

Developing Maths Eyes to Support Adult Numeracy Teaching and Learning

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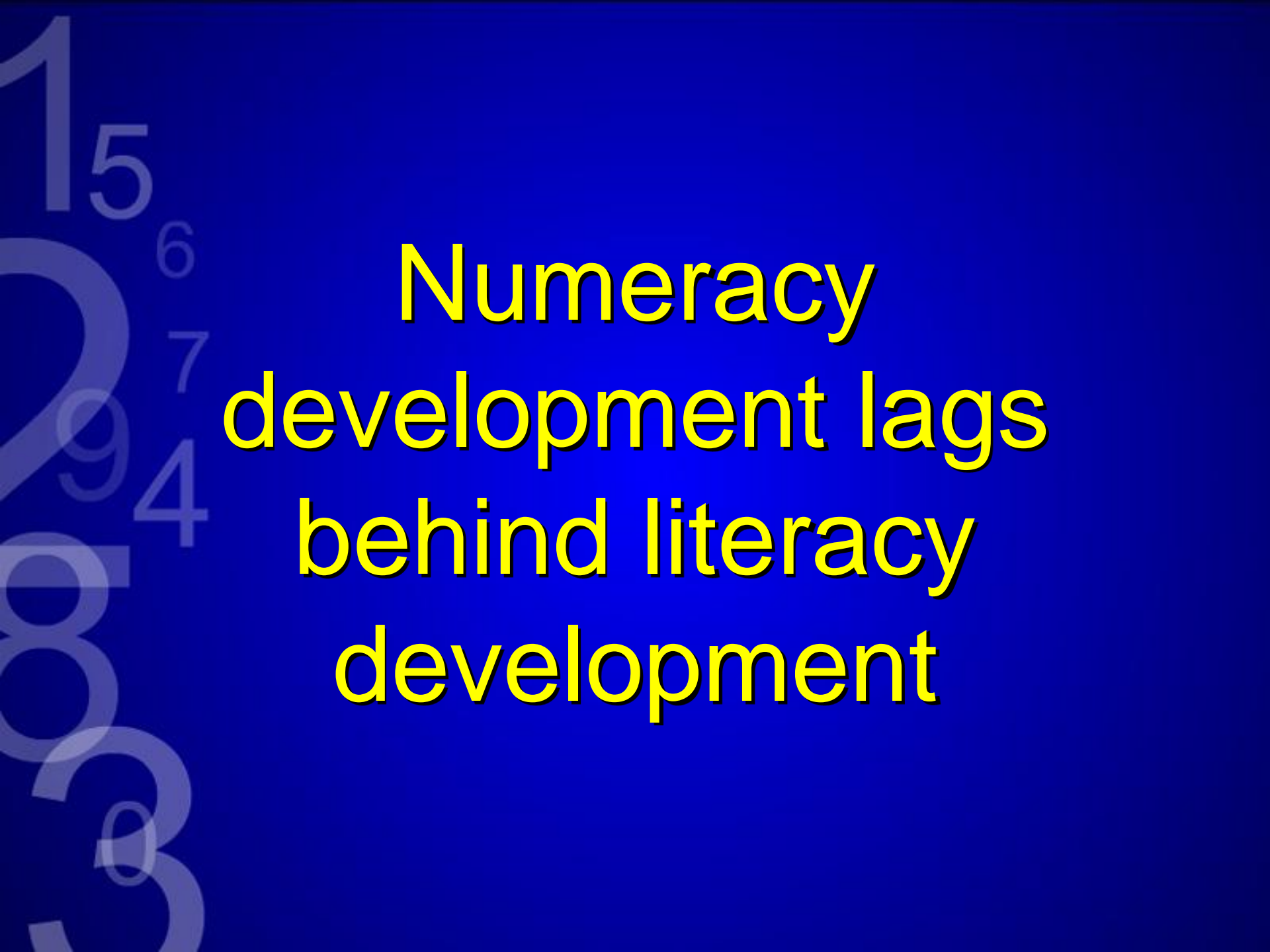
Literacy and Numeracy

