

The National Numeracy Strategy

SENCO Training Pack

Guidance

Curriculum & Standards

**Special educational
needs coordinators**

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SENCO training pack

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Supporting children with special educational needs in the daily mathematics lesson

All teachers will have in their class some children who are not making adequate progress. Their lack of progress may be because of a range of needs, such as in thinking and understanding, physical or sensory difficulties, emotional and behavioural difficulties, or difficulties with speech and language or how they relate to and behave with other people. Or they may stem from a legacy of poor learning that inhibits their current learning. A small number of children identified by primary schools as having special educational needs may have problems with mathematics, often but not always in association with literacy problems caused by difficulties of varying degrees of complexity.

This training pack is designed to support LEAs, and more specifically, SENCOs, in providing support to children with special educational needs to ensure that they are included in the daily mathematics lesson. Schools have a responsibility to provide effective learning opportunities to all children. The statutory inclusion statement in the National Curriculum sets out three principles that are essential to developing a more inclusive curriculum:

- setting suitable learning challenges;
- responding to children's diverse learning needs;
- overcoming potential barriers to learning and assessment for individuals and groups of children.

Within the context of an inclusive curriculum, early years settings, schools and teachers will have in place a wide range of strategies to respond to the diverse learning needs of their children. The SEN Toolkit which provides additional non-statutory advice to complement the statutory guidance in the SEN Code of Practice, sets out in general terms the **additional** or **different** forms of action that could be taken to enrich and extend these strategies.

This action falls within four broad strands:

- assessment, planning and review;
- grouping for teaching purposes;
- additional human resources;
- curriculum and teaching methods.

For most children, these actions will be taken in the context of the daily mathematics lesson and will be managed by the class teacher. Where the interventions involve spending some time outside the classroom, it will nonetheless be in the context of the inclusive curriculum.

The role of the SENCO

The National Numeracy Strategy clearly indicates that the role of the school SENCO in mathematics is essential if standards are to be raised. SENCOs have been encouraged to attend LEA training in mathematics and the materials in this pack allow SENCOs to reflect on their experiences of supporting children in schools and units. The SENCO role will differ from school to school but in general should include:

- supporting and working cooperatively with the mathematics coordinator to implement and develop the Strategy;
- leading INSET for staff on special needs issues, based upon support materials provided;
- advising staff how best to support children with varying needs during mathematics lessons so that they meet the expectations of the yearly teaching programmes;
- advising staff on the inclusion of mathematical objectives in individual education plans (IEPs) and group education plans (GEPs) for children with special difficulties in mathematics.

In addition, many SENCOs may be members of the senior management teams in primary schools and may also take responsibility for:

- helping to ensure that children who are capable of catching up with their peer group do so as quickly as possible;
- advising the headteacher and staff on the effective use of teaching assistants, and helping support staff to become familiar with the *Framework for teaching mathematics from Reception to Year 6*.



Outline of the SENCO pack

This pack consists of four sessions. The sessions cover the four broad strands of action outlined in the SEN Toolkit that accompanies the new Code of Practice for Special Educational Needs.

The SENCO will play a key role in considering the appropriate action to take for children in their school with special educational needs. This will involve looking at children's progress: their attainments and difficulties as well as their successes and strengths. It will also involve assessing the strategies that are currently being used to meet the children's learning needs and how these might be made more effective, including the use of other adults.

LEAs will be aware of the level of support SENCOs have received in the past. They will also have established routines for networking arrangements across schools. LEAs are encouraged to use the materials in the SENCO Pack to support this training and to promote the level of support required for mathematics.

The sessions can be used on their own in twilight sessions, perhaps, or grouped together for half- or whole-day training events.

Session 1

Introduction

- The introductory activity provides trainers with an opportunity to prioritise the amount of time spent on each of the sessions and to help focus support on areas of most concern.
- A Summary of Provision is included which enables the school SENCO to focus on the provision for support in mathematics in their school. It may be useful to encourage SENCOs to complete this form **before** they attend any training sessions.

Session 2

Assessment, planning and review

- This session shows how the model of planning and review that exists in the National Numeracy Strategy can inform teachers about where support may be necessary to meet the needs of those children who are out of step with the rest of the class.

Session 3

Classroom organisation and the use of additional human resources

- This session explores the different ways of grouping children to enable them to develop appropriate skills in mathematics. It also examines the deployment of support staff to ensure that children have access to direct quality teaching whilst receiving any additional specialist help available.

Session 4

Curriculum and teaching methods

- This session examines how targets and strategies in IEPs and Group Education Plans (GEPs) can be incorporated in the daily mathematics lesson. A number of sample lessons are used to explore issues around manageable differentiation and to identify structures to support children with a range of special educational needs.

Introduction

Objectives

- To examine how the daily mathematics lesson has benefited children with special educational needs
- To consider the challenges presented to children with special educational needs
- To discuss the Summary of Provision for support in mathematics

Resources

- OHT 1.1
- Summary of Provision booklet



Outline of the session

Introduction to the training	Talk	5 minutes
Activity to consider the benefits of the daily mathematics lesson	Talk Small groups Whole-group discussion	25 minutes
Summary of Provision	Talk Small groups	30 minutes

Please note: It will be useful for SENCOs to have looked at the Summary of Provision **before** attending the course.

Introduction to the training

5 minutes

Give SENCOs an overview of the SENCO pack.

Outline some of the areas a SENCO may be involved in from pages 2 and 3 of the pack.

Explain that the national drive for early, high quality intervention in both Literacy and Numeracy is intended to reduce the number of children who need long-term provision for SEN. Teachers have generally aimed to keep children with SEN up to the general pace of teaching in the class, rather than to offer a high degree of differentiated work. They have done this with children with a range of special educational needs and as a result, many of the children whose development had been delayed have begun to catch up.

Remind SENCOs that the training to support the National Numeracy Strategy has highlighted the teaching strategies and resources that teachers can use to help children with special educational needs, including ways of identifying and correcting children's misconceptions.

Explain that there are, however, a small proportion of children in mainstream schools who have severe difficulties that seriously hamper their progress in mathematics. The most common of these difficulties is problems with memorising and recalling facts. Other difficulties can include an inability to understand and apply methods of calculating, and visual/spatial difficulties in representing and interpreting arithmetical information. Children who have these kind of difficulties are likely to be identified as having special educational needs.

Emphasise that it is very important that levels of difficulty in learning numeracy as well as literacy are addressed in these children's statements, and that relevant targets are devised so that teachers can plan activities that suit the children's needs.



Activity to consider the benefits of the daily mathematics lesson

25 minutes

Ask SENCOs to work in pairs and note down any ways in which the daily mathematics lesson has benefited children. Allow 10 minutes for this discussion.

Manage the feedback by organising points under headings, e.g. planning, use of resources. Ensure that the following points are drawn out in discussion:

- structure and predictability of the mathematics lesson;
- focused, objective led teaching;
- opportunities for regular practice and reinforcement;
- high levels of interaction between child and teacher and child and child;
- high levels of teacher subject knowledge;
- high expectations on the part of the teacher.

Use OHT 1.1 to support the next part of the discussion.

OHT 1.1

- What challenges have you faced in delivering the daily mathematics lesson to children with a wide range of needs?

Ask the SENCOs to discuss this question in small groups. Encourage them to agree on the main challenge and then to note additional challenges.

Take feedback, making a note of the main challenges on the flip chart in order that they can be referred to throughout the training.

Use the following headings to summarise the discussion:

- Management of the range of ability and specific needs of the children in the three-part lesson
- Managing children's behaviour
- Efficient use of additional adult support

Remind the SENCOs that whilst addressing these issues it is essential to continue to provide an effective level of challenge in mathematics activities for all children.

Summary of Provision

30 minutes

Take SENCOs through the sub-headings in the **Summary of Provision**.

Many will be familiar with the layout as they have already completed a similar form for Literacy.

Ask for comments from any SENCOs who have already completed the Summary. Ask them to complete the form. They will need to consider the examples of provision under each of Wave One, Wave Two and Wave Three, and consider how provision in their schools needs further development.

Share examples with the whole group as the forms are being completed.



