

## SASC Guidance on Assessment of Mathematics Difficulties and Dyscalculia 2025

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| This guidance is aimed at assessors completinga full diagnostic assessment report for Specific Learning Difficulties (SpLDs) in mathematics leading to a potential diagnosis. It was updated by SASC (the UK’s SpLD (Specific Learning Difficulties) Assessment Standards Committee) in **March 2025** withthe Maths Difficulties and Dyscalculia Working Group.It should be read in conjunction with the document: **Format for a Diagnostic Assessment Report for Specific Learning Difficulties 2025[[1]](#footnote-1)**. Specialist teacher assessors should be familiar with this additional document and consider its implications within their practice.Additional guidance and explanatory detail is provided throughout in the form of comment boxes, allowing assessors immediate access to further information and clarification without needing to consult a separate document. However, the additional guidance and the Maths difficulties guidance full paper are available as separate document downloads from the SASC website. This document can be found at [www.sasc.org.uk](http://www.sasc.org.uk) Downloads. |

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## Key Messages

**Context and background**

* There has been sufficient time since the SASC 2019 guidance on Dyscalculia and maths difficulties to consider a review and update to the definition of dyscalculia and accompanying guidance and to provide additional clarity to support assessors. This is supported by the publication of key recent research papers.
* Discussions of the maths difficulties and dyscalculia working group have included similar debates to those raised for dyslexia through the 2025 Delphi study.
* The guidance aims to increase the understanding of current research evidence surrounding maths difficulties and ensure this is effectively translated into the assessment and diagnosis of Dyscalculia.  Further, shorter guidance may be helpful to explain to non-specialists.

**Key factors in defining a specific learning difficulty in mathematics**

* The interaction of genetic, biological, cognitive and environmental factors contributing to maths difficulties is not yet fully understood nor the correlation and overlap of symptoms with other developmental conditions.
* A severe and enduring difficulty in numerical magnitude processing, particularly symbolic magnitude processing, is the most commonly observed characteristic differentiating people with dyscalculia from those with more general mathematical difficulties.However, it remains very difficult to identify individuals with dyscalculia solely on the basis of domain-specific factors.
* A specific difficulty in mathematics due to domain-general cognitive factors (working memory, inhibition and shifting; language, spatial skills) can be equally as debilitating as dyscalculia.
* Whilst there remains a lack of consensus on a definition of number sense *per se*, there is an understanding that it manifests in different ways at different ages and stages of education and life. Subitising is often reported to be a key component of early number sense, yet not all findings support this supposition (e.g., Decarli, Vescovi, Surian, & Piazza, 2020). Whilst numerical magnitude processing is related to children’s mathematical achievement, there is a weaker correlation with older learners and adults. (Inglis, Attridge, Batchelor & Gilmore, 2011).

**Correlations and co-occurrence with SpLD in mathematics**

* Co-occurrence with other neurodevelopmental conditions is the norm rather than the exception. Other specific learning difficulties can create difficulties either with maths learning or operating in the maths learning environment.
* It is more *likely* that if maths difficulties are present there will also be maths anxiety. However, dyscalculia cannot be assumed if maths anxiety is present and vice a versa.

**Considerations for assessors**

* Whilst qualitative informal assessment including observation and questioning will continue to be an important part of an assessment, for formal assessment leading to diagnosis assessors should use reliable, validated assessment tools as listed by STEC/SASC.
* Accuracy, efficiency and flexibility are all key factors of arithmetic fluency. Timed arithmetic tests mostly measure automaticity through a construct of the number of correct answers during a specific timeframe. However, they do not give a full picture of fluency. Therefore, further analysis of an individual’s flexibility and efficiency in their use of strategies is required to consider fluency.
* To assess for a SpLD in Mathematics/dyscalculia, assessors are required to have extensive training, knowledge and experience of mathematical cognition, teaching mathematics, assessing and supporting those with maths difficulties. This would usually be gained through a master’s level qualification (Level 7) in assessing SpLD with extensive coverage of SpLD in mathematics. Alternative routes are available to those with a SpLD assessment qualification (dyslexia) who can evidence extensive experience, knowledge and understanding in mathematics cognition and applying this to assessment.
* It is very difficult to replicate all the elements and features of a holistic in-person maths assessment required in order to make a diagnosis via online platform. Therefore, an online assessment should only be considered in exceptional circumstances where it is in the best interests of the individual assessed and there is no option for a face-to-face assessment. It is highly unlikely that a diagnostic conclusion can be made via a remote assessment, and an assessment of needs may be more appropriate in these circumstances.

## Aims

The key aims of this SASC guidance are to provide updated, evidence based, operationally effective definitions and procedures on the assessment of specific learning difficulties in mathematics. It is also intended to increase assessors’ understanding of current research evidence surrounding maths difficulties for a range of stakeholders. Further, shorter guidance may be helpful for non-specialists.

## Context

The SASC Guidance on the assessment of dyscalculia and maths learning difficulties was published in November 2019. The guidance included a working definition for dyscalculia with the understanding that this definition should be regularly reviewed. There are a number of reasons for this current review:

* The passing of sufficient time to embed the guidance and identify possible issues.
* New research since the 2019 definition and guidance.
* The expressed need for greater clarity in the content of a mathematics/dyscalculia assessment report.
* The increased demand for assessments which can examine maths difficulties and/or possibility of dyscalculia.
* The wider availability of assessment tools.

A working group was set up by SASC to review the [SASC 2019 guidance on assessment of Dyscalculia and Maths Difficulties](https://www.sasc.org.uk/media/3gtdmm0s/assessment-of-dyscalculia-maths-sasc-nov-2019.pdf) in order to produce updated guidance for assessors. The draft definition was circulated to a wider group of interested parties for consultation in December 2024- January 2025 in order to reach consensus of 80% and above in the final version.

## Current Research

As with other SpLDs, there is difficulty in achieving consensus on a definition of dyscalculia. The interaction of genetic, biological, cognitive and environmental factors contributing to maths difficulties is not yet fully understood nor the correlation and overlap with indicators of other developmental conditions.

**The cognitive areas having the greatest impact on mathematics learning**

Cognitive barriers to learning mathematics are heterogeneous. By this we mean:

* That co-occurrence with other categorical conditions is the norm rather than the exception, and other specific learning difficulties can create difficulties either with maths learning or operating in the maths learning environment.
* That domain general variables, particularly language development, can be as crucial in achievement in mathematics as domain specific variables such as numerical magnitude processing. (See table 1 below).
* Associations between variables are complex and bi-directional.
* Variables across biological and environmental domains can interact to create cumulative risk.