Mathematics and Numeracy

1
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2
9
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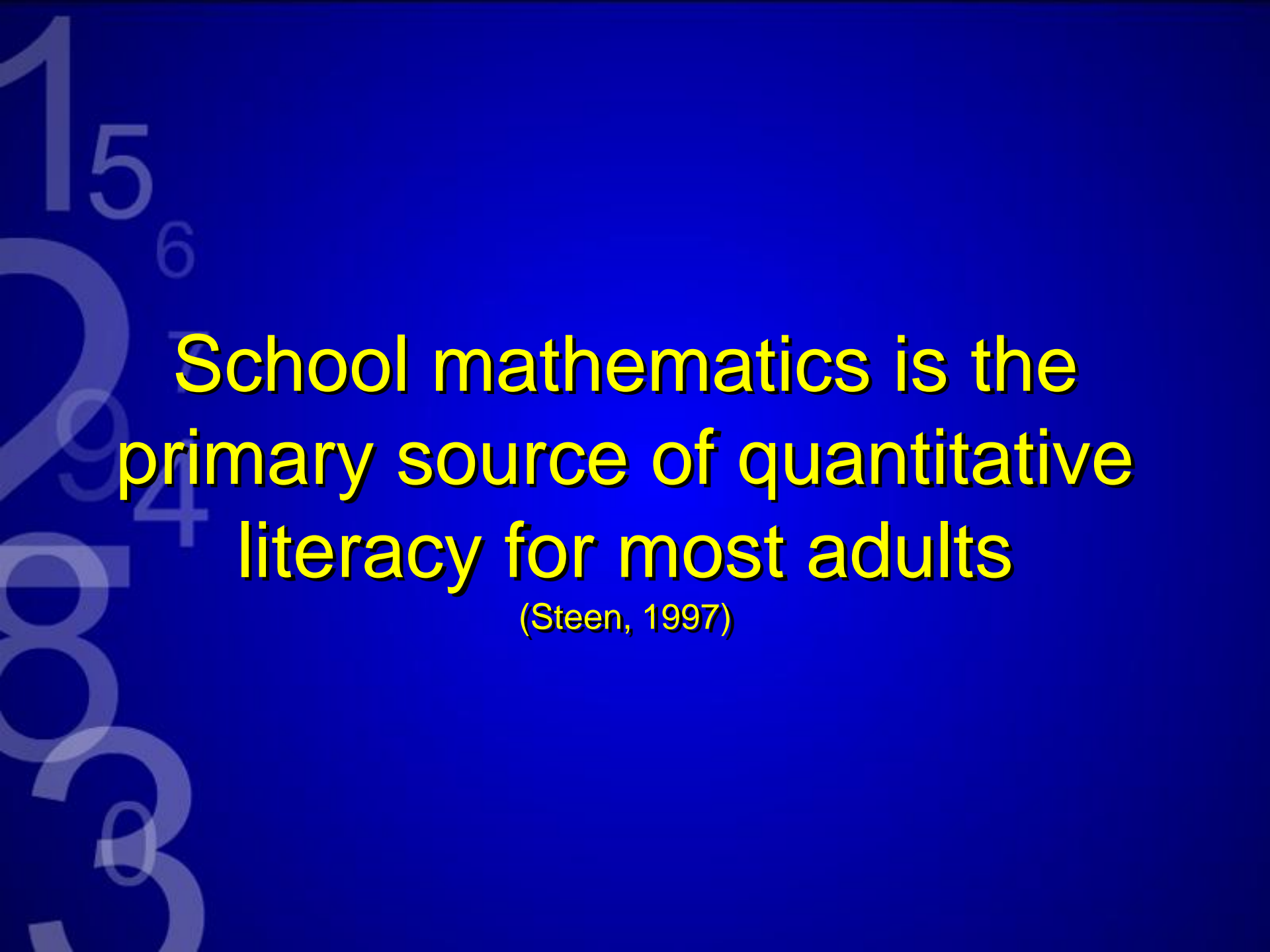
“The inclusion of numeracy as a component of literacy: sometimes explicitly included in literacy agendas, sometimes implicitly, sometimes omitted; is not sufficient”

(Cumming 1996)



**Numeracy
development lags
behind literacy
development**

‘Numeracy provision calls for as detailed and thoughtful an approach as has been given to literacy.’ (NALA, 1991, p. 54)



