



Denny
High School Est. 1909

Integrated Pupil Support Department

Defying Dyscalculia Info Booklet



What are the indicators of Dyscalculia?

Poor memory for **facts and procedures**

An **inability to subitise** even very small quantities

Weakness in **visual and spatial orientation**

Difficulties with **learning to tell the time** and understanding time

Poor **number sense**

Slow processing speed

Difficulty sequencing

Directional confusion

An inability to estimate whether a numerical answer is **reasonable**

Difficulties in **word problems** and multi-step calculations

Inability to **generalise**

Inability to notice **patterns**

Difficulty with **language**

An inability to **count backwards** reliably

Problems with all aspects of money

Weaknesses in both **short-term and long-term memory**

Weak strategies: for example counting in 1s or counting all instead of counting on

36%
of 15-24-year-olds
in the UK feel anxious
about maths



1 in 5
parents suffer from
arithmophobia –
a fear of numbers

**8⁷6³
5¹2**

Women are more
than twice as anxious
as men about using
maths and numbers



1 in 10
eight to 13-year-olds
in Britain suffer from
maths anxiety



Maths Anxiety

in numbers

only 26%
of undergraduate
students have the
numerical skills and
understanding necessary
for daily life and work



1 in 4
parents don't feel able
to teach their children
basic addition and
subtraction without
a calculator



40%
of parents
wouldn't be able to
show their children how
to split a restaurant
bill with friends



What is Dyscalculia?

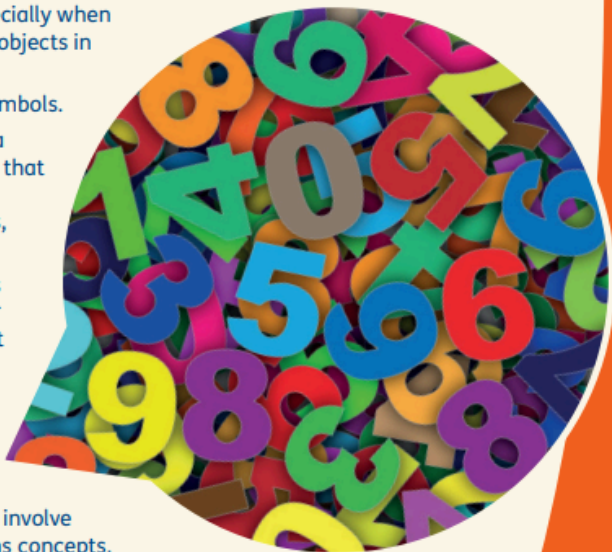
It is estimated that dyscalculia affects 4 – 6% of the population and it often co-occurs alongside other specific learning difficulties such as dyslexia and dyspraxia. Just as there is no single set of indicators that characterises dyslexia, there are a number of areas which can cause dyscalculic difficulties. These could include written number problems and difficulties caused by poor working memory.

See a definition of dyscalculia on the Addressing Dyslexia Toolkit website. <https://addressingdyslexia.org/what-is-dyslexia/what-is-dyscalculia/>