Feedback from the session will allow you to prioritise the amount of time spent on each of the following sessions and to help focus support on areas of most concern.



OHT 1.1

-
- What challenges have you faced in delivering the daily mathematics lesson to children with a wide range of needs?

Assessment, planning and review

Objectives

- To explore opportunities for gathering child information
- To consider adaptations to half-termly planning proformas
- To consider support available for 'tracking back'
- To identify some connections across teaching programmes and to consider the implications for teaching

Resources

- OHT 2.1
- Handouts 2.1 – 2.4
- Medium-term planning booklet (amended)
- Yearly teaching programme poster*
- P level descriptions poster*
- Supplement of examples for P levels*

*to be found at the back of this ring binder

Outline of the session

Introduction Exploring the ways that SENCOs can support class teachers in gathering information about children with special educational needs	Talk Small groups Whole-group discussion	15 minutes
Keeping the class together: issues for medium-term planning Examining the use of the half-termly planner to support the location of relevant objectives for children with special educational needs	Talk Small-group discussion	20 minutes
P level descriptions An opportunity to see how the poster and supplement of examples for P levels 1 to 8 can be used to support planning	Talk Small-group discussion	10 minutes
Tracking back, making connections and identifying the teaching Tracking back activity to be used by SENCOs to support teachers' understanding of planning to meet the needs of all children	Talk Small groups Whole-group discussion	25 minutes
Summary	Talk	5 minutes

Introduction

15 minutes

Section 6 of the SEN Toolkit suggests that good systems of assessment, monitoring and planning for all children can be supplemented by:

OHT 2.1

- Carrying out more detailed monitoring of children's classroom performance
- Using more powerful assessment instruments
- Calling on more specialist expertise in assessment and planning
- Involving children and parents more fully in assessment and planning
- Increasing the individualisation of planning
- Carrying out frequent and detailed reviews of progress

There are a number of ways that SENCOs can support class teachers in gathering information about children with special educational needs.

Give out **Handout 2.1, *Strategies for gathering information on children with special educational needs (1)***.

Ask SENCOs to make notes on each of the headings to outline the benefits, limitations and points to consider. Allow **10 minutes**.

Use **Handout 2.2, *Strategies for gathering information on children with special educational needs (2)***, to support the feedback.



Say that you are going to focus on the way planning can inform assessment.

In order to set targets for children with special educational needs and to adjust the planning and teaching to meet those needs, it is essential to identify where a child or small group of children is falling behind the rest of the class.

Yearly teaching plans

Highlighted yearly teaching plans that are passed from one teacher to the next at the end of the year will show areas of weakness. If there are a number of areas of weakness, the plan may suggest a series of targets that can be addressed over the forthcoming year.

Medium-term plans

Highlighted medium-term plans will show progress on targets that are ongoing and will inform adjustments to the next term's plans.

Key objectives record sheets

Many schools have adopted the NNS key objective record sheet to record individual child achievement against the key objectives.

The key objective record sheet may be used to inform mathematics targets at any point in the year.

The record sheets enable the teacher to see, almost at a glance, concise information about strengths and weaknesses, both for individuals and for groups of children.

At the end of the autumn or spring terms the sheets can be used to inform whichever of the key objectives that have already been taught but are still causing problems. These will then need to be picked up as targets for the following year.

Keeping the class together: issues for medium-term planning **20 minutes**

Teachers need to consider how they can plan links between what they are teaching to the majority of the children in the class and the earlier objectives that are appropriate for children working at much lower levels.

When the SENCO is providing guidance to class teachers on planning, it is important to remember:

- that all the class should work on the same mathematical topic;
- to include all children in the teaching plan to ensure that they all receive a broad and balanced mathematics curriculum.

The half-termly planner should identify the objectives a teacher intends to teach to the whole class. In some cases these may include IEP/GEP targets, but they should represent the full range of differentiated objectives to meet the needs of all the children in the class.

Planning for progression in mathematical skills and experiences also needs to be taken into account. If a child or group of Year 5 children remains with a mathematical diet that is intended for Year 2 they will not have access to the full mathematics programme for their chronological age.

Teachers need to be encouraged to use the correct chronological planning sheet as a starting point for planning with their full class and then use that range of experiences to track back to previous years to select appropriate objectives.

The teacher will then have:

- a clear picture of where the child or group of children should be with their mathematical work;
- a common topic to keep the whole class together;
- a starting point to track back to the appropriate skill level.

In order to support this planning process, **a booklet of amended half-termly planners** has been developed to provide more detailed information.

Use the booklet to show:

- by inserting the mathematical strand headings, teachers can ensure that the relevant breadth of experiences is covered;
- page references for supplements of examples from a lower key stage, including Reception and the P levels, support the correct identification of appropriate mathematical objectives.



Activity

Have a look at the adapted half-termly planning sheets, to see what support they offer to a teacher planning for a class of children with a wide range of mathematical ability.

Select a child from Year 5 or 6 and, using the references to the supplement of examples in the Framework, identify a selection of objectives that they may be working on for a particular unit of work.

Think of a child who is working well below that level and use the page references (in bold) to identify objectives from an earlier key stage.

Locate the year group that those earlier objectives come from and look at the half-termly planning sheet for that year.

Identify the key differences between the two programmes.

Use this activity to emphasise the need to use a common starting point for all children whilst also addressing their individual needs.

Remind SENCOs about the **yearly teaching programme** poster that supports opportunities for tracking back mathematical objectives into earlier levels. A copy of this poster is included at the back of the pack.

P level descriptions

10 minutes

It might be relevant for SENCOs to familiarise themselves with the organisation of the revised P scales for mathematics during the course of the previous exercise.

These P scales were published in the revised QCA document, *Supporting the Target Setting Process*.

They have been organised onto a poster format, which shows page references to the new supplement of examples for P levels. This supplement of examples illustrates the type of mathematical activities children may be able to engage in at each of levels P1 to 8.

Allow SENCOs a few minutes to familiarise themselves with this document and to ask questions.

Tracking back, making connections and identifying the teaching

25 minutes

The half-termly planning process is only the starting point for addressing the needs of children working at lower levels than their peers.

Through this planning process the teacher needs to be able to:

- make connections across the yearly teaching programmes;
- identify common difficulties that children have in certain areas of mathematics;
- select appropriate teaching strategies and activities.

Handout 2.3, *Tracking back from Key Objectives (multiplication)*, shows an example of that process in relation to long multiplication of a three-digit by a two-digit integer.

Consider how you might adapt it to meet the needs of the SENCOs.

You may like to consider the following alternatives:

- cut out each cell of information and ask SENCOs to organise the information under the headings on the proforma;
- complete the first two rows of the form for Years 5 and 6 and then encourage SENCOs to complete the rest of the form;
- leave out all of the teaching points and ask SENCOs to focus their attention on this part of the form;
- complete the exercise using another key objective (see **Handout 2.4, *Tracking back from Key Objectives (co-ordinates)***).

List any other suggestions.

Ask SENCOs how they may use it with staff in their schools.

Summary

5 minutes

- SENCOs need to support teachers in gathering information about the way children learn mathematics.
- Teachers need to consider how they can plan links between what they are teaching the majority of the class and the earlier objectives that are appropriate to children working at much lower levels.
- SENCOs need to make teachers aware of the materials that are available to help support teachers tracking back through the yearly teaching programmes.
- Teachers need to develop their skills in identifying teaching strategies to address the difficulties experienced by children in mathematics.