**School mathematics is the
primary source of quantitative
literacy for most adults**

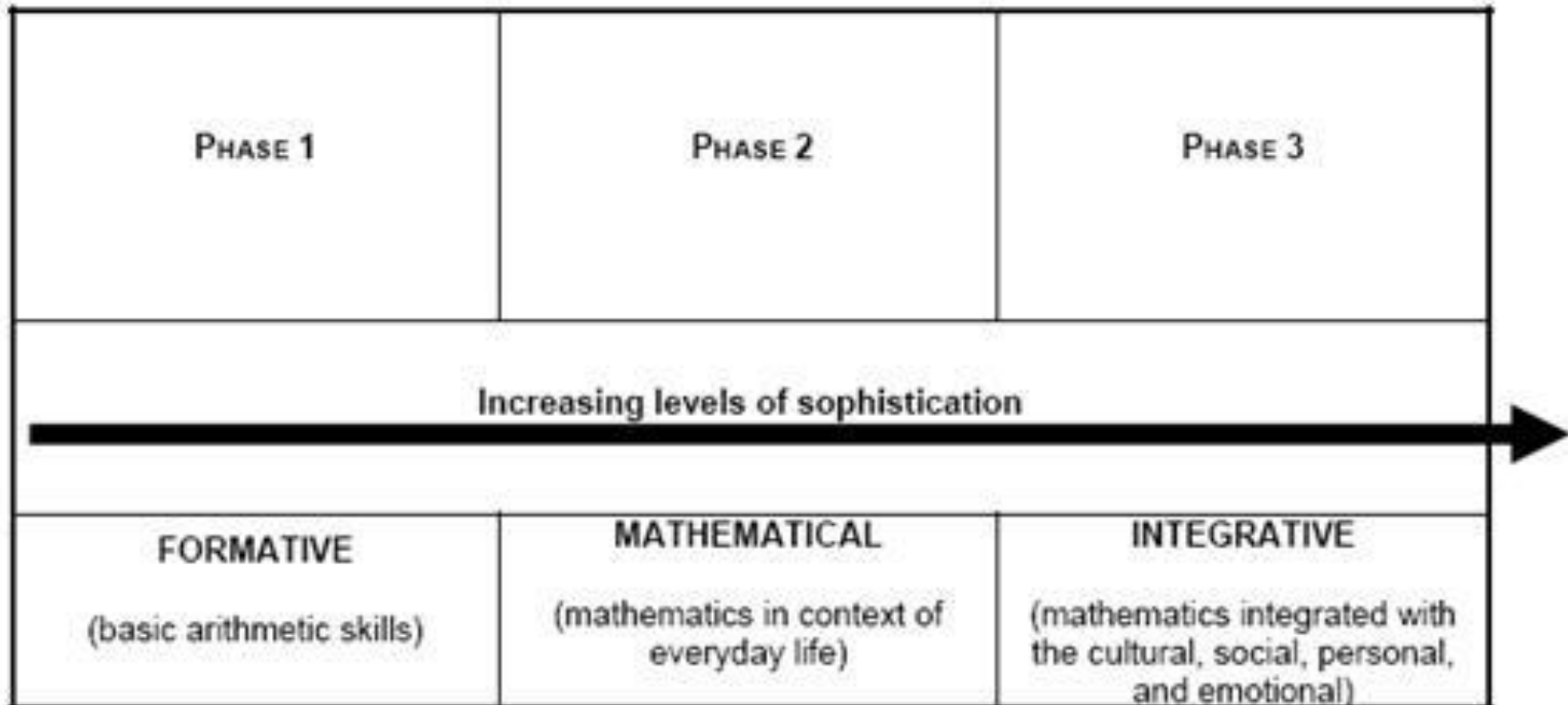
(Steen, 1997)

'The construction of this new thing, numeracy, gave us a chance to be creative, to claim for it the essentials we had for so long foregone [in maths]. Numeracy involved mathematics of course - how could it not? - but it was to be a mathematics in conversation with the world, where matters of life and death, survival and destruction, were not irrelevant matters but core concerns. It was to be a mathematics used by people, meaningfully, appropriately, purposefully, justly - and enjoyably'.

