



National & Kapodistrian
University of Athens
Research Center of
Psychophysiology & Education



European
Dyslexia
Association

European Parliament

Brussels
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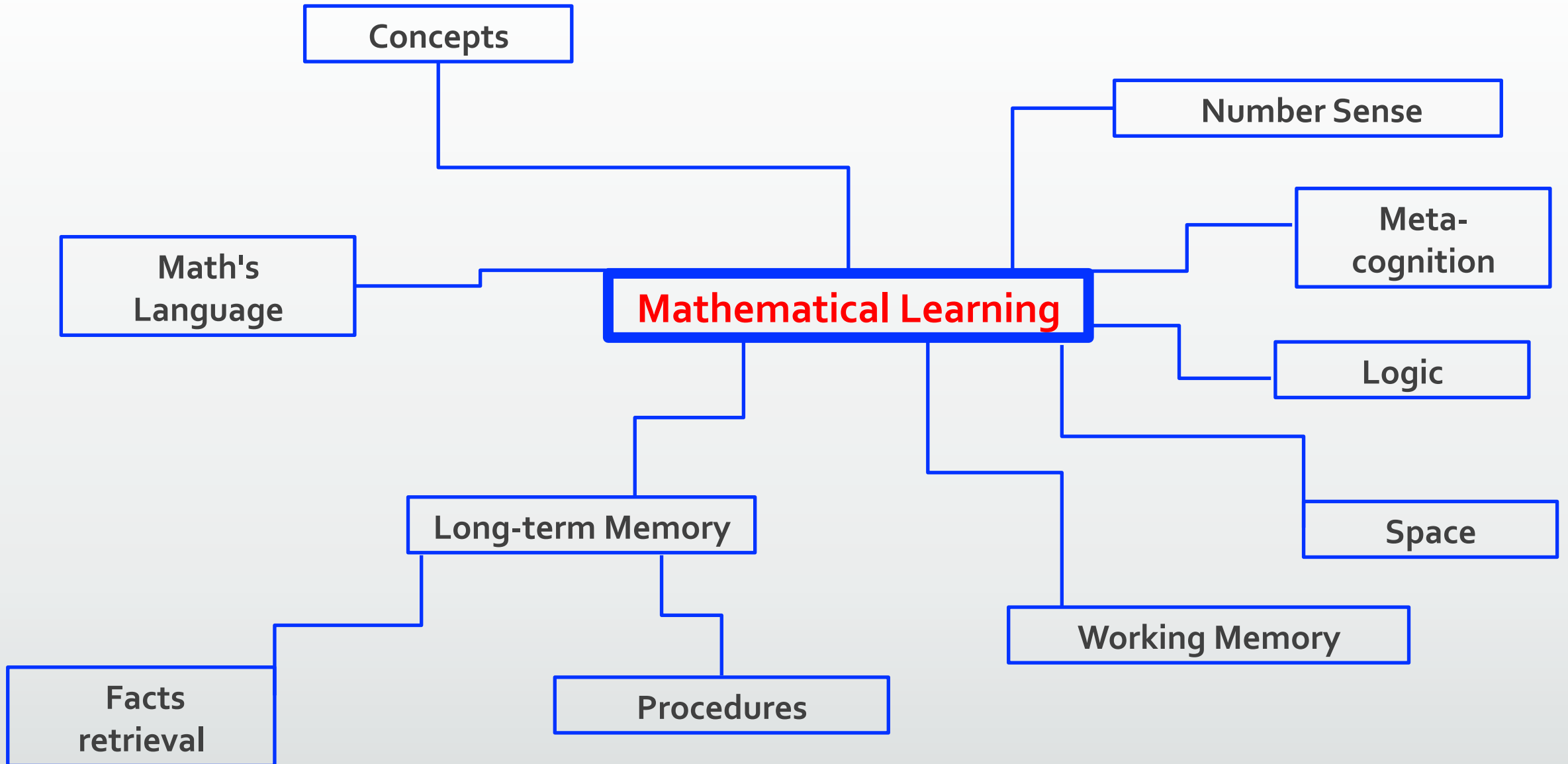
“Dyscalculia & Mathematical Learning Difficulties ”

Poor numerical skills are a more severe handicap than most people realize.

A recent cohort study of the effects of **low functional numeracy** shows that 'it is more of a handicap in the workplace than poor literacy'

(Bynner & Parsons, 1997)

Mathematics demands'



Developmental Dyscalculia

Developmental dyscalculia is traditionally defined as a **disorder of numerical competence and arithmetical skills** which is manifest in children who fail to achieve adequate proficiency in this cognitive domain despite normal intelligence, proper schooling, emotional stability, adequate social environment, and motivation

(APA, 1994; Shalev, Manor, & Gross-Tsur, 1997; Temple, 1992).

Dyscalculia Prevalence

Epidemiological studies conducted in several countries showed that this learning deficit is as widespread as reading disorders and affects about **3% to 7%** of school-aged children.

(Badian, 1983; Gross-Tsur, Manor, & Shalev, 1996; Kosc, 1974; Koumoula et al., 2004; Lewis, Hitch, & Walker, 1994; Shalev, 2004; Butterworth & Reigosa-Crespo, 2007; Reigosa-Crespo, Valdés-Sosa, Butterworth, Estévez, Rodríguez, et al., 2012; Shalev, 2007).

