition and subtraction which they can decide when and how to use

you model and display the correct use of addition and subtraction language, in context, and support children's use of the language to explain their thinking and methods

children are able to use models such as number tracks and number lines to support calculation

children are given calculations that demonstrate when the order of numbers matters

children know that, when counting on or back with a number line, the first move is the first count

children are given opportunities to make decisions about the 'best' way to add or subtract and to explain their strategies and why they chose them

children record whole number sentences, rather than just filling in answers



- Intervention materials
- Wave 3 materials
- +/- Year R booklets 3, 4
- +/- Year 2 booklet 3

'l can' statements	Assessment examples
l can understand and use words that link to adding and subtracting	There are eight pennies in this bag. I spend 5p. How much money will be left? I want to save 10p. How much more money do I need?
l can answer addition calculations by putting groups of objects together or by counting on	In a bowl of fruit there are four pears and five apples. Work out how many pieces of fruit there are altogether. Josh collects toy bears. He has six and then is given three more for his birthday. How many bears does he have now?
l can answer subtraction calculations by taking away objects or by counting back	Use counters or a number track to help you with these questions: Bilal has seven computer games. Anya has two fewer than Bilal. How many computer games does Anya have? There are 11 birds on a roof, six fly away. How many are left?
I know that I can add numbers in any order but that I have to use a particular order for subtraction	Nisha is two years younger than Hitan. Nisha is nine. How old is Hitan? To answer this problem, Kieran says he has to work out two take away nine. Is he correct? Explain why you think that. Add together these numbers: one, eight and two. Which numbers did you add together first? Why?
l can write number sentences using symbols	Write a number sentence for each of these problems. Billy buys a box of 12 eggs. He cooks four of them. How many are still in the box? Sam has five raisins in one hand and six in the other. How many raisins does he have altogether?

Using known number facts, properties and relationships

Level 1 standards to be achieved:

Solve simple problems involving counting

Derive number pairs that total 10, and addition and subtraction facts to at least 5, and draw on these to solve simple problems

Interpret and use the language of number to identify the strategy needed to solve a problem

Solve problems that involve ordering and comparing numbers of objects and events

Represent a problem and find its solution, using practical equipment or drawings

Identify and record number sentences to represent simple problems

Solve problems that involve simple addition or subtraction calculations

For children to attain level 1, they need to:

- derive addition and subtraction facts in context and begin to learn by heart key facts, such as pairs that total 10, by recognising the pattern in the pairs 1, 9; 2, 8; 3, 7...
- become familiar with language such as: altogether, more than, fewer than, less, add, in total, sum of, take away, subtract, left, how many?
- talk about how they have solved a problem
- decide how to represent a problem in their own way
- use the symbols +, and = to write simple number sentences to represent problems
- appreciate that addition can be used to solve problems involving combining groups or counting on
- appreciate that subtraction can be used to solve problems involving removing objects from a group or counting back

Make sure that:

you use practical resources to show children how addition and subtraction facts are linked, for example, by adding five objects to a group, then taking away five objects

you create visual displays to reinforce knowledge of number facts, for example, displaying children's pictures of number pairs that total 10, with appropriate number sentences

you model how to solve problems by 'thinking aloud', describing the clues that helped you to identify an appropriate strategy to solve the problem and what you might record

you model how to represent practical situations, using apparatus, pictures and number sentences, and encourage children to choose how to represent problems

you regularly ask children to describe and compare methods and support them towards developing clear explanations