Johnston and Yasukawa, 2001

Adult Numeracy Concept Sophistication

Adult Numeracy Concept Continuum of Development



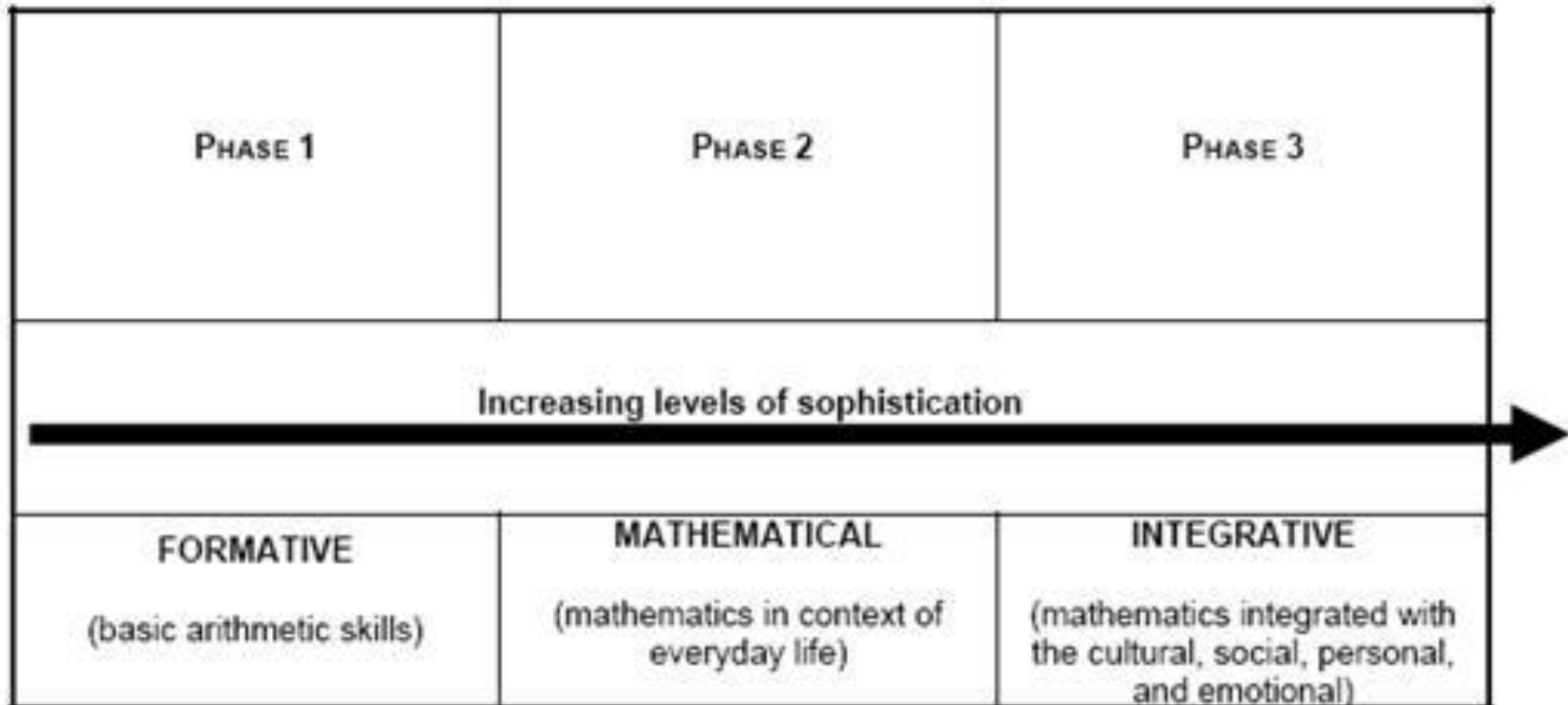
A continuum of development of the concept of numeracy showing increased level of sophistication from left to right (from Maguire & O'Donoghue, 2002)

A vertical column of large, light blue numbers is positioned on the left side of the slide. The numbers, from top to bottom, are 1, 5, 6, 7, 9, 4, 8, 3, and 0. They are semi-transparent and overlap each other.

What is Happening in Europe?