De Smedt (2022) reviewed the body of research that identified that mathematical attainment is related to a range of key domain specific and domain general variables as detailed in table 1.

**Table 1**

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| **Domain specific**  | **Domain general cognitive factors** |
| **Cognitive factors:** | Language |
| Mathematical vocabulary | Working memory |
| Numerical magnitude processing  | Inhibitory control |
|  | Task shifting |
| **Other factors**: | Phonological processing |
| Mathematics anxiety | Spatial skills |
| Home mathematics environment | Fluid intelligence (reasoning) |

(Adapted from De Smedt, 2022)

**Language:** Both domain specific and domain general language have an impact on learning maths.There is growing understanding that language and literacy also play a significant role in mathematics difficulties. The most common disorders co-occurring with maths difficulties are language and communication. (Morsanyi, K., van Bers, B. M., McCormack, T., & McGourty, J. (2018). General language difficulties (domain-general) are likely to have an impact across the curriculum. In addition, many people with maths difficulties have a further difficulty in understanding language specific to maths (domain-specific).

### Domain-specific factors

**Numerical magnitude processing** involves the ability to represent and process non-symbolic (e.g. dot patterns) and symbolic (Arabic numerals) magnitudes. There is stronger evidence to support symbolic magnitude processing as a predictor than non-symbolic.

**Mathematics anxiety**: Maths anxiety *can* co-occur alongside dyscalculia and maths difficulties. It is more *likely* that if maths difficulties are present that there will also be maths anxiety. (Devine, A., Hill, F., Carey, E., & Szűcs, D. (2018)) Cipora, K., Artemenko, C., & Nuerk, H.-C. (2019). It is, therefore, important to establish whether maths anxiety is or is not present alongside dyscalculia/a specific learning difficulty in mathematics within an assessment and to make appropriate recommendations in light of this.

*Further guidance on maths anxiety is expected in 2025 and will be published in the Downloads section of SASC.org.uk.*

**Home mathematics environment:** Limited experiences of formal and informal maths-related activities within the home, both prior and during education can impact on maths attainment, particularly in the early years. The impact of family attitudes to maths is well documented, together with parental/carers’ expectations, beliefs and confidence in supporting a child with maths at home. (Maloney, E. A., Ramirez, G., Gunderson, E. A., Levine, S. C., & Beilock, S. L. (2015) and (Tomasetto, C., Passolunghi, M. C., De Vita, C., Guardabassi, V., & Morsanyi, K. (2025)).

The **school environment** also plays a key role including whole-school ethos and beliefs, teacher training and experience, teacher confidence and anxiety, (Skyrme S. and Hunt T. (2023)).

### Domain-general cognitive factors

**Executive Function:** Working memory, inhibition, and shifting are all related and can have a significant impact on learning and using mathematics.

**Visual-spatial processing skills:** The processing of visual-spatial information enables us to make sense of what we see and to interact efficiently and appropriately with the world around us. It is crucial to our performance of everyday tasks in academic and workplace environments. The ability to store accurate visual-spatial representations in memory and to marshal these when solving problems is important in the development of mathematical understanding and problem-solving (Szucs, D., Devine, A., Soltesz, F., Nobes, A., & Gabriel, F., 2013).

**Phonological processing** has a greater impact on mathematics for younger learners than later on**.**

### Difficulties in using number sense as the defining feature of dyscalculia

The concept of number sense had previously seemed to be a simple and satisfactory causal explanation of dyscalculia. However, the term number sense is considered either too broad or too limited by different researchers making it problematic as the key criterion. Advances in research have demonstrated increasingly complex relationships between number sense and other areas of maths cognition (both domain general and domain specific).

Research on number sense continues to highlight differences in interpretation between and within cognitive science and maths education and whether it is genetic (conceptual sense of quantity) or an acquirable skill (conceptual sense-making) which can be trained. Number sense can manifest differently within an individual at different ages and stages and within different contexts. The impact of numerical magnitude processing on maths learning decreases (weakly) with age (Vanbinst et al., 2019).

For some professionals, understanding of number is an innate skill related to awareness and interpretation of the magnitude, values and interrelationships of numbers. Others talk about an “intuitive grasp” of number enabling an understanding of when answers are right or wrong, and if so, why. In the previous guidance, subitising was considered a key indicator but recent research suggests that whilst subitising is a predictor of maths attainment in younger children, it is less reliable as an indicator for older learners.

If number sense is used as a criterion, it is almost impossible to distinguish between dyscalculia and maths difficulties arising from other SpLDs.

Despite these theoretical issues, understanding of number remains a useful way of differentiating between:

1. A small set of individuals who have very limited, or no, understanding of what numbers represent in terms of quantity which is persistent rather than a developmental phase. They may have mastered certain procedures and number facts if these have been extensively drilled, but they are unable to recognise if they have made a mistake, understand why their mistake is an error, or know how to correct those mistakes.
2. The greater majority who make mistakes but can understand and eventually work out what is wrong with their calculations.

However, the concept cannot differentiate between individuals who have a transitory lack of numerical magnitude processing skills and those with a permanent lack of awareness of the values numbers represent and of the number system itself.

## Arithmetic fluency

Arithmetic fluency is a key element to consider when appraising maths performance. A lack of arithmetic fluency has also been recognised as a key marker for a specific learning difficulty in mathematics/ dyscalculia. For the purpose of a definition, fluency can be considered in the context of both conceptual and procedural understanding.

**Measuring Fluency**

Arithmetic fluency tests generally measure automaticity and perpetuate the misunderstanding that fluency is all about “remembering facts and applying standard algorithms or procedures”. Whilst a useful tool, we need to look beyond them and analyse performance in additional ways.

Therefore, qualitative approaches are needed, in addition to standardised tests of automaticity.

## Considerations for a definition**[[2]](#footnote-2)**

A label such as dyscalculia shouldenable a common language for understanding, intervention and support for persistent numeracy difficulties but should be linked clearly to current scientific evidence.

To consider the key aspects of a definition for a SpLD in mathematics/dyscalculia, the working group looked at:

* Existing definitions including the current BDA dyscalculia definition 2018/SASC 2019, DSMV definition, Scottish working definition of dyscalculia 2022 , ICD-11 (2022)
* Debates regarding labels
* Whether it was the right time to introduce a dimensional approach to SpLD assessment
* Establishing a definition with longevity that is not too closely tied to a specific point in time but carefully considers current research.

## Key Principles of a SpLD in mathematics

As with other SpLDs, the following four principles apply:

1. Difficulties must be unexpected in relation to age, level of education, level of experience which may include level of attainment in other areas of the curriculum.