'l can' statements	Assessment examples
l can quickly find pairs of numbers that add up to 10	Show me a pair of number cards that sum to 10. Can you find all the pairs? Which number is left? What would you need to make another pair? 1 2 3 4 5 6 7 8 9
I can answer addition and subtraction calculations, using facts that I know	Point to the answer to each problem on this number track. Add together three and two. Find six take away four, five subtract three. Sum six and two. What number is three more than one, four less than nine? 1 2 3 4 5 6 7 8 9
I can use the words in a problem to help me decide how to solve it, and number sentences to answer a problem	Find the answer to this problem. At my birthday party there were three girls and five boys. How many children in total came to my birthday party? Which words helped you decide how to work out the answer? Write a number sentence that matches it.
l can use objects, pictures and number sentences to answer a problem	Use these objects. Show me how to work out this problem. There are five caterpillars on a leaf and then a bird eats two of them. How many caterpillars are left on the leaf? Draw a picture to show how you solved the problem. Write a number sentence that matches it.
I can solve problems by ordering numbers or calculating	Amy is seven. She has a sister, Megan, who is ten, and a brother, Sam, who is five. Who is the youngest child in the family? How much older is Megan than Amy? How old will each child be in two years' time?
l can solve problems using addition or subtraction	A domino has four dots on one side and three dots on the other. How many dots does it have altogether? Here is a tower made using two building blocks. How many more blocks do you need to make it six blocks tall?

Describing shape, position and movement

Level 1 standards to be achieved:

Sort 2-D and 3-D shapes, using criteria, and explain choices and decisions

Recognise and name common 2-D and 3-D shapes and describe their properties, using everyday language

Follow instructions that use everyday positional language

Describe the relative positions of objects, using everyday language

Follow and give instructions that use everyday language to describe movements and simple routes

For children to attain level 1, they need to:

- use understanding of shape properties to sort shapes, explaining the criterion used
- name and describe features of 2-D shapes, including square, rectangle, triangle, circle
- name and describe features of 3-D shapes, including cube, sphere, cylinder, pyramid and cone
- use everyday shape language to describe simple patterns in the environment
- understand, follow and use positional vocabulary such as: position, grid, outside, inside, beside, next to, front, back, between, centre, underneath, above, on top of, below, halfway, near, far
- understand, follow and use directional language such as: direction, forwards, backwards, sideways, whole turn, half turn, quarter turn, right, left

Make sure that:

children have ready access to a wide range of practical equipment, big and small, that they can use to explore shape, position and movement

children have frequent hands-on opportunities to manipulate and build shapes and to talk about their names and properties with peers and adults

you give children experience of regular and irregular shapes, of different size and in different orientations, so they can see what is the same and what is different

children apply their knowledge and understanding of 3-D shapes to real-life objects

children experience 2-D shapes through exploring the faces of 3-D shapes

you model and display the correct use of shape, positional and directional language, in context, and all adults support children in using it consistently and appropriately

you use prompts and probing questions to develop children's reasoning skills about shape, position and movement

you use everyday routines and incidental occasions to reinforce the vocabulary of position and movement

you plan opportunities where the language of position and movement will naturally support the activity, for example, through construction activities

Objects that are common
3-D shapesBuilding blocks and
construction kitsProgrammable toys and floor robotsImage: Comparison of the common o

Teaching and learning resources

'l can' statements	Assessment examples
l can sort shapes and explain how I sorted them	Look at these solid shapes. Put all of the shapes that have triangular faces into a hoop. What shapes are left? Why? Sort the shapes in your own way and then tell me how you chose to sort them.
l can name and describe common shapes	Find a rectangle and a triangle in this set of shapes. Tell me one thing that is the same about them. Tell me one thing that is different. Look at these two identical shapes. What shape are they? Show me how can you put them together to make a square.
l can follow instructions to position myself or objects	Go and stand: under a light; in front of a window; beside the door. Place these shapes on the table so that: the square is above the triangle the circle is to the right of the square the rectangle is between the square and the oval.
l can describe the position of objects	I am going to place toys in different positions around the room. Go and find one toy at a time. Bring each one back and describe to me exactly where you found it. Tell me how I should arrange this plate, knife, fork, spoon and cup to lay the table properly.
<i>I can follow and give instructions to move along a route</i>	Follow my instructions as you move around the outdoor area: Walk along the log, then make a half-turn and walk back. Turn to your right and walk beside the climbing frame. Turn to your left and walk forwards until you reach the tyre. Give me directions that take me from here to the hopscotch grid.