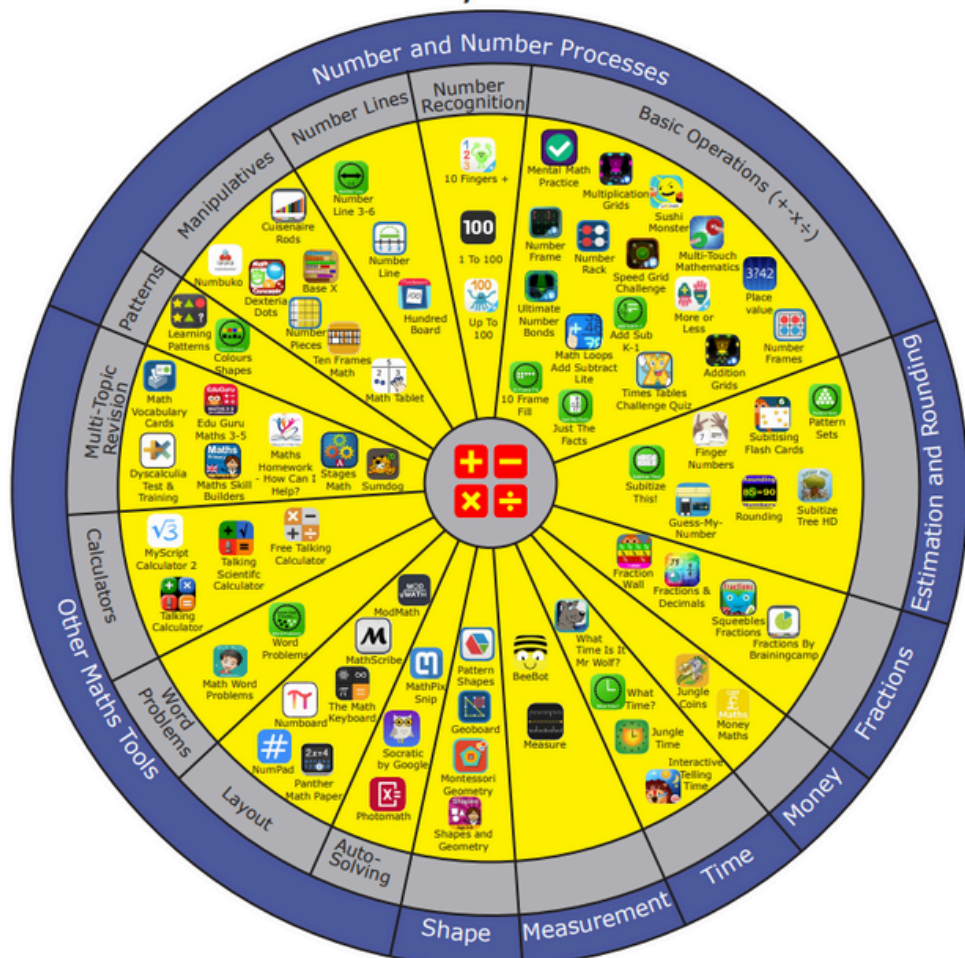
In general, people with dyscalculia have poor 'number sense'. Number sense is an intuitive understanding of how numbers work. Number sense is at the core of maths learning. In a similar way that a lack of phonemic awareness causes people with dyslexia to struggle with reading, a lack of number sense causes people with dyscalculia to struggle with maths concepts. If individuals don't understand the basics about how numbers work, learning maths and using it every day can be very frustrating.

Signs of Dyscalculia in pre-school children

- Has trouble learning to count, especially when it comes to assigning a number to objects in a group.
- Has trouble recognising number symbols.
- Struggles to connect a number to a real-life situation, such as knowing that '3' can apply to any group that has three things in it – 3 biscuits, 3 cars, 3 toys.
- Has trouble remembering numbers and skips numbers long after other children of the same age can count and remember numbers in the right order.
- Finds it hard to recognise patterns and sort items by size, shape or colour.
- Avoids playing popular games that involve numbers, counting and other maths concepts.



iPad Apps for Learners with Dyscalculia/ Numeracy Difficulties



iPad Apps for Learners with Dyscalculia/Numeracy Difficulties is one of over 30 posters available from the Downloads section of the CALL Scotland web site. It was first launched in October 2017 and has been downloaded nearly 12,000 times. Since our last update a few apps have disappeared; others have had their names / icons or web addresses changed and we have added 10 apps to the poster.

The wheel is by no means comprehensive but tries to find apps that will help to embed numerical learning and to give opportunities for repeated practice of concepts that cause difficulty. We would stress that, particularly for dyscalculia and maths, individual apps provide useful practice and reinforcement, but are not a substitute for sound teaching.

If you use the electronic version, clicking on the individual app names or icons will take you to information on each app in the Apple App store.

CALL Scotland runs courses on Technology to support Dyslexia and Dyscalculia at our centre in Edinburgh and at your school, by request:

<https://www.callscotland.org.uk/professional-learning/>

Some developers have chosen to make their resources available through a web site, rather than develop separate apps for the various laptops and tablets used in schools. We therefore decided to include a short list of web sites with relevant online activities in this poster.

- [Coolmath4Kids](#)
- [Crickweb](#)
- [Doorway Online](#)
- [Helping with Math](#)
- [Math Playground](#)
- [StudyLadder](#)
- [TES Elements - Maths](#)
- [Twinkl - Primary Resources - Maths](#)



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of EDINBURGH



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An electronic version of this chart can be downloaded from:
<http://www.callscotland.org.uk/downloads/posters-and-leaflets>

CALL Scotland
Communication, Access, Literacy and Learning

Ideas for supporting maths

Children,
Parents &
Teachers

Some problems with maths may be related to dyslexia. These problems are different from – but may overlap with – difficulties caused by dyscalculia.