2. Difficulties should be specific and established as persistent.

3. Difficulties must not be solely caused by other factors such as:

* Teaching approaches or gaps in mathematics education
* Social and personal factors which adversely affect attitude/motivation with regard to learning mathematics
* Incomplete mastery of the language of instruction (e.g. EAL/ESL)
1. Difficulties should not solely arise from another neurological, physical or mental health condition.

The proposed definition maps closely to the recently published Delphi Dyslexia definition adopted by SASC.

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| SASC definition of a Specific Learning Difficulty in Mathematics (2025) |
| **Features**: A specific learning difficulty in mathematics is a set of processing difficulties that affects the acquisition of arithmetic and other areas of mathematics.In **dyscalculia**, the most commonly observed cognitive impairment is a pronounced and persistent difficulty with numerical magnitude processing and understanding that presents in age related difficulties with naming, ordering and comparing physical quantities and numbers, estimating and place value.Some individuals may not present with a specific cognitive impairment in numerical magnitude processing but have an equally debilitating specific learning difficulty (SpLD in mathematics) due to other processing difficulties. Difficulties in language, executive function (verbal and visuo-spatial working memory, inhibitory control) and visual-spatial processing may also contribute.**Impact**: Mathematics is a very varied discipline. Difficulties with learning mathematics may present in specific areas (for example, basic calculation) or across of the mathematics studied by the individual in relation to age, standard teaching and instruction, and level of other attainments. Across education systems and age groups, difficulties in arithmetic fluency and flexibility and mathematical problem solving are key markers of a SpLD in mathematics. Persistent difficulties in mathematics can have a significant impact on life, learning and work. This may also have a detrimental impact upon an individual’s resilience to apply mathematical skills effectively.**Presentation**: The presentation and developmental trajectory of a specific learning difficulty (SpLD) in mathematics depends on the interactions of multiple genetic and environmental influences. It will persist through life but may change in manifestation and severity at different stages.A SpLD in mathematics frequently co-occurs with one or more of the following: attention deficit hyperactivity disorder (ADHD), dyslexia, developmental language disorder (DLD) and developmental coordination disorder (DCD). Maths anxiety commonly co-occurs with a SpLD in mathematics but is not an indicator in itself. |

## Categorising mathematics learning difficulties

Maths learning difficulties correlate with domain-general deficits which can include language, executive function (verbal and visuo-spatial working memory, inhibitory control) and visual-spatial processing. There is substantial evidence that these general domain deficits can potentially affect all types of learning, including mathematics.

The difficulty of identification is summed up by Dowker:

*Some of the ambiguities with regard to the deficits that underlie dyscalculia are the result of ambiguities about the criteria for diagnosing dyscalculia. Such ambiguities make it difficult to tell even how frequent dyscalculia is, let alone what its main foundations are (Dowker, 2024, p. 622).*

An individual can be considered to have a specific learning difficulty in mathematics, when they experience significant, persistent difficulties with the acquisition and/or application of mathematical skills in daily life. Dyscalculia is within a wider category of maths difficulties but is distinct from other maths SpLDs due to an enduring and extreme difficulty with domain-specific cognitive processing, namely numerical magnitude processing. Therefore, an SpLD in mathematics can be considered to be:

1. A specific learning difficulty (SpLD) in mathematics where an individual experiences significant, persistent difficulties with the acquisition and/or application of mathematical skills in daily life. The individual may not have an enduring deficit in numerical magnitude processing but their difficulties in mathematics can be attributed to domain-general deficits which potentially affect all types of learning. Their difficulties in mathematics are due to the complex interplay of some of the following:
	1. The cumulative effect of domain-general cognitive processes including language, memory, planning and sequencing, processing speed, attention, perceptual reasoning and visual-spatial skills. The difficulties cannot be solely explained by one specific cognitive process or specific area of maths (e.g. worded problems).
	2. Biological or chronic medical conditions (e.g. Turner syndrome, Williams syndrome, pre-term birth, FAS etc).
	3. Environmental factors.
	4. Psychological factors including attitude towards maths (low maths self-efficacy).

The interaction of these factors and processes can have a detrimental downstream effect upon maths cognition.

1. Dyscalculia – A specific learning difficulty in mathematics where numerical magnitude processing difficulties are not transient but are persistently and significantly affected. The individual is also likely to have domain-general cognitive processing difficulties detailed in a. above.

Where the difficulty is due to temporary factors such as short-term medical conditions or gaps in education or instruction, it cannot be considered a persistent maths learning difficulty.

When an individual has a specific and persistent difficulty in mathematics but does not have an enduring and extreme domain-specific difficulty with numeric processing and does not meet the criteria for dyscalculia, they can be identified as having a SpLD in mathematics. An assessor should not diagnose dyscalculia unless they are fully satisfied that the persistent significant difficulty can be attributed to pronounced difficulties in numerical magnitude processing.

## Persistence and resistance

To be termed a SpLD in mathematics, both the specific areas of cognitive underdevelopment, and the accompanying difficulties in acquisition of skills and knowledge must be persistent (longstanding and still present). Where the individual has received support, it is likely that interventions may have brought limited or short-lived improvement.

Dyscalculia/maths difficulties can manifest differently at different ages and stages. For example, a child may have difficulty mastering basic counting skills but will not necessarily have the same difficulty in high school, particularly after targeted intervention. A small number of adults may manage to keep up with their peers at school but experience severe difficulties with maths-based activities in later life.

For the purpose of a definition, persistence is used to denote that:

* The difficulties persist through different developmental stages.
* The difficulties are resistant to attempts to mitigate them with appropriate teaching. Individuals may make progress, but the gap is never closed.

Persistence could theoretically be assumed if the individual has been assessed more than once and has completed well-founded intervention in between. However, there are drawbacks to this theoretical stance. Firstly, the cost of assessment precludes this becoming a core criterion. Secondly, there is considerable variation in the style and extent of assessment across different institutions. A previous assessment might not, therefore, be addressing the same range of difficulties as the current one. Thirdly, there could be a degree of uncertainty regarding the efficacy and effectiveness of the intervention cannot be ruled out.

In the assessment of adults, persistence becomes harder to evaluate as the main source of information about past difficulties may be self-reporting. Consideration should also be given to the objectivity and accuracy of self-reporting.