Handout 2.1

Strategies for gathering information on children with special educational needs (1)

	Benefits	Limitations	Points to consider
Lesson observation			
Sampling children's work, photos, videos			
Informal and incidental exchanges with staff			
Scrutinising planning			
Analysis of assessments			
Taking the views of children, e.g. interviews, focus groups			

Handout 2.2

Strategies for gathering information on children with special educational needs (2)

	Benefits	Limitations	Points to consider
Lesson observation	<ul style="list-style-type: none"> • First-hand evaluation • Teaching seen in context • Observee gets useful feedback • Observer also learns 	<ul style="list-style-type: none"> • Teacher anxiety • 'One-offs' can be misleading • Time cost 	<ul style="list-style-type: none"> • Effect of observer • Need agreed criteria • Have to screen out personal preferences
Sampling children's work, photos, videos	<ul style="list-style-type: none"> • Easy to moderate and share • Can reveal whether teaching leads to application • Can keep for comparative tracking over time • Can reveal patterns over time and classes 	<ul style="list-style-type: none"> • Work can vary from topic to topic even for one child • Not easy to capture oral or collaborative work • Assess product, not process • Can be time-consuming 	<ul style="list-style-type: none"> • Needs a focus • Must make use of it to inform planning – otherwise pointless
Informal and incidental exchanges with staff	<ul style="list-style-type: none"> • A degree of freshness and honesty • Genuine ground-floor issues get taken into account 	<ul style="list-style-type: none"> • Not systematic • Danger of building too much on unconsidered remarks 	<ul style="list-style-type: none"> • Do this as well as, not instead of
Scrutinising planning	<ul style="list-style-type: none"> • Can be formative, especially if staff get feedback and help • Revealing comparison between intentions and activities • Can monitor progression and continuity over time 	<ul style="list-style-type: none"> • Can see only the intended rather than the delivered curriculum • Quality of planning does not necessarily reflect quality of teaching • Time-consuming if done properly 	<ul style="list-style-type: none"> • Useful focus • Plan in feedback time
Analysis of assessments	<ul style="list-style-type: none"> • Quantifiable progress • Persuasive to outsiders • Identifies trends 	<ul style="list-style-type: none"> • Can be a pen-and-paper exercise unless you act on it • Takes away teaching time • Staff feel judged by numbers 	<ul style="list-style-type: none"> • Staff appreciate it if qualitative data and background information are taken into account as well as quantitative data
Taking the views of children, e.g. interviews, focus groups	<ul style="list-style-type: none"> • Children can often tell us what they need most 	<ul style="list-style-type: none"> • Children cannot always articulate their difficulties and sometimes cannot communicate • Children sometimes voice their parents' opinions rather than their own perceptions • Relies on quality of the interviewer 	<ul style="list-style-type: none"> • Plan key questions • Explain purpose of discussion to children

Tracking back from Key Objectives from the *Framework for teaching mathematics from Reception to Year 6 (NNFT)*

Key Objective: Carry out long multiplication of a three-digit by a two-digit integer

Yr	Objective	Preparatory activities	Misconception	Teaching
6	Extend written methods to: long multiplication of a three-digit by a two-digit integer.	Multiply a two-digit multiple of 10 by a three-digit multiple of 100, e.g. 30×400 (Y5 Sec 6 p. 65). Multiply a two-digit multiple of 10 or a three-digit multiple of 100 by a single-digit number, e.g. 400×9 (Y5 Sec 6 p. 65). Derive quickly multiplication facts for multiplication tables up to 10×10 (Y5 Sec 6 p. 59). Know by heart the squares of all numbers from 1×1 to 10×10 (Y5 Sec 6 p. 59).	Children are taught to multiply single digits and count the number of zeros. $20 \times 50 = 100$ is a common mistake as children don't know what to do with the 'extra' zero.	Use 20×5 as a key fact and then extend to 20×50 which is 10 times bigger. Say the number sentences one after the other: <i>Twenty times five is one hundred.</i> <i>Twenty times fifty is one thousand.</i> Write the connected number sentences one above the other, e.g. $20 \times 5 = 100$ $20 \times 50 = 1000$
5	Extend written methods to: long multiplication of a two-digit integer by a two-digit integer.	Multiply a two-digit multiple of 10 by a two-digit multiple of 10. Consolidate multiplying a two-digit multiple of 10 by 2, 3, 4, 5 or 10 and begin to multiply by 6, 7, 8, or 9 (Y4 Sec 6 p. 64). Derive quickly multiplication facts for 2, 3, 4, 5, 10 x tables (Y4 Sec 6 p. 58).	Children need to understand the connection between 6×3 and 60×3 , understanding that the answer is 10 x bigger because the number being multiplied is 10 x bigger.	Use a counting stick to count in multiples of a number and then the corresponding multiple of 10, e.g. 3, 6, 9, 12 ... 30, 60, 90, 120 Use multiplication grids with multiples of 10 on, e.g. instead of 3×4 , 30×4 , etc. Learning square numbers gives children a useful benchmark to derive other facts quickly, e.g. <i>If you know 5×5, you can work out 6×5. If you know 8×8 you can work out 9×8 ... etc.</i>
4	Develop and refine written methods for $TU \times U$.	Multiply a two-digit multiple of 10 up to 50 by 2, 3, 4, 5 or 10 (Y3 Sec 5 p. 57). Derive quickly multiplication facts for 2, 5 and 10 x tables and begin to derive quickly the 3 and 4 x table (Y3 Sec 5 p. 53). Double any multiple of 5 up to 100 (Y3 Sec 5 p. 57). Double multiples of 50 to 500 (Y2 Sec 5 p. 53).	As above up to 50, e.g. 2×3 , 20×3 .	Ask children to respond as a class to connected facts, e.g. teacher asks, <i>What are 2 threes? What are 2 thirties?</i> Use apparatus to shows 2 lots of 3 (using cubes) and 2 lots of 30 (using rods which each hold 10 cubes).

3	Multiply by 10 / 100, shift the digits one / two places to the left.	Derive quickly multiplication facts for 2, 5 and 10 times tables (Y3 Sec 5 p. 55). Double any multiple of 5 to 50 (Y2 Sec 5 p. 53). Double multiples of 50 to 500 (Y2 Sec 5 p. 53).	Children need to understand why a digit moves one place to the left, i.e. because the value of the digit is 10 x higher.	Use place value cards to partition a number, e.g. 45. Point to 40 on a place value chart, multiply it by 10 and show the number multiplied by 10 moving up the chart to 400. Repeat multiplying 5 by 10. Recombine the cards, saying <i>45 multiplied by 10 is 450</i> .
2	Know by heart (or derive quickly) multiplication facts for the 2 x and 10 x tables.	Count reliably objects by grouping them in 10s (Y2 Sec 5 p. 3). Count on and back in tens from and back to zero (Y1 Sec 5 p. 4). Derive quickly addition doubles for all numbers to at least 5 (Y1 Sec 5 p. 30).	Confusion occurs because spoken numbers, e.g. sixty, seventy, eighty, etc., follow a regular pattern which link to the single-digit numbers. Ten, twenty, thirty, do not relate directly to their corresponding single-digit number.	Continue the count even if pupils get the first few tens confused as the later numbers are easier. Encourage children to chant as a class / group, point to the numbers on the hundred square. Ask questions relating to multiplication facts, e.g. <i>What are 3 tens? Count up in tens on fingers, down the hundred square, using 10p coins, etc.</i>
1	Count on in twos or tens from zero.	Count in twos, join in rhymes like 'Two, four, six, eight, Mary at the cottage gate' (YR Sec 4 p. 7). Count in pairs, for example: pairs of socks, children. Begin to relate addition of doubles to counting on (YR Sec 4 p. 15).	Children may be unsure about assigning one number name to two objects when counting in twos. They can also be unsure about the sequence of numbers if they are used to counting in ones and then move on to saying every other number.	Provide children with an aural pattern, e.g. whisper <i>one</i> and say <i>two</i> out loud. Whisper <i>three</i> and say <i>four</i> out loud, etc. Put numbers on a washing line, take off every other number and count along the number line in twos. Colour hops of two on a number track - say aloud the numbers coloured as a sequence.
R	Say and use the number names in order in familiar contexts. Count reliably up to 10 everyday objects.	Join in with rote counting to beyond 10 (P8). Begin to count up to 10 objects (P8).	Children need to know the order of the number names and recognise which number comes after a given number. Children who find counting of real objects difficult often cannot relate the number said to the touch of the object.	Children need to be provided with opportunities to count real objects and be encouraged to move them when counting. They also need to have opportunities to count on from numbers other than 0 or 1.