Difficulties in primary school

- Learning the vocabulary of maths
- Confusion with signs such as + and \times or – and \div
- Confusion with reversing numbers such as 6 and 9 or 2 and 5
- Difficulty in memorising multiplication tables
- Directional confusion in calculations such as subtraction
- Directional confusion with tables such as bus/train timetables
- Sequencing – writing 18 as 81 or 29 as 92
- Place value
- Difficulty with mental arithmetic because of short term memory difficulties
- Difficulty with understanding a question which involves words

How to help in primary school

- Help with the vocabulary. Sometimes there is more than one expression for the same thing which can be confusing – for example ‘subtract’, ‘take away’, ‘minus’.
- Give as much practical experience as you can. For example, with money, use real coins to increase practical understanding and experience.
- Use concrete examples to illustrate ideas. Building a tower of bricks helps with counting. Cutting a cake or pizza into portions helps with fractions.
- Help raise awareness of direction, for example, working from right to left for addition. Tables might have to read from both top to bottom and from left to right.
- Talk about numbers – TV Channels, dates, birthdays, house numbers, page numbers, phone numbers.
- Count when skipping, scoring goals, climbing stairs (then try doing this two at a time).
- Use children’s games to work on numbers. For example Connect 4, dominoes, board games such as Snakes and Ladders (great for counting forwards from different numbers, and not just from 1).
- Use terminology used in maths, including the same, more than, less than, how many, how many more.
- Make games such as ‘pairs’ with cards to help match symbols.
- Time – discuss the concepts of time in different ways, for example, day and night, early and late.
- Encourage them to help with things like cooking – using weighing and measuring. By putting these skills into practical ‘real life’ tasks, it can aid understanding.

Difficulties in secondary school

- Vocabulary will become more demanding
- Sequencing might be more of a problem: 30 31 32 34
- Greater difficulty with wordy problems, especially extracting the numerical information and knowing where to start with the calculation
- Knowing where to start in a calculation or remembering the correct order of steps
- Able to come up with the correct answer but be unable to show the working
- Graphs and three-dimensional work might be difficult – or it might be much easier than numerical calculations
- Algebra might be confusing

How to help in secondary school

- Help with learning and understanding vocabulary.
- Read through questions together. Help extract the numerical information and work out the steps needed, perhaps by drawing simple pictures. Encourage independent working.
- In an exam, marks will be given for correct working so encourage the writing down of steps during calculations.
- Help with use of a calculator.
- Find concrete examples where possible to illustrate a topic – for example, encourage them to help with something practical like a car journey by working out the mileage and time it will take to make a journey.

Further information

- Maths for the Dyslexic: A Practical Guide by Anne Henderson
- Supporting Students with Dyslexia in Secondary Schools by Moira Thomson
- Mathematics Learning Difficulties, Dyslexia and Dyscalculia by Steve Chinn
- Working definition of dyscalculia: www.addressingdyslexia.org
- Dyslexia Scotland Helpline 0344 800 8484 or helpline@dyslexiascotland.org.uk





Technology: numeracy checklist for learners with dyscalculia

If you...	learn how to...with...	Windows 	ChromeOS 	iPad
mix up numbers or confuse maths symbols...	<ul style="list-style-type: none"> write numbers with a keyboard write expressions with an equation editor read numbers and symbols with text-to-speech. 	Do column calculations with CALL Maths template (Word and PDF). Microsoft Office Equation Editor	Do column calculations with CALL Maths template (Word and PDF). Google Docs Equation Editor	Do column calculations with CALL Maths template (Word and PDF). Pages Equation Editor
confuse dates and times...	<ul style="list-style-type: none"> read dates and times with text-to-speech. 	Use Natural Reader or the built-Read Aloud	Use the built-in Select to Speak .	Try the iPad/iPhone built-in Speak Screen .
find it hard to get information from graphs and charts...	<ul style="list-style-type: none"> use digital graphs and charts and <ul style="list-style-type: none"> zoom in/out change colours highlight text-to-speech add annotations, e.g. straight lines to guide you. 			
have problems holding numbers in your head when calculating...	<ul style="list-style-type: none"> use a calculator. 	Windows Calculator	Chromebook Calculator	Talking Calculator
get muddled when doing a complicated maths problem...	<ul style="list-style-type: none"> ask your teacher for a step-by-step summary. tick off or strike out each step as you complete them. 			
find it hard to remember the order of steps to solve problems...	<ul style="list-style-type: none"> ask your teacher for a step-by-step summary. tick off or strike out each step as you complete them. 			



Useful links

[Numeracy difficulty help](#)

[Immersive reader](#)

[Equations](#)