## Types of assessments

**Assessment of mathematics as part of a SpLD assessment (dyslexia):** Where the background information indicates a maths difficulty, assessors should complete one or more standardised maths attainment test . Where those difficulties are confirmed, assessors could note how the specific learning difficulty (dyslexia) has a clear and specific impact upon mathematics. However, it should not be assumed that domain-general deficits will inevitably lead to weaker performance in mathematics. As with literacy, appropriate training, extensive practice, and compensatory use of other strengths and strategies can enable an individual to perform well in mathematics despite domain-general or domain-specific deficits. If there is a clear and specific difficulty in mathematics that cannot be explained by a co-occurring difficulty (e.g. dyslexia) the assessor should consider/recommend a further assessment for mathematics/ dyscalculia.

Assessors with a level 7 assessment qualification in SpLD that did not include comprehensive training in mathematics nor extensive teaching experience in mathematics may need further training in order to assess mathematics as part of a SpLD (dyslexia) assessment.

**Assessment of Need**: An evaluation of an individual’s skills and knowledge to identify gaps, inform teaching, design focused interventions, and monitor progress. It can include measures of cognitive skills, and other factors such as maths anxiety alongside attainment tests in mathematics. For children and young people, this may be a more appropriate route which better meets their needs rather than a full diagnostic assessment. The SEND Code of Practice (0-25) (Gov.uk (2015) recommends that identification of need should be carried out as early as possible, to inform appropriate support and prevent the cumulative cascade effect that happens when early needs are not addressed. The Code of Practice also emphasises that a diagnosis is not necessary to access support.

**Assessment Leading to diagnosis of a SpLD in mathematics**: the main aim of a diagnosis is still to inform intervention and support, but it has the additional aim of identifying the barriers to learning that explain the difficulties the individual is experiencing. This assessment will cover the range of domain-general and domain-specific cognition and mathematical attainment tests as outlined in Table 2 (below). Where the individual has already undergone a full assessment for SpLD (Dyslexia), this may be taken into consideration, and a further full cognitive assessment may not be required.

## A diagram of mathematics  AI-generated content may be incorrect.What should be included in a holistic assessment of maths difficulties/ dyscalculia?

Gilmore (2023) provides a multi-level framework of mathematical cognition:

There are key relationships between proficiency in specific components of mathematics, general cognitive skills, and basic mathematical processes. The content of a holistic maths assessment conforms with this model.

Full details of assessment and reporting are outlined in Appendix 1.

The range of areas explored within a diagnostic assessment of mathematics should be informed by the individual’s history of difficulties and appropriate to their age and stage of development, rather than by diagnostic categories. Therefore, comprehensive information should be sought prior to the assessment.

Assessors should explore the following, appropriate to the background information, the age and stage of the individual and the emerging profile from the assessment.

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| **Table 2 –** **Standardised tests and qualitative information that should be included in a diagnostic assessment of a SpLD in Mathematics/ Dyscalculia** |
| **Language**  |
| Standardised tests and qualitative observations on: * **Receptive language** and listening comprehension.
* **Expressive language**.
* Measures of **verbal reasoning**.
* Tests of phonological awareness may be used at the discretion of the assessor for younger learners.
 |
| **Attainment** |
| **Maths attainment standardised measures:*** **Timed test(s) of basic calculation**
* A written untimed **test of graded computation**
* **General maths attainment**
* **Mathematics reasoning and problem solving**, including worded problems

Informal and/or qualitative assessments should be used to supplement standardised assessments. **Literacy attainment**:* Limited to avoid over testing.
* Informed by the background information together with observations and findings of the assessment.
 |
| **Cognitive Profile** |
| **Numerical cognition*** A standardised test of **symbolic magnitude comparison** (digit comparison)
* Other standardised or informal tests as appropriate to the age and stage of the individual.
* A standardised test and /or qualitative observations and analysis of **mastery of mathematics language.**

Qualitative assessment and observations related to numerical magnitude processing gathered during the maths attainment tests can be used to supplement standardised assessments according to age and stage. |
| **Domain General Cognitive Processes** |
| **Speed of processing and retrieval**At the discretion of the assessor:* Rapid automatised (or symbolic) naming (RAN)
* Coding, symbol search and cancellation tasks
* Retrieval fluency tasks
* Visual-motor speed tasks.

**Verbal working memory, phonological short-term memory, inhibitory control, and shifting attention.*** Standardised measures of **Verbal working memory**
* Short-term phonological memory (optional)
* Observational or standardised measures of attention, shifting and inhibitory control).

**Visual-spatial processing** At least one measure of visual-spatial information **should** be included**.** * Visual working memory: Pattern recognition/recall, recall of sequential pattern or action information, recall of scenes).
* Spatial processing: spatial working memory, mental rotation - and other types of spatial reasoning tasks, spatial scaling, spatial orientation)
* (Other types of) Non-verbal reasoning
* Mental imagery/visualisation (qualitative analysis and informal observations only).

The assessment should also consider qualitative observations of the individual’s ability to deal with tasks involving spatial thinking. Informal questioning can also be used to elicit how the individual uses mental imagery and visualisations to solve mathematical problems. Assessors may also consider tests or qualitative observations of general visual perception and other visual processing skills. |

Whilst the range of standardised tests available to assessors has increased in some areas of the assessment, there are limited tools in some specific areas or age groups. Qualitative and informal assessment is likely to be required in most assessments to cover all the areas required for a diagnosis.

Assessment reports should be: accessible, consistent, reliable, clear, efficient and useful as outlined in the Format for a Diagnostic Assessment Report for Specific Learning Difficulties 2025.

The content of an assessment report for mathematics is detailed in appendix 1. The order and presentation of the report should follow the SASC SpLD report format guidance 2025[[3]](#footnote-3).

## Remote assessment via online platform

It is very difficult to replicate all the elements and features of a holistic in-person maths assessment via online platform due to:

* The nature of interactions between different components within mathematics
* The importance of qualitative observations
* The use of physical materials

It is highly unlikely that a diagnostic conclusion can be made via a remote assessment, and an assessment of needs may be more appropriate in these circumstances.

Therefore, an online assessment should only be considered in exceptional circumstances where it is in the best interests of the individual assessed and there is no option for a face-to-face assessment. This may be where the individual has no access to a qualified assessor in their area, has a disability or other reasons that preclude them from having a face-to-face assessment.

The assessment should cover all elements included in “What should be included in a holistic assessment of maths difficulties/ dyscalculia?” above, using assessment tools approved for online delivery by the relevant publisher.

## Qualifications and experience required for assessors to assess for difficulties with mathematics/dyscalculia

It will be evident from the above guidance that difficulties in mathematics should not be assessed and evaluated purely on the basis of a score derived from one test of arithmetic skills (in the same way that literacy skills would not be assessed purely on the basis of a score derived from one test of single word reading).