Handout 2.4

Tracking back from Key Objectives

Key Objective: Read and plot co-ordinates in all four quadrants

Yr	Objective	Preparatory activities	Misconception	Teaching
6	Read and plot co-ordinates in all four quadrants.	Recognise negative whole numbers in context (e.g. on a number line) (Y4 Sec 6 p. 14).	Think that -6 is larger than -2 because 6 is larger than 2.	Give children experience of counting back into negative numbers so that they hear the pattern in the numbers. Count on and back into negative numbers on a counting stick - in a vertical and horizontal orientation.
5	Read and plot co-ordinates in the first quadrant.	Recognise and identify simple examples of horizontal and vertical lines (Y4 Sec 6 p. 108).	Confuse vertical with horizontal.	Provide opportunities for children to use the terms <i>vertical</i> and <i>horizontal</i> , e.g. <i>The counting stick is horizontal; The leg of the table is vertical.</i> Encourage children to remember that the horizon is horizontal.
4	Describe and find the position of a point on a grid of squares where the lines are numbered.	Begin to understand the convention that (3,2) describes a point found by starting from the origin (0,0) and moving three lines across and two lines up (Y4 Sec 6 p. 108). Read a scale to the nearest marked division (Y3 Sec 5 p. 77).	Go up the grid before going across - so that (2,5) would be plotted at (5,2). Think that the spaces are labelled rather than the lines.	Children need practice plotting and reading co-ordinates. They can use alphabetical order to help: <i>across first</i> because it starts with <i>a</i> . Teach children that they are labelling the lines, not the spaces, and that they should count the number of lines across from the origin and up from the origin.
3	Describe and find the position of a square on a grid of squares with the columns.	Order numbers to at least 20 and position them on a number track (Y1 Sec 5 p. 14). Respond to instructions using positional language (Y2 Sec 5 p. 87).		
2	Use mathematical vocabulary to describe position. Describe, place, tick, draw or visualise objects in given positions.		Not understanding that positional language describes the position of something relative to something else. Position may be described in different ways, e.g. <i>The cat sat next to the dog, on the cushion above the heater.</i>	Give children opportunities to describe and have described to them the position of the same object in different ways, e.g. <i>John is next to Sally, between Sally and Tom ... etc.</i>
1	Use everyday language to describe position.			
R	Use everyday words to describe position.			

Page references are taken from the Supplement of examples in the National Numeracy Strategy Framework for teaching mathematics from Reception to Year 6.



OHT 2.1

- Carrying out more detailed monitoring of children's classroom performance
- Using more powerful assessment instruments
- Calling on more specialist expertise in assessment and planning
- Involving children and parents more fully in assessment and planning
- Increasing the individualisation of planning
- Carrying out frequent and detailed reviews of progress

Classroom organisation and the use of human resources

Objectives

- To explore different organisational strategies in the classroom to support children with special educational needs
- To consider the role of the teaching assistant in the daily mathematics lesson
- To promote the use of questions to develop children's learning

Resources

- OHT 3.1 – 3.7
- Handouts 3.1 – 3.4
- Acetate copies of handouts
- OHP pens
- Probing questions from Using assess and review lessons

Outline of the session

Introduction Classroom organisation and setting	Talk	5 minutes
Grouping for teaching purposes Exploring the use of different grouping strategies to support children with special educational needs	Talk Small-group / whole -group discussion	15 minutes
Additional human resources Key characteristics of effective classroom support	Talk Small-group / whole -group discussion	10 minutes
Using additional adults effectively in the daily mathematics lesson Activity to identify the role of teaching assistants and to develop their questioning skills to support children with special educational needs	Talk Small-group / whole -group discussion	40 minutes
Summary	Talk	5 minutes

Introduction

5 minutes

Remind SENCOs that the daily mathematics lesson is recommended for all primary schools in which the whole class is taught together for a high proportion of the time. The teacher should be able to spend time interacting directly with the class about mathematics, and less time than many teachers do at present in troubleshooting with individuals. It is important to remember, however, that although the structure of the daily mathematics lesson envisages that all the children in the class will work on the same topic at the same time, there is a certain amount of differentiation in the group work and in targeted questions for individual children during whole-class work.

Explain that differentiation within the whole class, for part of the lesson, is an effective means of dealing with the range of attainment that will inevitably exist in any classroom. Some schools also deal with this by organising mathematics teaching into ability sets. When considering the scope for setting children it is important for schools to remember that setting does not necessarily close the overall range of attainment across sets. Some children may become discouraged when they are placed in a lower set, so schools that decide to place children in sets need to monitor the arrangements carefully and continuously.

Emphasise the need for parents to understand the reasons why a school has decided to set children for mathematics, especially if this is not happening in other subjects. Good teamwork and cooperative planning are essential to ensure the transfer of children between sets. Perhaps the most important consideration is our aspiration for the gap in attainment between children to become smaller over time, and particularly for underachieving children to improve their standards of achievement, as the Strategy becomes embedded in classroom practice.



Classroom organisation

Explain that one of the key areas of difficulty experienced by teachers of children with special educational needs is the amount of classroom movement that is often associated with the daily mathematics lesson. Teachers need to ensure that there is a smooth transition from one part of the lesson to the next as this is often the point at which valuable teaching time is lost.

General questions such as:

- *'How do I arrange the furniture?'*
- *'How long do I give them to settle down?'*
- *'How do I make a range of resources readily available?'*
- *'How do I manage behaviours when children are changing over activities?'*

need to be talked through in relation to children who may become disruptive or lose the focus of what they are doing during the course of the lesson.

Classroom rules and routines need to be established across the school to ensure that these general areas of concern can be dealt with smoothly.

Invite SENCOs to consider other areas of general classroom management that can be addressed before moving on to consider class grouping and additional adults.

Grouping for teaching purposes

15 minutes

Section 6 of the SEN Toolkit suggests that teachers can use grouping strategies of different types and sizes within ordinary classrooms to help children make progress. Groups may work together either for particular activities or on a long-term basis.

OHT 3.1

There are many possible grouping strategies:

- creating small groups, within the ordinary classroom, which receive additional attention from the teacher or other adult;
- creating small groups which work with a teacher or other adult outside the ordinary classroom for part of the time;
- using small-group withdrawal sessions to prepare children for inclusion in a later lesson as opposed to withdrawal for parallel teaching;
- giving children access to out-of-hours provision such as lunch-time or after school clubs where specialist help is available;
- giving children flexible access within school to a base where SEN resources and teaching expertise are available;
- teaching children in groups which are permanently small and where specialist teaching, support and resources are available.



Activity

Allocate each group a bullet from the OHT.

Ask them to consider the advantages and disadvantages of the grouping strategy in the daily mathematics lesson.

Encourage SENCOs to use their own experiences of mathematics lessons to exemplify their decisions.

Give them **5 minutes** and then tell them you will be taking brief feedback.

Very few schools will have the luxury of their own SEN base with specialist support available. During feedback, encourage SENCOs to consider whether there are any other grouping strategies listed here that they have not yet used in their schools. The most common reason why some of these strategies have not been used is the lack of available teaching assistants to support mathematics.

Where additional support is available, the management of other adults can become a burden in organisational and planning terms for SENCOs. It is important that time spent on management of additional support does not outweigh the benefits to children with special educational needs. See advice in the DfES publication *Working with Teaching Assistants; a good practice guide* (Ref DfES 0148/2000).

Additional human resources

10 minutes

Section 6 of the SEN Toolkit suggests that schools can use extra classroom support by:

OHT 3.2 Schools can use extra classroom support by:

- targeting the additional support that is already available in the classroom at children who are experiencing difficulties;
- deploying additional support specifically for one or more children in a class;
- using child support from within the class group;
- using targeted cross-aged child support;
- seeking advice or teaching input from specialist teachers, educational psychologists, health professionals or others with specialist expertise;
- drawing on advice and expertise from voluntary agencies and parental organisations.

Activity



Ask SENCOs to think of a lesson where they observed additional adults being used effectively within a whole-class daily mathematics lesson. Encourage SENCOs to work in groups to share their experiences and to note down on Post-its the characteristics of that support. Give them **5 minutes** to do the activity.

Invite one group to present their key characteristics to the other SENCOs. Ask if there are any different ideas that anyone else would like to add.

Use **OHT 3.3** to summarise these characteristics. See if the SENCOs have anything to add from their Post-it suggestions.

Provide examples from the daily mathematics lesson to support the discussion.