Measuring and ordering objects, using comparison

Level 1 standards to be achieved:

Make direct comparisons of the length or height of two objects and sort more than two objects in order of size

Use correct language to describe the relative lengths or heights of objects

Compare the weight of two objects and decide which is heavier or lighter

Use correct language to describe the relative weights of two or more objects

Make direct comparisons of the capacity of two or more containers

Use correct language to describe the relative capacities of two or more containers

Use informal measures and standard uniform equipment to measure the length, weight or capacity of objects and use the results to make comparisons

For children to attain level 1, they need to:

- understand that objects must be carefully lined up along a common base line in order to compare their length or height directly
- understand and use language such as: *longer than, shorter than, taller than, smaller than, longest, shortest, tallest, smallest*
- demonstrate how to compare the weights of two objects, by placing one on each tray of a balance scale and interpreting that the object that sits lower is the heavier
- understand and experience how heavier objects push down harder on our hands
- understand and use vocabulary such as: heavier than, lighter than, weigh, holds more, holds less, fills more than one, full
- appreciate how pouring liquid, sand or small objects from one container into another can help identify which holds more or which holds less

Make sure that:

children's learning environment includes a range of practical equipment that they can use to explore properties through measurement, including length, weight and capacity

children have opportunities to describe and compare the methods they have used to measure objects and to talk with adults and their peers about what they have found out

you model and display the language of measurement, in context, and all adults support children in using it consistently and appropriately

you ask children to identify which object is *shorter, lighter* or *holds less* as often as you ask them to identify which object is *longer, heavier* or *holds more*

children have opportunities to use and apply their measuring skills to solve problems, including those presented within other curriculum areas

you model how the use of standard uniform equipment supports consistency in measures

Uniform objects Blocks and cubes





Scales and measuring tools



'l can' statements	Assessment examples
I can compare how long or tall objects are and describe what I have found out	Find objects that are longer than a pencil and objects that are shorter than one. Tell me how you decided whether each object was shorter or longer than the pencil. Ask three friends to stand in front of you. Tell me who is the tallest and who is the shortest and show me how you know.
<i>I can compare how heavy two objects are and describe what I have found out</i>	Which do you think will be lighter, this book or this apple? Find a way to compare the weights of the two objects. Show me what you did and explain what you found out.
I can compare how much two containers hold and describe what I have found out	Fill a jug with water. Use it to find out which holds more liquid, the jug or a small bucket. Explain what you have found out. How many spoonfuls of water do you think it will take to fill a cup? What about a different one? Test out your ideas. Tell me what you have found out and which cup holds less water.
I can use objects and equipment to make measurements and compare objects	Use your pencil to work out which is longer, the table or the board. Use these balance scales to work out how many cubes weigh the same as your shoe. Now weigh one of your plimsolls. Tell me which is heavier and which is lighter. How do you know? I drink three cups of tea each day. In a week, would my tea fill a bucket? If I used a mug for my tea would that fill it?

Where can I find the resources?

ICT resources

ITPs (interactive teaching programs)

These programs can be downloaded from www.standards.dcsf.gov.uk/nationalstrategies/primary Navigate to the Mathematics Framework area and then to the Mathematics resource library. Refine the results by filtering down to the interactive teaching programs.

Number scales ITP



Intervention materials

Supporting children with gaps in their mathematical understanding – Wave 3

The Wave 3 mathematics pack aims to help teachers identify and address gaps in learning for children who are working significantly below age-appropriate levels. It can be downloaded from www.standards.dcsf.gov.uk/nationalstrategies/primary. Navigate to the Mathematics Framework area and then to the Mathematics resource library. Refine the results by filtering down to Mathematics Wave 3.

Overcoming barriers in mathematics – helping children move from level 1 to level 2

This is a booklet with a set of materials, based on a CD-ROM, designed to help teachers move children from level 1 into level 2.

Further information about these materials can be found at www.standards.dcsf.gov.uk/nationalstrategies. Search using reference 00021-2009.

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