It is a requirement of HCPC and the BPS for psychologists and APC issuing organisations and their relevant governing bodies for specialist teacher assessors that assessors should work within their range of expertise (acquired through appropriate qualifications and experience), use appropriate assessment tools, and be fully up to date in their professional development. Any diagnostic decision might, ultimately, need to be defensible in court. Where an individual’s difficulties fall beyond the scope of an assessor’s professional boundaries, that individual should be referred on for further assessment by a suitably qualified assessor. This is most likely to occur when:

* an assessor has only been trained in literacy skills (or has minimal training in mathematics),
* and/or where a SpLD in mathematics/dyscalculia (as defined in this guidance) is suspected and the assessor does not have sufficient experience, training and knowledge to evaluate the relevant skills,
* and/or where the mathematics difficulties are having a very major impact upon the individual’s ability to perform effectively in education, the workplace and/or daily life and the assessor does not have sufficient experience, training and knowledge to understand or assess that impact or make suitable recommendations.

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| Issues in qualification pathways to assess for maths difficulties and dyscalculia* Most current SpLD assessment training courses leading to an approved qualification tend to focus on literacy skills and the identification of dyslexia, with limited content on mathematics.
* Over the past ten years, course providers responded to an increased interest in, and awareness of, mathematics-related learning difficulties informed by a growing body of research. Separate courses have been developed, specifically focused on the assessment of maths difficulties/dyscalculia.
* These courses have played an important role in raising awareness of the current gaps in more general SpLD training. However, there is an insufficient range of training opportunities to cater for all currently qualified SpLD assessors who wish to upskill in mathematics.
* Moreover, separate courses focusing on one specific assessment area (e.g. maths difficulties/dyscalculia or literacy/dyslexia) do not address the issue of how to provide holistic underpinning training in both literacy and mathematics SpLD assessment for all specialist teachers and assessors.
* In the interim, assessors should expand their underpinning knowledge and skills as detailed in Table 3: **Knowledge, understanding and skills required to carry out a diagnostic SpLD assessment.**
 |

Whilst assessors with a level 7 assessment qualification in SpLD (Dyslexia) may have the confidence and training to assess mathematics as part of a SpLD (dyslexia) assessment, they should not make a diagnostic decision regarding dyscalculia/a SpLD in mathematics unless they meet all the criteria in table 3 below.

|  |
| --- |
| **Table 3:** **Knowledge, understanding and skills needed to conduct an assessment of a SpLD in mathematics** |
| * + 1. **Knowledge, understanding of mathematical skills and how to support learners**
 |
| **Knowledge, skills, experience required** | Acquired through: |
| **1.a. Knowledge of mathematical skills development including**: * + Typical trajectories of development of mathematics skills.
	+ The normal range of variation that might be expected for the individual’s age and/or level of mathematics education.
	+ The range of strategies and procedures an individual might use to perform calculations and solve mathematical problems at the individual’s current level of mathematics experience and training.
	+ An understanding of which strategies and procedures are least/most efficient and effective in different situations.
	+ Typical error patterns for individuals who are struggling with particular aspects of mathematics.
* The range of strategies and procedures an individual might use to perform calculations and solve mathematical problems at the individual’s current level of mathematics experience and training. An understanding of which strategies and procedures are least/most efficient and effective in different situations.
* Current research into mathematical cognition
 | Training of teaching mathematical skills * + Primary Teacher (QTS or equivalent)
	+ Basic/Functional Skills Tutor, Mathematics Teacher)
	+ SpLD qualification which explicitly covers mathematical skills development
	+ Accredited CPD covering knowledge of the mathematical skills in 1.a.
 |
| **1.b. Specific Maths difficulties*** The impact that domain-specific and domain-general deficits may have upon learning and performance in mathematics in education, the workplace and everyday life.
* Typical error patterns for individuals who are struggling with particular aspects of mathematics.
* The impact that mathematics anxiety may have upon learning and performance in mathematics
* Risk and resilience factors in learning mathematics.
 | * + SpLD qualification which explicitly covers dyscalculia and maths difficulties
	+ Accredited CPD in specific maths difficulties covering content in 1.b.
 |
| **1.c. Maths Anxiety**The impact that mathematics anxiety may have upon learning and performance in mathematics.  | CPD in understanding the impact of maths anxiety in learning mathematics/part of other qualification |

|  |
| --- |
| **2. Teaching qualifications and teaching experience** |
| **2.a. Teaching qualification** |
| A relevant bachelor’s degree or Postgraduate qualification which explicitly and extensively covers how maths skills and/or maths cognition develop, for example: * a BEd or PGCE in primary teaching or in a mathematics related subject or;
* a BA/BSc or master’s in psychology which includes extensive coverage of mathematics and/or mathematical cognition;
* a qualification in SpLD Tutoring (Level 5 or above) which includes extensive coverage of maths difficulties within SpLDs;
* an accredited top-up course which covers all aspects of 1a, 1b and 1c.

In exceptional circumstances, where the assessor does not have a specific graduate/postgraduate qualification in maths, extensive experience and training may be considered on a case-by-case basis at the discretion of the assessor’s professional body. |

|  |
| --- |
| **2.b. Relevant teaching experience** |
| **Knowledge, skills, experience required** | Acquired through: |
| I) At least two years’ experience of teaching mathematics skills  | For example: as a Primary Teacher (QTS), SpLD Tutor, Basic/Functional Skills Tutor, Mathematics Teacher, Specialist Maths Teacher |
| II) At least 20 hours of teaching students with mathematical difficulties of which ten hours should ideally be in the last two years. | As detailed in 2a and 2bi. |

|  |
| --- |
| **3.Training, knowledge and experience of holistic SpLD Assessment** |
| Training in the process of performing a holistic SpLD diagnostic assessment which synthesises and evaluates qualitative and quantitative evidence gathered from detailed history-taking, psychometric testing, observation and error analysis. | A level 7 diploma in SpLD assessment |
| Training in and experience of, applying this knowledge to the assessment of mathematics. | * Level 7 qualification which explicitly trains and assesses the assessor in the full process of diagnostic assessment, including extensive coverage of diagnosing difficulties with mathematics or mathematical cognition (for example a master’s degree in psychology, or a level 7 specialist SpLD qualification in maths difficulties and dyscalculia assessment or a top-up level 7 qualification).

or* In exceptional circumstances, where the assessor has extensive experience of teaching and assessing mathematics, a minimum of twenty hours CPD (training, mentoring, personal research) on holistic diagnostic assessment in mathematics and can demonstrate their knowledge in diagnostic assessments of mathematics or mathematical cognition.
 |

Assessors should not identify a SpLD in Mathematics/dyscalculia unless they meet all the qualification criteria, covering their training, knowledge and experience of mathematical cognition and the teaching and assessment of mathematics covering the following criteria: as detailed in the table above.