Mathematical Learning Difficulties

Comorbidity

- ❖ **Dyscalculia**
- ❖ **Dyslexia** **40% -60%**
- ❖ **Dyspraxia (DCD)**
- ❖ **ADD-ADHD** **25 %**
- ❖ **Autistic Spectrum**
- ❖ **Low average Intelligence**

Single Core Deficit

Multiple Deficit Views

MLD

MLD classification

acute - obtuse – concave

49 71

$$6 \times 7$$

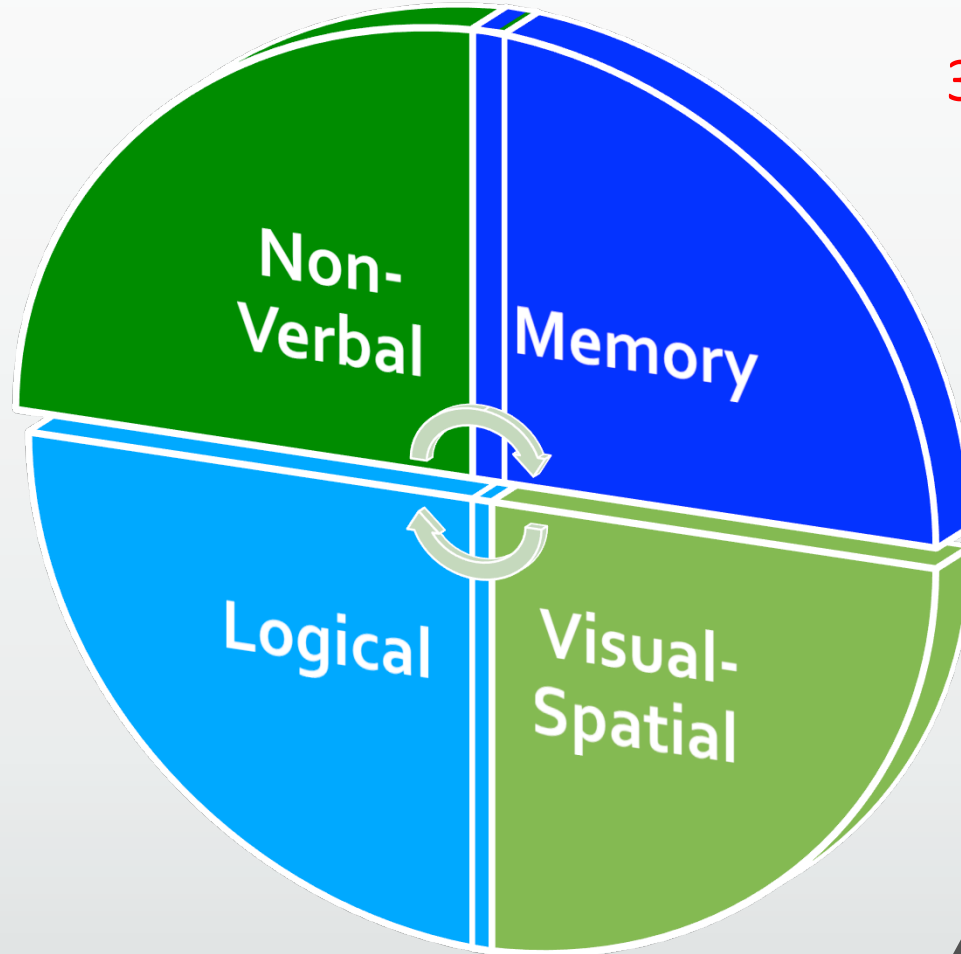
$$53 - 24$$

$$3 \times 8$$

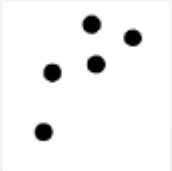
$$7 + 7$$

even- odd

numerator - denominator

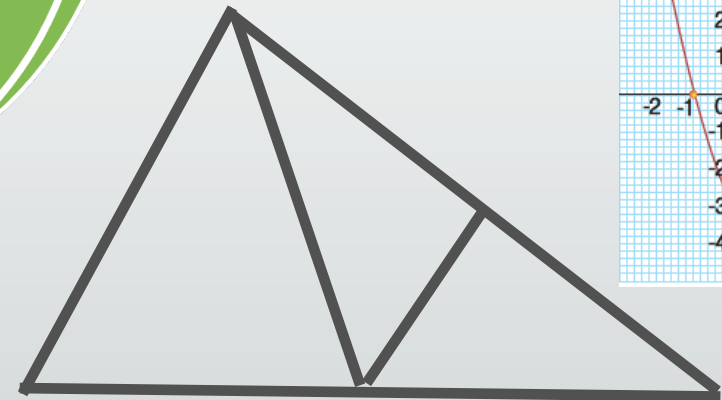
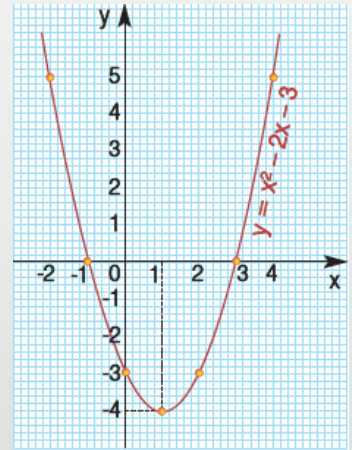


3



$$86 + 87 = \underline{\quad}$$

$$86 + 86 = 172$$



People with **poor numerical skills** (**26%** of the population) are:

- ❖ **more than two and half times** as likely to be **unemployed**
- ❖ **more than three and half time** as likely to be **depressed**

Compared with their numerically competent peers:

- ❖ **twice as many** are in **poor physical health**
- ❖ **fewer than half** are in **employment** by 30 years old
- ❖ **fewer than half** are home owners

(Parsons & Bynner, 2005).



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Thanks



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