OHT 3.3 Effective support from additional adults in the daily mathematics lesson is:

- based on an understanding of children's individual mathematical needs;
- planned for by the teacher using the *Framework* for teaching mathematics and shared with the other adult;
- used at specific times for a specific purpose;
- aimed at including the child in the mathematics lesson alongside their own peer group;
- focused on the children working as independently as possible;
- discreet, in order that it does not cause embarrassment;
- aimed at allowing the child to experience success;
- used to inform future planning;
- skilled, based on a range of strategies to support the effective teaching of mathematics.

Using additional adults effectively in the daily mathematics lesson

40 minutes



Activity

Imagine that a new child has just arrived at your school.

This child has been allocated extra support time from a teaching assistant during the mathematics lesson.

The class teacher comes to you with their plan and asks you to help to identify what role the assistant can take in the lesson.

Handouts 3.1, 3.2 and 3.3, *Mathematics lesson plans*, provide alternative lesson plans for you to use with the SENCOs. You can either allocate the plans to different groups of SENCOs or ask them to select a preferred year group to work with.

Tell them to read the objectives and to identify the level that the new child is working at (identified in bold italics).

Encourage SENCOs to use the posters outlining P levels of attainment and teaching objectives (Reception to Year 6) to select a relevant objective for the child with special needs to work on alongside the rest of the class.

After **5 minutes**, check that the groups have made a decision on the objective and are ready to progress with the rest of the activity.

Using the lesson plan, ask the SENCOs to consider the role of the teaching assistant during each part of the lesson. Offer the following suggestions to begin the discussion.

During oral / mental starter

- Clarify language used by teacher
- Prompt response to questions using number line or 100 grid
- Provide sentence starters to prompt independent responses to questions

During main teaching activity

- One-to-one support on a similar task using 'easier' numbers
- One-to-one support using structured materials, e.g. problem solving writing frame within mixed-ability group
- Focused activity to support essential prerequisite learning
- Pre-tutoring to prompt child ready to participate independently in the plenary activity

During plenary

- Prompt child to respond to questions they feel confident about
- Provide praise and encouragement when the child responds correctly

Give the SENCO groups acetate copies of the plan and bright OHP pens. Tell them they have **10 minutes** to incorporate activities for the child with special educational needs and to identify the role of the teaching assistant. (You may choose to focus on the main teaching activity only.)

Invite groups to give brief feedback. Ask if anyone considered modifying the questions on the plan to include the needs of the child with special educational needs. Make a separate note of any comments about the adaptation of questions.



Use of questions to support children's thinking

Explain to the SENCOs that one of the ways that teaching assistants can support children's understanding of mathematics is by the structured use of questions at relevant points in the lesson.

During the main teaching activity there is a range of questions that can be used. Give out **Handout 3.4, *Questions that can help to extend children's thinking***, with examples.

Use OHTs 3.4 – 3.7 to talk through points on the handout.

OHT 3.4 Ask children who are getting started with a piece of work:

- How are you going to tackle this?
- What information do you have?
- What do you need to find out or do?
- What operation/s are you going to use?
- Will you do it mentally, with paper and pencil, using a number line, with a calculator ... ? Why?
- What method are you going to use? Why?
- What equipment will you need?
- What questions will you need to ask?
- How are you going to record what you are doing?
- What do you think the answer or result will be?
Can you estimate or predict?

OHT 3.5 Make positive interventions to check progress while children are working by asking:

- Can you explain what you have done so far? What else is there to do?
- Why did you decide to use this method or do it this way?
- Can you think of another method that might have worked?
- Could there be a quicker way of doing this?
- What do you mean by ... ?
- What did you notice when ... ?
- Why did you decide to organise your results like that?

OHT 3.6

Ask children who are stuck:

- Can you describe the problem in your own words?
- Can you talk me through what you have done so far?
- What did you do last time? What is different this time?
- Is there something that you already know that might help?
- Could you try it with simpler numbers ... fewer numbers ... using a number line ... ?
- What about putting things in order?
- Would a table help, or a picture / diagram / graph?
- Why not make a guess and check if it works?
- Have you compared your work with anyone else's?



Explain that there are similar questions to use in the plenary.

OHT 3.7

During the plenary session:

- How did you get your answer?
- Can you describe your method (or pattern, or rule) to us all? Can you explain why it works?
- What could you try next?
- Would it work with different numbers?
- What if you had started with ... rather than ... ?
- What if you could only use ... ?
- Is it a reasonable answer / result? What makes you say so?
- How did you check it? What have you learned or found out today?
- If you were doing it again, what would you do differently?
- Having done this, when could you use this method or information or idea again?
- Did you use any new words today? What do they mean? How do you spell them?
- What are the key points or ideas that you need to remember for the next lesson?

Using additional adults effectively in the daily mathematics lesson

40 minutes



Activity

Explain that you are going to focus on the examples of questions for children who are stuck (**OHT 3.6**). Encourage SENCOs to work quickly in groups to think of additional questions they might advise a teaching assistant to use in relation to the annotated lesson plan. Give them **5 minutes**. Ask SENCOs to note down any specific questions that could be used across a range of mathematics activities.

Take feedback. Emphasise the positive language used. Discuss when it might be better to use statements rather than questions, e.g:

- 'Show me ...'
- 'Tell me how ...'
- 'Describe ...'

Remind SENCOs about the guidance *Using assess and review lessons*. This contains a number of probing questions linked to each key objective from the *Framework for teaching mathematics from Reception to Year 6*. The questions have been included in this pack to support further work with teaching assistants in schools.



Summary

5 minutes

- General aspects of classroom organisation need to be considered at a whole-school level.
- Teachers need to consider grouping strategies in relation to what is being taught and the learning styles of the children.
- Teachers need to develop effective ways to use additional adults to provide support in each part of the daily mathematics lesson.
- Additional adults need to consider how they can use questions to support and prompt children within the context of the whole-class mathematics lesson.

Handout 3.1

Mathematics lesson plan	Year 1
Learning objectives Mental / oral: To count to ten and back To say one more or less than a given number to ten To add two numbers less than 5 together	Main: To recognise addition bonds to ten
Pupil with SEN working at P5	
Key vocabulary <i>more than, less than, numbers 0-10, altogether, add</i>	Resources Digit cards Interlocking cubes
Mental / oral Use fingers – count up and down together from 1 and back down to zero. Hold up a number of fingers. Hold up some fingers on both hands, e.g. 4 and 2.	Key questions What comes before one? What is one more than this many? How did you do it? What is one less than this many? How many fingers altogether? How did you work it out?
Main activities Hold up a tower of ten cubes. Count in unison. Point to each cube as it is counted. Ask the children to hold up ten fingers – show them to demonstrate. Take 3 cubes off the tower. Fold fingers down to match how many cubes have been taken off. 3 fingers folded down – how many left standing up? Write $3 + 7 = 10$ on the board – put the cubes back together – and say, <i>Three and seven make ten</i> . Repeat the process for other addition bonds to 10. Write all addition bonds in order on the board. Ask the children to look at patterns to continue them. Put number cards 0-10 and an extra 5 face down on the board. Divide the class into two teams. Play a game of pelmonism. Which team can find the most pairs?	Key questions How many cubes do you think there are here? Have a guess. How many cubes in each tower? Can anybody think of two other numbers that add together to make ten? How did you work it out? She has picked a 7. What number does she need to make 10? There is only one pair left. Do you know what it is?
Plenary Repeat the activity as a whole class, using pairs of multiples to 100.	