## Appendix 1 - What should be included in a holistic assessment of maths difficulties/ dyscalculia?

This guidance aims to provide further detail of the content of an assessment of maths difficulties/ dyscalculia and should be read alongside and follow the Report format guidance at SASC.org.uk in the Downloads section.

The range of areas explored within a diagnostic assessment of mathematics should be informed by the individual’s history of difficulties, rather than by diagnostic categories.

**Overview**

An overview section at the start of the assessment report will detail the key findings of the report including recommendations. (See Format for a Diagnostic Assessment Report for Specific Learning Difficulties in the downloads section of SASC.org.uk).

**Background information**

Assessors should employ a framework for a thorough and appropriate history taking which covers mathematics, literacy and wider barriers to learning. The background information should explore risk and resilience factors, as detailed in Table i below, including health and developmental history; family history of SpLD; linguistic history; early and current experiences of maths at home, educational setting and workplace; progress, attainment and support in maths and across the curriculum; co-occurring difficulties and confidence and anxiety in maths and in general.

It should be gathered from a range of parties to identify the strengths and needs of the individual. This may include parents/carers, teachers and support staff for pre-16 assessments, tutors and colleagues for post-16 assessments. The views of the individual are particularly important.

**Table i**

|  |  |  |
| --- | --- | --- |
| **Background information** | **Area** | **Rationale** |
| Health and Developmental History |  |
| Vision  | Difficulties with visual acuity and dynamic vision, may impact on visual-spatial skills and learning in general.SASC visual difficulties protocol. |
| Hearing | Current or historical hearing difficulties can impact on maths learning, *s*pecific recommendations may need to be made. See Blatto-Vallee, Kelly, Gaustad, Porter & Fonzi, (2007); Nunes, (2004).   |
| Identification of relevant conditions/syndromes known to impact on maths learning  | Certain medical issues and genetic conditions are known to be increased risk factors for maths difficulties e.g.:* Turner Syndrome,
* Williams Syndrome
* DiGeorge Syndrome (22q11deletion).
* Preterm birth, (before 32 weeks) and extremely preterm birth (before 28 weeks). (The number of weeks should be noted).

Some health issues may also result in missed education |
| Language/ Linguistic History | English as an additional language – including levelComplex linguistic history | To eliminate as a potential cause of difficulty or to highlight a potential risk factor. |
|  |  |
| Reported language difficulties, past and present including DLD. | Associations between language difficulties and maths difficulties have been consistently observed (Dowker, 2024). |
| Early experiences of maths(When available) | Limited access to early education.A persistent difficulty in acquiring early number skills, despite a range of good quality opportunities.Not reaching the [EYFS goals](https://www.bing.com/ck/a?!&&p=1a640c13f1cf5dc4JmltdHM9MTcwODIxNDQwMCZpZ3VpZD0yNmZhN2NmYS05MWFmLTZmYzctMjRhNy02ZTMxOTBjZDZlNmImaW5zaWQ9NTIyOQ&ptn=3&ver=2&hsh=3&fclid=26fa7cfa-91af-6fc7-24a7-6e3190cd6e6b&psq=eyfs+goals+maths&u=a1aHR0cHM6Ly93d3cuZ292LnVrL2dvdmVybm1lbnQvcHVibGljYXRpb25zL2Vhcmx5LXllYXJzLWZvdW5kYXRpb24tc3RhZ2UtZnJhbWV3b3JrLS0y&ntb=1) in maths by the end of Reception. | Early experiences of and progress in maths are a strong indicator of future maths performance (Aubrey, Godfrey & Dahl, 2006). This may not be available for older learners. |
| Information from the family (approached sensitively and maintaining anonymity)Other information from home | Access and enjoyment of mathematical activities within the family. | De Smedt (2022) identifies the home environment in maths as a domain-specific factor in maths learning, particularly in the early stages of education. |
| Presence of a maths difficulty or other SpLD within the family | An individual is more likely to have a maths difficulty if there is a family history of difficulties |
| Reported difficulties present/historicalDifficulties with homework | To inform areas to be investigated in assessment |
| Attainment | Attainment in maths (general) | To identify a maths difficulty the individual would usually be working below age expectations or is not making expected progress over a sustained period of time. |
| In specific areas of maths e.g. place value, fractions, multiplication tables, etc | To inform assessment content and to consider whether the difficulty is specific to one area of maths or more generalised. |
| Teacher/tutor perspective on maths performance | To inform assessment and to confirm whether the views of the school are consistent with the findings of the assessment. This may also indicate that teaching support/perspectives are contributing to or positively supporting the challenges faced. However, this should be reported sensitively at the assessor’s discretion. |
| In other areas of the curriculum, particularly literacy | To record an individual’s performance in and enthusiasm for other areas of the curriculum. |
| Stability in education | Low attendance/punctualityGaps in educationDisruptions due to moving school/home | To consider whether any identified difficulty is due to gaps in education. |
| SEND | Level – e.g. SEND support/ EHCP, past and present areas requiring support. E.g. the four areas of need in the SEND Code of Practice for school pupils. | To establish level of support and to consider co-occurring areas of difficulty.  |
| Support | In class/withdrawalPresent/previous intervention with details of:* What (type/name of intervention, keep up/catch-up)
* When (for how long/how often)
* With whom (qualification level of teacher/tutor)
* Progress made
 | To ascertain whether the individual has accessed intervention, whether it was targeted and how they responded. This would be reported sensitively. |
| Co-occurring difficulties | Dyslexia | To establish whether the difficulty is co-occurring and/or the impact of the identified condition on mathematics learning.Dyslexia and ADHD were the most common co-occurring condition (Morsanyi et al 2018).Some students may compensate in maths so that it is not a problem. |
| ADHD |
| DCD |
| DLD |
| ASC |
| Confidence/ enjoyment levelsIn maths at home/school | General anxiety, and/or issues with confidence and self-esteemSpecific maths anxietyPositive and negative school experiences in maths | To ascertain levels of anxiety and whether there are particular triggers as well as the impact on maths learning.Information should be gathered sensitively and could include maths anxiety questionnaires. |
| The views of the individual(if not providing other information) | Self-evaluation of levels in maths, confidence, areas of strength in maths and beyond. | To compare with the views of the school/parentsTo inform assessment content and style of deliveryTo explore the usefulness of recommendations focused on enhancing maths self-efficacy |

Dyscalculia screeners and checklists may be used to inform the assessment. Details of previous assessments of literacy and maths will also help to determine the specificity of tests selected in the assessment to reduce over-testing.