Adult Numeracy Concept Sophistication

Adult Numeracy Concept Continuum of Development



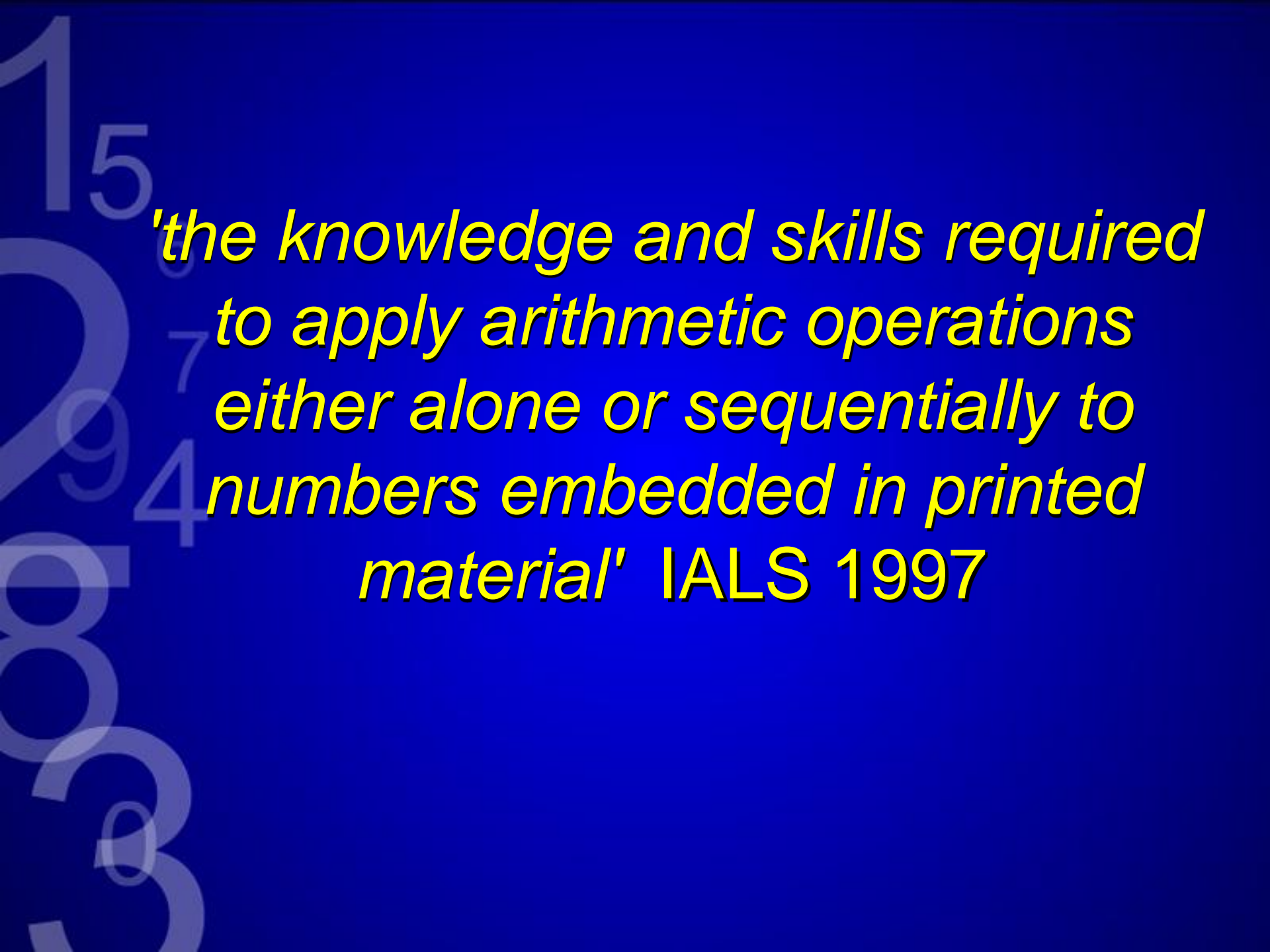
A continuum of development of the concept of numeracy showing increased level of sophistication from left to right (from Maguire & O'Donoghue, 2002)

PIAAC (Programme for the International Assessment of Adult Competencies)