Handout 3.2

Mathematics lesson plan	Year 3
<p>Learning objectives</p> <p>Mental / oral: To use the vocabulary of comparing and ordering numbers</p> <p>Read and write whole numbers to at least 1000 in figures</p>	<p>Main: To read and begin to write the vocabulary of estimation</p> <p>To estimate up to 100 objects</p> <p>To begin to round up a two-digit number to the nearest 10</p>
<i>Pupil with SEN working at Reception level</i>	
<p>Key vocabulary</p> <p><i>more than, less than, tens, estimate, guess, fewer, round, nearest, close to</i></p>	<p>Resources</p> <p>Counters in bags.</p> <p>Place value chart.</p>
<p>Mental / oral</p> <p>Ask the children to say the number that is pointed to on the place value chart. Start with two-digit numbers. Build up to three-digit numbers.</p> <p>Ask a child to write a two-digit number on the board. Ask the children questions. They must answer <i>Yes</i> or <i>No</i> until the mystery number is discovered.</p> <p>Repeat with the children having to guess the teacher's mystery number.</p>	<p>Key questions</p> <p>How could we write that number?</p> <p>Is it larger than 50?</p> <p>Is it smaller than 75? etc.</p>
<p>Main activities</p> <p>Tell the children that they are going to be doing some work on estimating.</p> <p>Hold up a tower of unifix cubes and then hide it.</p> <p>Count the cubes together.</p> <p>Hold up a different tower.</p> <p>Hold up a bag of counters. Tell the children there are 20 counters in this bag. Hold up another bag.</p> <p>Repeat. Encourage children to estimate how many are in the bag by comparing them to other bags. Mark estimates on a number line.</p> <p>Tell the children they are going to work with a partner. They have to guess how many counters are in each bag. Mark down guess on a number line, compare with another pair.</p>	<p>Key questions</p> <p>What does <i>estimate</i> mean?</p> <p>How many cubes do you think are in this tower?</p> <p>Do you think there are more cubes in this tower? How do you know?</p> <p>Do you think there are fewer counters in this bag? How many do you think are in this bag altogether?</p> <p>Why?</p> <p>Where do you think that this number should go on this number line?</p>
<p>Plenary</p> <p>Use 100 square outline with just a few numbers filled in. Ask children to estimate where other numbers might be. Encourage them to explain why they chose certain numbers.</p>	

Handout 3.3

Mathematics lesson plan	Year 5
Learning objectives Mental / oral: To use multiplication facts and corresponding division facts up to 10×10	Main: To understand the relationship between multiplication and division
Pupil with SEN working at Year 2	
Key vocabulary <i>multiply, divide, times, lots of, how many lots in</i>	Resources Petal cards Worksheets
Mental / oral Ask children questions related to multiplication and division facts. Children hold up answers on petal cards. Discuss methods and vocabulary.	Key questions How did you work it out? Did anybody do it in a different way?
Main activities Tell the children they are going to look at the relationship between multiplication and division. Write $12 \square 3 = 36$ on the board. Write a multiplication sign in the box. Read it as a class. Use a range of different vocabulary. Change the sign to a division sign. Write different arrangements on the board. Repeat with a larger number, e.g. $43 \times 4 = \square$. Ask children how they might calculate the answer. Change to a division sign. Discuss how the numbers should be rearranged so that the calculation is still correct. Repeat with $52 \times 20 = \square$. Ask children to do examples from the white board. Ask them to select three questions from each column to begin with.	Key questions Which sign do I need to put in the space to make this correct? How would I rearrange the numbers to make this correct? Is there another way I could do it? How did you work it out? How might you do it another way? Would it be more difficult if it was 46×4 ? Why?
Plenary Write a multiplication problem on the board. Ask the children how they can use known facts to estimate the answer before they begin the calculation.	

Handout 3.4 Questions that can help to extend children's thinking

Ask children who are getting started with a piece of work:

- How are you going to tackle this?
- What information do you have?
- What do you need to find out or do?
- What operation/s are you going to use?
- Will you do it mentally, with paper and pencil, using a number line, with a calculator ... ? Why?
- What method are you going to use? Why?
- What equipment will you need?
- What questions will you need to ask?
- How are you going to record what you are doing?
- What do you think the answer or result will be? Can you estimate or predict?

Make positive interventions to check progress while children are working by asking:

- Can you explain what you have done so far? What else is there to do?
- Why did you decide to use this method or do it this way?
- Can you think of another method that might have worked?
- Could there be a quicker way of doing this?
- What do you mean by ... ?
- What did you notice when ... ?
- Why did you decide to organise your results like that?

Ask children who are stuck:

- Can you describe the problem in your own words?
- Can you talk me through what you have done so far?
- What did you do last time? What is different this time?
- Is there something that you already know that might help?
- Could you try it with simpler numbers ... fewer numbers ... using a number line ... ?
- What about putting things in order?
- Would a table help, or a picture / diagram / graph?
- Why not make a guess and check if it works?
- Have you compared your work with anyone else's?

During the plenary session:

- How did you get your answer?
- Can you describe your method (or pattern, or rule) to us all? Can you explain why it works?
- What could you try next?
- Would it work with different numbers?
- What if you had started with ... rather than ... ?
- What if you could only use ... ?
- Is it a reasonable answer / result? What makes you say so?
- How did you check it? What have you learned or found out today?
- If you were doing it again, what would you do differently?
- Having done this, when could you use this method or information or idea again?
- Did you use any new words today? What do they mean? How do you spell them?
- What are the key points or ideas that you need to remember for the next lesson?



.....

There are many possible grouping strategies:

- creating small groups, within the ordinary classroom, which receive additional attention from the teacher or other adult;
- creating small groups which work with a teacher or other adult outside the ordinary classroom for part of the time;
- using small-group withdrawal sessions to prepare children for inclusion in a later lesson as opposed to withdrawal for parallel teaching;
- giving children access to out-of-hours provision such as lunch-time or after school clubs where specialist help is available;
- giving children flexible access within school to a base where SEN resources and teaching expertise are available;
- teaching children in groups which are permanently small and where specialist teaching, support and resources are available.



Schools can use extra classroom support by:

- targeting the additional support that is already available in the classroom at children who are experiencing difficulties;
- deploying additional support specifically for one or more children in a class;
- using child support from within the class group;
- using targeted cross-aged child support;
- seeking advice or teaching input from specialist teachers, educational psychologists, health professionals or others with specialist expertise;
- drawing on advice and expertise from voluntary agencies and parental organisations.



OHT 3.3

.....

Effective support from additional adults in the daily mathematics lesson is:

- based on an understanding of children's individual mathematical needs;
- planned for by the teacher using the *Framework* for teaching mathematics and shared with the other adult;
- used at specific times for a specific purpose;
- aimed at including the child in the mathematics lesson alongside their own peer group;
- focused on the children working as independently as possible;
- discreet, in order that it does not cause embarrassment;
- aimed at allowing the child to experience success;
- used to inform future planning;
- skilled, based on a range of strategies to support the effective teaching of mathematics.



OHT 3.4

Ask children who are getting started with a piece of work:

- How are you going to tackle this?
- What information do you have?
- What do you need to find out or do?
- What operation/s are you going to use?
- Will you do it mentally, with paper and pencil, using a number line, with a calculator ... ? Why?
- What method are you going to use? Why?
- What equipment will you need?
- What questions will you need to ask?
- How are you going to record what you are doing?
- What do you think the answer or result will be?
Can you estimate or predict?

.....

Make positive interventions to check progress while children are working by asking:

- Can you explain what you have done so far? What else is there to do?
- Why did you decide to use this method or do it this way?
- Can you think of another method that might have worked?
- Could there be a quicker way of doing this?
- What do you mean by ... ?
- What did you notice when ... ?
- Why did you decide to organise your results like that?

.....

Ask children who are stuck:

- Can you describe the problem in your own words?
- Can you talk me through what you have done so far?
- What did you do last time? What is different this time?
- Is there something that you already know that might help?
- Could you try it with simpler numbers ... fewer numbers ... using a number line ... ?
- What about putting things in order?
- Would a table help, or a picture / diagram / graph?
- Why not make a guess and check if it works?
- Have you compared your work with anyone else's?