**Language and Reasoning Skills**

* Receptive language and listening comprehension.
* Expressive language.
* Verbal reasoning.
* Phonological awareness.
* Non-verbal reasoning.

*These skills are the foundation for reading, spelling and mathematics learning. Poor phonological awareness is strongly implicated in specific learning difficulties such as dyslexia and has a weaker link with the early acquisition of arithmetic skills. Very poor oral (receptive and expressive) language skills are implicated in developmental language disorder (DLD). Poor early language skills are implicated as a risk factor for dyslexia and a specific learning difficulty in mathematics.*

**This section will include:**

* A standardised measure of **receptive and/or expressive language** skills to assess vocabulary knowledge, language structure and the ability to put thoughts into words **and** sentences in ways that make sense.
* Measures of **verbal reasoning ability** to assess the capacity to make conceptual links and relationships.

**This section could also include:**

* A test of **listening comprehension** to provide useful information to contrast with tests of reading comprehension carried out elsewhere in the assessment.
* Standardised measures of **phonological awareness** if there is a concern.

**Attainment Sections**

* Gathering information about areas of attainment is a core component of a SpLD assessment.

**Mathematics**

* Basic calculations
* Graded computation
* General mathematics attainment
* Mathematical reasoning
* Problem solving

*Assessing the level of mathematics attainment can provide an indicator of the impact that difficulties have on mathematics learning and application.*

*Where persistence and severity of mathematics difficulties seem marked, this may signal the possibility of a specific learning difficulty in mathematics. An assessment primarily focusing on literacy, informed by the background information, would not usually include all assessment areas of mathematics attainment.*

Choosing tests in this section can therefore depend on the emerging focus of the assessment. However, in a holistic assessment of mathematics leading to a diagnosis of a specific learning difficulty in mathematics, it would usually be expected that all areas listed below would be covered.

**A comprehensive, holistic assessment of mathematics difficulties will include** standardised measures, as listed on the SASC test list, to cover the following areas:

1. Standardised **timed test(s) of basic calculation** to cover +, -, x, ÷ as appropriate to the age and level of the individual to assess the automaticity of written responses.
2. A written untimed **test of graded computation** to explore the individual’s current levels across the four operations and to see how far they can advance and to consider their approaches.
3. **General maths attainment**: A general maths assessment that includes progression to ascertain the individual’s current level of attainment in maths and their potential ceiling.
4. **Mathematics reasoning and problem solving**, including word problems to explore whether the difficulties are related to number, or mathematical terminology, or language more generally. This may or may not be included in the maths assessment listed above. Consideration should be given to whether a selected standardised test assesses reasoning and whether additional qualitative assessment is required.

**This section could also include:**

* Standardised measures of specific areas of maths (e.g. geometry, algebra) to determine the impact across different areas of maths.

**Informal and/or Qualitative Assessments of Mathematics**

Informal assessments may be used to supplement standardised assessments to compare performance in different contexts and to fill gaps not already assessed or where further information is needed. For example, for numerical magnitude processing and domain-specific language, non-standardised assessments may be referenced and used qualitatively. Assessors need a deep understanding of mathematics and typical development trajectories to use them effectively and with a degree of objectivity.

**Literacy**

Reading ability is a strong predictor of future maths attainment. The selection of literacy tests should be:

* Limited to avoid over-testing.
* Based on the background information, particularly if there is evidence of literacy difficulties and no prior assessment has been undertaken.
* Informed by the findings and observations of the current cognitive and maths assessments.

Findings from prior assessments of literacy (standard school examinations, tests and assessment administrations by suitably qualified professionals) can be considered if the assessor considers them to be reliable and appropriate to the assessment. Caution should be exercised when comparing findings on literacy skills to mathematical understanding and skills performance unless the subtests used have been co-normed.

### Standardised tests and qualitative observations of cognitive processes

Assessors should use their professional judgment in order to select appropriate assessment tools from the STEC test list, based on the background information and their observations from the assessment in order to avoid over-testing. Consideration should also be given to the age and level of the individual and whether standardised tests are available and appropriate. Care should be considered in relation to the Americanisms within some assessments, particularly contexts, and whether this affects how findings should be recorded within reports.

The following areas should be considered as appropriate to the age of the individual:

**Table ii**

|  |  |
| --- | --- |
| **Area** | **Rationale** **Research evidence justifies that:** |
| i) **Domain-specific**  |  |
| **Numerical cognition** |  |
| * Symbolic magnitude processing
 | Weaker performance on numerical (symbolic) magnitude processing is strongly associated with weak maths achievement (De Smedt et al (2013). Accuracy in symbolic number comparison is specifically associated with mathematical performance (Caviola et al., 2020). (Lyons et al (2014)A standardised measure of symbolic magnitude comparison (e.g. digit comparison) **should** be used. |
| * Non-symbolic magnitude processing.
* Magnitude estimation
* Counting
* Sequencing/ordering numbers
 | Research findings on the predictive value of non-symbolic magnitude are mixed (Caviola et al., 2020); De Smedt, Noël, Gilmore & Ansari, 2013). Morsanyi et al (2020).Other areas of numerical processing (ordering, sequencing, etc) **should** be explored through standardised tests or qualitative assessment as appropriate to the age and level of the individual. This **could** include standardised measures of:Non-symbolic magnitude comparison (e.g. dot comparison)CountingOrdering/sequencing numbersMagnitude estimationQualitative assessment and observations from maths attainment tests can be used to supplement standardised assessments or could replace them where standardised assessments are not available for or appropriate to a particular age group. |
| **Domain-specific language** including number words and terms, linguistic elements that have a mathematical meaning. | It is essential that spatial language is appraised in younger learners (See: Gifford, Gripton, Williams, Lancaster, Bates, Williams, et al., (2022); Gilligan, Hodgkiss, Thomas & Farran, 2019; Gilligan-Lee, Hodgkiss, Thomas, Michael, Patel & Farran, 2021). Other factors to consider are potential maths language confusions (how everyday words have specific, different meanings in maths), maths terminology (to describe the elements in mathematical actions and mathematical entities) and academic register in maths (the ability to talk coherently and confidently about mathematical ideas and actions). Observations and qualitative analysis of mathematical language are sufficient without the requirement of a standardised test. |
| **ii) Domain-general**  |  |
| **Speed of processing and retrieval*** Rapid automatised or symbolic naming
* Coding, symbol search and cancellation tasks
* Retrieval fluency
* Visual-motor speed
 | *Speeded tests of processing and retrieval can be used to gain information about the individual’s ability to perform relatively simple, repetitive cognitive tasks quickly and accurately. Processing speed can impact on reading, spelling or numerical fluency.* Generally, the automaticity of arithmetic is dealt with in the domain-specific section of the report. There is mixed evidence on whether RAN (rapid automatic naming) impacts on maths learning. It is thought to have more of an impact on mathematics in younger children. If there is evidence of slow processing in a dyslexia assessment, assessors should consider the impact in maths.Standardised tests **could** include:* Measures of rapid automatised or symbolic naming (RAN)
* Coding, symbol search and cancellation tasks.
* Retrieval fluency tasks, semantic or phonological.
* Visual-motor speed tasks.
 |
| **Memory and attention*** Verbal working memory,
* Phonological short-term
* Phonological memory
 | Working memory has particular impact on word problems and calculation (De Smedt, 2022).Generally, verbal working memory and phonological short-term memory are associated with maths achievement (Caviola, Colling, Mammarella & Szűcs, 2020) but the role of verbal working memory appears to fluctuate with age (development) and the area of maths under scrutiny ( Dowker, 2024). Verbal working memory is of particular importance in multi-step calculations where interim solutions must be held in mind. Attentional facilities usually correlate with mathematical performance (LeFevre, Berrigan, Vendetti, Kamawar, Bisanz, Skwarchuk et al., 2013).A standardised measure of verbal working memory **should** be used.A standardised measure of phonological working memory **could** be used.Caution is advised when reporting standardised measures as coping strategies or test design factors can mask the underlying difficulties the individual experiences more generally. |
| * Inhibitory control
 | Inhibitory control is important to maths development (Spiller, Clayton, Cragg, Johnson, Simms & Gilmore, 2023; Friso-Van den Bos, Van der Ven, Kroesbergen & Van Luit, 2013).Observations of the individual’s ability to channel attention effectively during arithmetic and problem-solving tasks are sufficient. |
| * Shifting
 | Shifting has not been found to be as influential as either of the other executive function factors (Spiller et al., 2023) Shifting need not be tested/explored but could be noted if difficulties are observed. |
| **Visual-spatial processing:** * Visual working memory,
* Visualisation
* Spatial processing: spatial working memory, spatial thinking skills (mental rotation, spatial visualisation, spatial orientation, spatial scaling)
 | The processing of visual-spatial information enables us to make sense of what we see and to interact efficiently and appropriately with the world around us. It is crucial to our performance of everyday tasks in academic and workplace environments. Visual-spatial skills contribute to mathematical performance at a practical level: when reading and interpreting graphs, lining up calculations and comparing visual quantities. The ability to store accurate spatial representations in memory and to marshal these when solving problems is important in the development of mathematical understanding and problem-solving. Spatial skills influence all areas of mathematical thinking, not just shape and space. ‘The mapping of numbers to space is central to how we operationalize, learn, and do mathematics’ (Hawes & Ansari, 2022, p. 465); The visualisation of space and other spatial skills are significantly correlated for individuals at all educational levels (Atit, Power, Pigott Lee, Geer, Uttal, Ganley & Sorby, 2021).* At least one measure that explores how the learner processes visual-spatial (non-verbal) information **should** be used. **Tests that could be used** to fulfil this include:
* **A standardised test of visual working memory** (The ability to analyse visual stimuli and to recall the relations within those stimuli): e.g., recall of abstract patterns; memory for sequences; memory for observed actions and the ability to reproduce them; memory for scenes; memory for designs – with or without a motoric reproduction element.
* **Spatial processing** (The ability to hold spatial relations in memory and use the information to carry out tasks effectively)**:** e.g., spatial working memory; spatial thinking skills are used when informally or formally solving problems involving spatial information.
* **Mental rotation skills**
* Measures of **visual reasoning / pattern or design recognition /construction** which may assess grouping and ordering skills, pattern recognition, abstract reasoning skill, logic, problem solving and deduction.
* In a maths-focused report it is likely to be more appropriate to report non-verbal reasoning performance (e.g., matrices, pattern-building/completion tasks - English, 2004) in this section of the report if they are carried out.

The assessment should also consider qualitative observations of the individual’s ability to deal with tasks involving spatial thinking. Informal questioning can also be used to elicit how the individual uses mental imagery and visualisations to solve mathematical problems. Assessors may also consider tests or qualitative observations of general visual perception and other visual processing skills. |

Informal assessments may be used to supplement standardised assessments to compare performance in different contexts and to fill gaps not already assessed or where further information is needed. For example, for numerical magnitude processing and domain-specific language, non-standardised assessments may be referenced and used qualitatively. Assessors need a deep understanding of mathematics and typical development trajectories to use them effectively and with a degree of objectivity.

**Qualitative analysis**

Analysis of the performance within the assessment should include:

* Analysis of the individual’s pattern of errors,
* Observation and questioning about strategies used. These observations are used to determine levels and areas of fluency,
* Observation of motivation, determination, perseverance, impulse inhibition, attention, and which tasks were avoided,
* Conceptual understanding of any standard procedures used,
* Use of concrete materials and visual representations – to evaluate to what extent an individual understands basic mathematical concepts, and to explore any differences between what an individual can achieve with standard symbolic notation, and with non-standard representational strategies (e.g. modelling, drawing). Assessors should consider the impact of the individual’s previous access to equipment.

**Recommendations for interventions and reasonable adjustments** should be clearly linked to:

* The individual’s difficulties reported in the background information and evidenced in the assessor’s quantitative and/or qualitative analysis of performance in tests.
* The individual’s needs within the classroom, course or job.

Wherever possible recommendations should be developed collaboratively with relevant mathematics specialists in the individual’s school, course or workplace. Reasonable adjustments should be appropriately targeted to address the need in order to redress a disadvantage. Assessors should bear in mind that adjustments such as use of a calculator or provision of rest breaks can sometimes target the need more effectively than additional time.

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1. See **Format for a Diagnostic Assessment Report for Specific Learning Difficulties 2025** (forthcoming 2025) available at SASC.org.uk in the downloads section. [↑](#footnote-ref-1)
2. More detailed discussion on this topic can be found in the **SASC Maths Difficulties and Dyscalculia Working Group report 2025** (forthcoming) to be found on the SASC.org.uk in the Downloads section. [↑](#footnote-ref-2)
3. **Format for a Diagnostic Assessment Report for Specific Learning Difficulties 2025** (forthcoming) See SASC.org.uk downloads section. [↑](#footnote-ref-3)