Dyscalculia, Dyslexia and Maths.

1. What is dyscalculia?

The DfE defines dyscalculia as: 'A condition that affects the ability to acquire arithmetical skills. Dyscalculic learners may have difficulty understanding simple number concepts, lack an intuitive grasp of numbers, and have problems learning number facts and procedures. Even if they produce a correct answer or use a correct method, they may do so mechanically and without confidence.'

Dyscalculia is like dyslexia for numbers. Not so much is known about dyscalculia as dyslexia but it is generally felt that it tends to run in families and that there is a specific area of the brain affected which mean people experience great difficulty with the most basic aspects of numbers and arithmetic.

Best estimates indicate that somewhere between 3% and 6% of the population are affected. These statistics refer to children who are 'purely' dyscalculic – i.e. they only have difficulties with maths but have good or even excellent performance in other areas of learning.

2. Does dyscalculia also affect people with dyslexia?

- Research suggests that 40-50% of dyslexics show no signs of dyscalculia. They perform at least as well in maths as other children, with about 10% achieving at a higher level.
- The remaining 50-60% do have difficulties with maths. Not surprisingly, difficulty in decoding written words can transfer across into a difficulty in decoding mathematical notation and symbols.
- For some dyslexic pupils, however, difficulty with maths may in fact stem from problems with the language surrounding mathematical questions rather than with number concepts – e.g. their dyslexia may cause them to misunderstand the wording of a question.
- In summary, dyscalculia and dyslexia occur both independently of each other and together. The strategies for dealing with dyscalculia will be fundamentally the same whether or not the learner is also dyslexic.

3. Typical symptoms of dyscalculia.

- **Counting**: Dyscalculics can usually learn the sequence of counting words, but may have difficulty navigating back and forth, especially in twos and threes.
- **Calculations**: Dyscalculics find learning and recalling number facts difficult. They often lack confidence even when they produce the correct answer. They also fail to use rules and procedures to build on known facts. For example, they may know that 5+3=8, but not realise that, therefore, 3+5=8 or that 5+4=9.

- **Numbers with zeros**: Dyscalculics may find it difficult to grasp that the words ten, hundred and thousand have the same relationship to each other as the numerals 10, 100 and 1000.
- **Measures**: Dyscalculics often have difficulty with operations such as handling money or telling the time. They may also have problems with concepts such as speed (miles per hour) or temperature.
- **Direction/orientation**: Dyscalculics may have difficulty understanding spatial orientation (including left and right) causing difficulties in following directions or with map reading.

Dyscalculic children may be particularly vulnerable where teachers follow an interactive, whole-class method of teaching as recommended by the National Numeracy Strategy. Asking dyscalculic children to answer apparently simple maths questions in public will inevitably lead to embarrassment and frustration.

4. Testing for dyscalculia

Dyscalculia screener for teachers by Professor Brian Butterworth.
http://www.gl-assessment.co.uk/education/resources/dyscalculia_screener.

This test is particularly useful because it depends very little on other cognitive skills (such as reading, language or short-term memory) or on a learner's educational experience. It makes it possible to assess a child's numerical potential independently of their abilities in other areas.

DysCalculiUM

www.dyscalculia.advancelearningzone.com/

DysCalculiUM is the first web-based solution for screening for dyscalculia in adults and learners in post 16 education. It is designed to screen both large groups of students and individuals and generally takes less than an hour to complete. It is effective for both further and higher education, but can also be used to screen adults in the workplace who are struggling with mathematics.

The Dyscalculia Assessment - a complete assessment tool for investigating maths difficulties in children, this book also provides advice for implementing the findings into teaching plans. Jane Emerson, Continuum 2010.

5. What help is available?

Dyscalculia is a special need and requires diagnosis and appropriate counselling as well as support away from whole class teaching. However, compared with dyslexia, very little research has focused on dyscalculia and how to overcome it. Consequently, there is relatively little ready made support available.

There are, however, a few very useful publications designed particularly to help teachers: firstly, so that they can recognise dyscalculia, and then so they can adapt their teaching to meet the needs of dyscalculic children. Parents of children with (suspected) dyscalculia may also find it useful to read these publications.

If you are a parent, you may find it helpful to discuss your concerns with the school Special Educational Needs Coordinator (SENCO).

The following website has helpful links for dyscalculia information and support: www.ddig.lboro.ac.uk/dyscalculia_web_links.html

British Dyslexia Association new technologies committee website:

www.bdatech.org/

Dyscalculia website

www.dyscalculia.me.uk/articles.html

Using your fingers to do times tables

http://gwydir.demon.co.uk/jo/numbers/finger/multiply.htm

Suppliers of Resources for Maths

British Dyslexia Association www.bdadyslexia.org.uk/

See their online shop www.bdastore.org.uk/

- Tel: 0845 251 9002
- Email: helpline@bdadyslexia.org.uk

Crossbow Education Limited www.crossboweducation.com/

- Tel: 01785 660 902.
- Email: sales@crossboweducation.co.uk

Dyslexia Action (Courses and materials) http://www.dyslexiaaction.org.uk/

- Tel: 01784 222 300
- Email: www.dyslexiaaction.org.uk/

iANSYST www.iansyst.co.uk/

- Tel: 01223 420 101

NASEN http://www.nasen.org.uk/

- Tel: 01827 311 500
- Email: welcome@nasen.org.uk

SEN Marketing http://www.senbooks.co.uk/

- Tel: 01924 871 697.
- Email: info@senbooks.co.uk

Sharma- Berkshire Mathematics http://www.berkshiremathematics.com/

- Tel: 0118 948 3476.
- Email info@berkshiremathematics.com

Cuisenaire rods (coloured blocks of wood to help with counting etc.) various suppliers if you search on Google or try:
www.amazon.co.uk
www.play.com

Further reading.

Butterworth, B. (1999). **The Mathematical Brain**. Macmillan.
Chinn, S. & Ashcroft, R. (1997) **Mathematics for dyslexics - a teaching handbook**. Whurr
Kay, J. & Yeo, D. (2003) **Dyslexia and maths** (A BDA/Fulton publication). David Fulton Publishers.
Yeo, D (2002). **Dyslexia, Dyspraxia and Mathematics**..Whurr
Eds.T and E Miles (1995) **Dyslexia and Mathematics**. Routledge
Chinn and Ashcroft(1993) **Mathematics for Dyslexics**. Whurr
Pauline Clayton (2003) **How to Develop Numeracy in Children with Dyslexia**.LDA.
Anne Henderson (2003) **Working with Dyscalculia**. Learning Works
Ronit Bird (2007) **The Dyscalculia Toolkit: Supporting Learning Difficulties in Maths**. Sage Ltd, book and CD.
Tandi Clausen-May (2005)**Teaching Maths to Pupils with Different Learning Styles** Sage Ltd.
Ronit Bird (2011) **The Dyscalculia Resource Book: Games and Puzzles ages 7 to 14**.Sage Ltd
Glynis Hannell (2005)**Dyscalculia: Action Plans for Successful Learning in mathematics**. David Fulton
Steve Chinn (2007) Dealing with Dyscalculia: Sum Hope.Souvenir Press