OHT 3.7

During the plenary session:

- How did you get your answer?
 - Can you describe your method (or pattern, or rule) to us all? Can you explain why it works?
 - What could you try next?
 - Would it work with different numbers?
 - What if you had started with ... rather than ... ?
 - What if you could only use ... ?
 - Is it a reasonable answer / result? What makes you say so?
 - How did you check it? What have you learned or found out today?
 - If you were doing it again, what would you do differently?
 - Having done this, when could you use this method or information or idea again?
 - Did you use any new words today? What do they mean? How do you spell them?
 - What are the key points or ideas that you need to remember for the next lesson?
-

Curriculum and teaching methods

Objectives

- To examine the role and content of IEPs in mathematics
- To explore the use of key objectives to inform target setting
- To consider some structured activities to use to support manageable differentiation

Resources

- OHTs 4.1 – 4.4
- Handout 4.1
- Amended key objectives booklet
- Targets for children: a booklet for parents
- Lesson plans booklet
- Activity cards

Outline of the session		
Introduction Enhanced teaching strategies	Talk	10 minutes
Individual Education Plans The role of IEPs in supporting children with special educational needs in mathematics	Talk Small-group / whole-group discussion	25 minutes
Using the Key Objectives Sheet for target setting and record keeping Examining the use of the amended Key Objectives Sheet	Talk Small-group / whole-group discussion	10 minutes
Manageable differentiation through structured activities Looking at the importance of structure and security prior to focusing on mathematical skills	Talk Small-group / whole-group discussion	25 minutes
Summary	Talk	5 minutes

Introduction

10 minutes

Explain to SENCOs that the more flexible and responsive the teaching strategies are within the daily mathematics lesson, the more likely it is that children with a range of learning needs will make adequate progress.

Show OHT 4.1.

OHT 4.1

Adequate progress in mathematics can be defined as progress which:

- closes the attainment gap between the child and the child's peers;
- prevents the attainment gap growing wider;
- is similar to that of peers starting from the same attainment baseline, but less than that of the majority of peers;
- matches or betters the child's previous rate of progress;
- ensures access to the full curriculum.

Emphasise that the National Curriculum statement on inclusion explains how to enhance normal teaching strategies for children with special educational needs.

Show OHT 4.2.

OHT 4.2

Teaching strategies for children with special educational needs can be enhanced to include:

- more focused differentiation of existing mathematical activities and materials, relating them more specifically to individual learning strengths and needs;
- individualised mathematics teaching directly targeting children's particular difficulties;
- alternative means of accessing the mathematics curriculum and assessment through, for instance, the use of adapted teaching materials, specialist equipment and alternative or augmentative forms of communication;
- using the flexibility within the curriculum to devote additional time to mathematical activities which address children's learning needs or build on their strengths and interests;
- using specific teaching methods that are appropriate for meeting particular children's learning needs;
- using small-group intervention programmes in addition to the daily mathematics lesson.

Individual Education Plans

25 minutes

Explain that the IEP is the planning, teaching and reviewing tool that underpins the process of planning intervention for the individual or small group of children with special educational needs.

IEPs should be teaching and learning plans setting out 'what', 'how' and 'how often' particular knowledge, understanding and skills should be taught through **additional** or **different** activities from those provided for all children through the differentiated curriculum.

Explain that the IEP is the structured planning documentation of the differentiated steps and teaching requirements needed to help children achieve identified targets. It is a working document for all staff involved in supporting children with special needs in mathematics.

Emphasise that the IEP must be accessible and understandable to all concerned. It should be agreed, wherever possible, with the involvement of parents and the child, depending on the child's needs and particular circumstances. IEPs in mathematics are likely to be most effective when the child is fully involved in the process.



Go through **OHT 4.3** to outline the purpose of IEPs to support the development of mathematical skills.

OHT 4.3

IEPs which include mathematical targets should:

- raise achievement for children with SEN;
- be seen as working documents;
- use a simple format;
- detail mathematics provision **additional to** or **different from** those generally available for all children;
- detail mathematical targets which are **extra to** or **different from** those for most children;
- be jargon free;
- be comprehensible to all staff and parents;
- be distributed to all staff as necessary;
- promote effective planning in mathematics;
- help children monitor their own progress in mathematics;
- result in good planning and intervention by staff in the daily mathematics lesson;
- result in the achievement of mathematical goals for children with special educational needs.



Activity

Ask the SENCOs to work in small groups to note down the type of information that they commonly include in their IEPs. Give them **5 minutes**.

During feedback, ask for comments regarding specific elements that would be present in an IEP containing mathematical targets.

Show **OHT 4.4** to summarise the feedback, using additional notes to promote the use of the *Framework for teaching mathematics from Reception to Year 6* and to support the mathematical targets in the IEP.

OHT 4.4

The IEP should include information about:

- the short-term targets set for the child;
- the teaching strategies to be used;
- the provision to be put in place;
- when the plan is to be reviewed;
- success and / or exit criteria;
- outcomes (to be recorded when the IEP is reviewed).

The short-term targets for children

Use the Key Objectives from the *Framework* as a starting point.

The teaching strategies to be used

Link these to the key elements in the three-part daily mathematics lesson.

The provision to be put in place

Consider times when Springboard materials may be appropriate, e.g. using *Springboard 3* and *4* in a Year 6 class.

When the plan is to be reviewed

Remind SENCOs about the half-termly assess and review lessons, which allow you to focus attention on the 'outliers' in the class.

Success and/or exit criteria

Remind SENCOs about the Supplements of examples in Sections 4, 5 and 6 of the *Framework for teaching mathematics from Reception to Year 6*. Both these and the examples in the QCA standards booklet can be used to clarify outcomes and set criteria for success.

Outcomes (to be recorded when IEP is reviewed)

Show SENCOs the key objectives in Section 2 of the *Framework for teaching mathematics from Reception to Year 6*. Indicate how this has been amended slightly to provide slightly smaller steps to address the needs both in this bullet and in bullet 1 of OHT 4.4.

Using the Key Objectives for target setting and record keeping

10 minutes

Give out the **Amended Key Objectives booklet**.

Explain that each component of the Key Objective has been identified.

Give an example:

Find one more or one less than a number from 1 to 10.

Find one more than a number from 1 to 10.

Find one less than a number from 1 to 10.

This provides a more specific target that can receive focused teaching.

Give SENCOs **5 minutes** to look briefly through the objectives. Ask them to identify those mathematics targets that occur most frequently on IEPs at present.

Take feedback and make a note of common targets.

Remind SENCOs about the **parents' leaflets** that were distributed at the beginning of the National Numeracy Strategy (in pack).

Suggest that those schools who use these leaflets may wish to consider how they can be modified to include some of these 'stepped' objectives for children who have special educational needs.

Ask them also if any of the ideas from lower year groups could be used to provide ideas for parents to follow at home.



Manageable differentiation through structured activities

25 minutes

Explain to SENCOs that often too much teacher time is taken up both in planning a whole range of activities and also giving instructions to the class about what they have to do in these activities.

Give out **Handout 4.1, *Examples of structured activities***.

Tell SENCOs that these two activities need to be taught, the procedures modelled and the rules and the language agreed with the class. Explain that this will take some time, but that it is time well-invested, as the structure for the activity can then be used to develop a number of mathematical skills.

Not only can a range of mathematical skills be covered, but there is also scope for broad differentiation to incorporate the needs of those children with special educational needs.

Most importantly, once the routines for the activities have been learned and are familiar, children with special educational needs will feel secure. The demands that will be made of them will focus more on the development of their mathematical skills and less on them knowing how to 'perform' in a given activity.

Using the **activity cards** model one of the activities. Show, for example, using decimals, fractions and percentages, how the structured activity can be used both in the oral and mental starter as a warm-up activity, but also as a consolidation activity for a small group in the main teaching activity.

Give out the **lesson plan booklet** containing sample lesson plans for Reception through to Year 6.

Ask SENCOs to work in small groups. Tell them to select a lesson and to see how these activities could be incorporated to meet the needs of the children whose IEPs and GEPs are specified. Allow **10 minutes**.

Take feedback.

Encourage SENCOs to suggest other aspects of mathematics that could be developed using these activities.

Invite them to look at the resource cards in the pack and suggest other structured activities that could be used in this way, e.g. 'Function Machine' activities could build on work done with 'Behind the Wall/ Show and Reveal'.

Summary

5 minutes

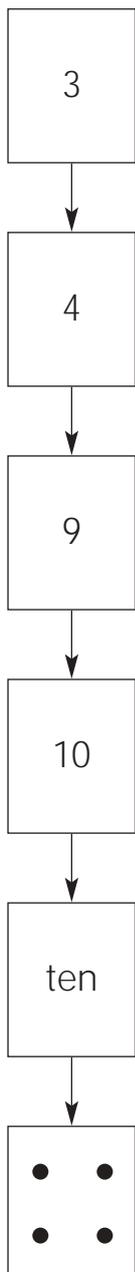
- SENCOs and teachers need to be able to identify when a child or children are not making adequate progress within the mathematics curriculum.
- IEPs should include a range of information that can promote the further development of mathematical skills.
- The *Framework for teaching mathematics from Reception to Year 6* includes information that is incredibly useful when writing IEPs/GEPs.
- The Key Objectives are the starting point for all mathematical target-setting.
- Structure and routine are essential in developing teaching approaches for children with special educational needs.

Examples of structured activities

Example 1 'Higher or lower'

This activity can be used in the mental / oral starter and then developed in the main teaching activity.

The aim of the activity is for children to predict whether the next card the teacher takes from the pile has a higher or lower value than the one on show. On revealing the card, the teacher can encourage children to discuss their answers, possibly with the aid of a number line if necessary, before they go on to predict the relative value of the next card. E.g.



At the start of the activity it is important to identify the range of numbers being used, e.g. 1-10.

Key questions can be asked to target children, e.g. 'What is the difference between 3 and 4?'

Use visual prompts in the room if necessary to support discussions about whether the next number is likely to be higher or lower in value than 9, e.g. a number line showing 1-10.

Depending on the group and the mathematical skills they are developing, you could ask, 'Has the next card got to be one with a lower value?'

The introduction of number words can extend the activity and rehearse new vocabulary such as *same as* and *equivalent to*.

The use of dice patterns to represent numbers in the sequence can also encourage the involvement of children who do not yet recognise numerals.

The 'higher or lower' activity can be used to rehearse a number of mathematical skills:

Estimation

Use cards displaying different numbers of dots. Encourage children to say whether the next card will have more or fewer dots. When the next card is shown, ask the children to estimate the number of dots displayed.

Money

Use cards with pictures of coins printed on them. Use to predict whether the next coin will be higher or lower in value than the one displayed. Introduce cards with 1p, 5p, ten pence, one pound, £2, etc. written on them to encourage children to recognise different representations during the activity.

Time

Use cards with analogue clock faces on. Use to predict whether the next time will be earlier or later than the one displayed. Introduce cards with the time written in full, e.g. two o'clock and also with digital representations of the time.

Weight

Use cards which show weight in grams on weighing scales. Use to predict whether the next weight will be heavier or lighter than the one displayed. Introduce cards with the weight measured in kilograms and also fractions of kilograms to introduce some challenge and promote thinking.

Fractions, decimals and percentages

Use cards which show fractions. Use to predict whether the next fraction will be bigger or smaller than the one displayed. Introduce cards which show fractions represented pictorially to support children who cannot recognise the written form. As an extension, introduce decimals and percentages amongst the fractions to challenge the thinking of more able children.

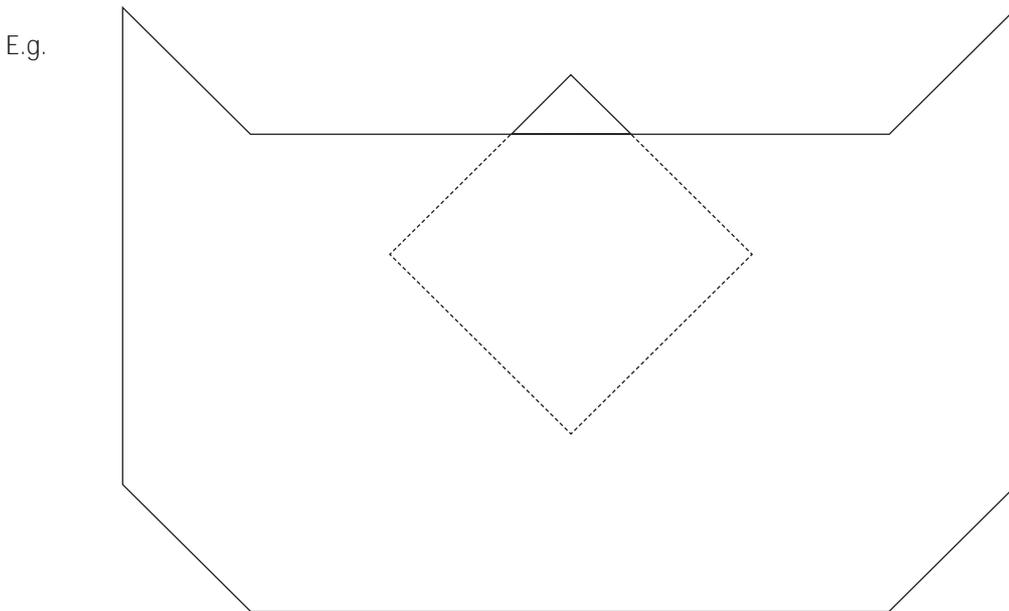
- In each activity it is important to agree the boundaries of the values you are using and to agree the appropriate language to make your predictions, e.g. *more than* and *less than*, *higher* and *lower*.
- At times you may wish to focus on specific skill levels. The activity can be used to target questions at individual children, as well as for whole-class work; for example, to encourage a child to see that the dice pattern for 5 is equivalent to the numeral 5.
- Throughout the activity it is essential to pause and reflect on the language being used and to draw children's attention to the number line and where values are represented. Key words and markers can be located to support work that may then be developed in the main teaching activity.

Example 2 'Behind the wall'

This activity is also known as 'Show and reveal'.

The activity involves an object that can be used as a 'wall' from behind which a range of objects and pictures can be slowly revealed. The teacher can use targeted questions to encourage children to focus on certain aspects of what is being revealed.

As with the first example, the basic structure of the activity is one that the children can become familiar with. They can feel secure in what is expected of them and will soon be able to engage with the activity to focus on a number of mathematical topics.



Questions

- What shape do you think it is?
- How many angles does it have?
- How many lines of symmetry does it have?
- Do you think it has any corners?

As the shape is slowly revealed, the teacher asks children to confirm whether their predictions were correct and to justify any new thoughts they may have.

This activity is used a lot with shapes but it can also be used to support basic teaching of time.

E.g. slowly reveal a clock face showing 5 o'clock.

When part of the big hand is shown pointing to twelve, ask:

- What sort of time could it be? (Something o'clock.)
- What 'o'clock' can't it be?

Continue with questioning as more of the clock is slowly revealed.

Repeat a similar activity with coins, weights on a scale, visual representations of fractions, etc.

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Adequate progress in mathematics can be defined as progress which:

- closes the attainment gap between the child and the child's peers;
- prevents the attainment gap growing wider;
- is similar to that of peers starting from the same attainment baseline, but less than that of the majority of peers;
- matches or betters the child's previous rate of progress;
- ensures access to the full curriculum.



OHT 4.2

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Teaching strategies for children with special educational needs can be enhanced to include:

- more focused differentiation of existing mathematical activities and materials, relating them more specifically to individual learning strengths and needs;
 - individualised mathematics teaching directly targeting children's particular difficulties;
 - alternative means of accessing the mathematics curriculum and assessment through, for instance, the use of adapted teaching materials, specialist equipment and alternative or augmentative forms of communication;
 - using the flexibility within the curriculum to devote additional time to mathematical activities which address children's learning needs or build on their strengths and interests;
 - using specific teaching methods that are appropriate for meeting particular children's learning needs;
 - using small-group intervention programmes in addition to the daily mathematics lesson.
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IEPs which include mathematical targets should:

- raise achievement for children with SEN;
- be seen as working documents;
- use a simple format;
- detail mathematics provision **additional to** or **different from** those generally available for all children;
- detail mathematical targets which are **extra to** or **different from** those for most children;
- be jargon free;
- be comprehensible to all staff and parents;
- be distributed to all staff as necessary;
- promote effective planning in mathematics;
- help children monitor their own progress in mathematics;
- result in good planning and intervention by staff in the daily mathematics lesson;
- result in the achievement of mathematical goals for children with special educational needs.

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The IEP should include information about:

- the short-term targets set for the child;
- the teaching strategies to be used;
- the provision to be put in place;
- when the plan is to be reviewed;
- success and / or exit criteria;
- outcomes (to be recorded when the IEP is reviewed).