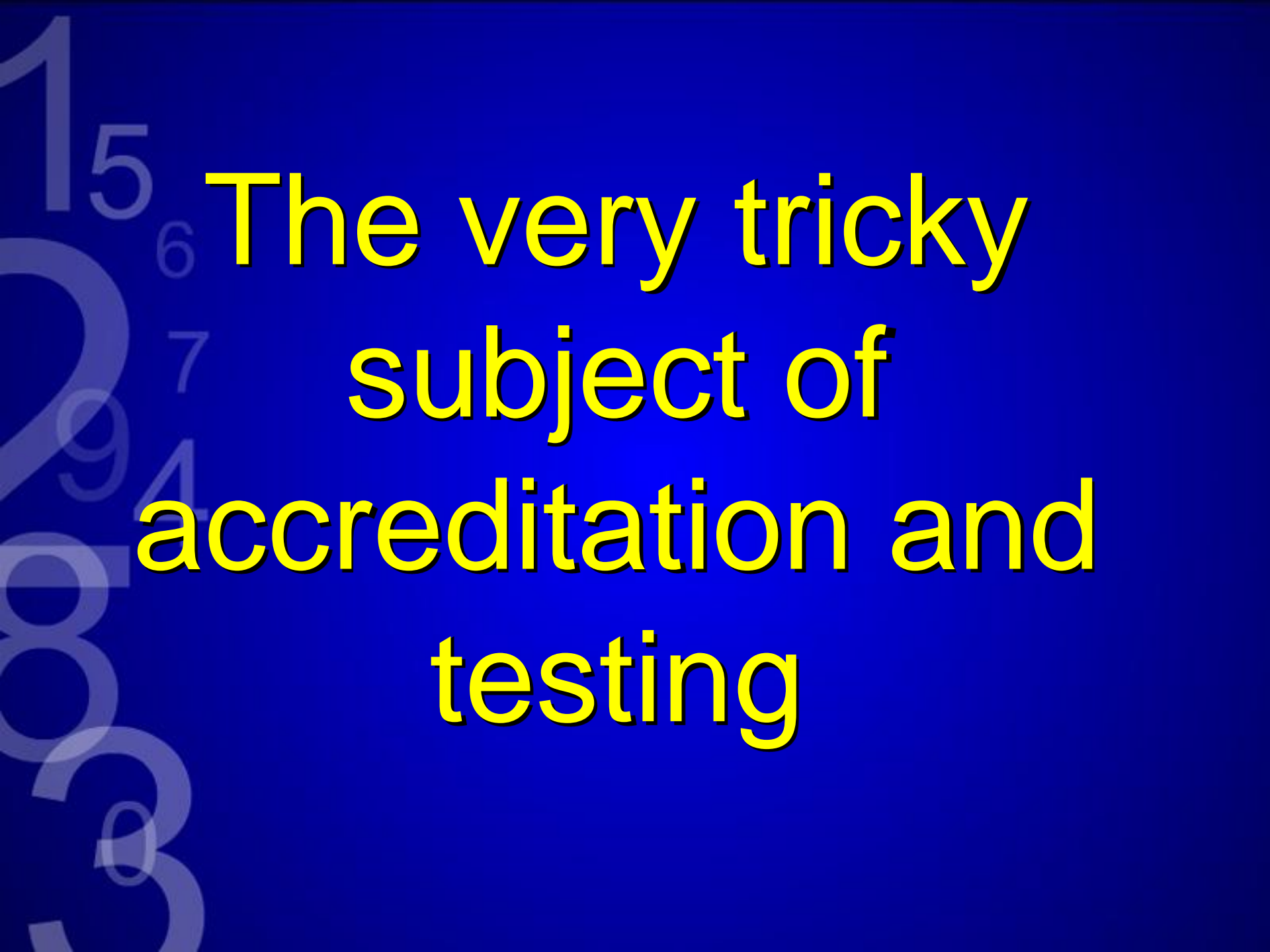
- Literacy
- Numeracy
- Reading
- Problem Solving
- Technology Competency

How is Numeracy Defined in PIAAC?

*Numeracy is the ability to **access, use, interpret, and communicate** mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life*



*'the knowledge and skills required
to apply arithmetic operations
either alone or sequentially to
numbers embedded in printed
material' IALS 1997*



The very tricky
subject of
accreditation and
testing

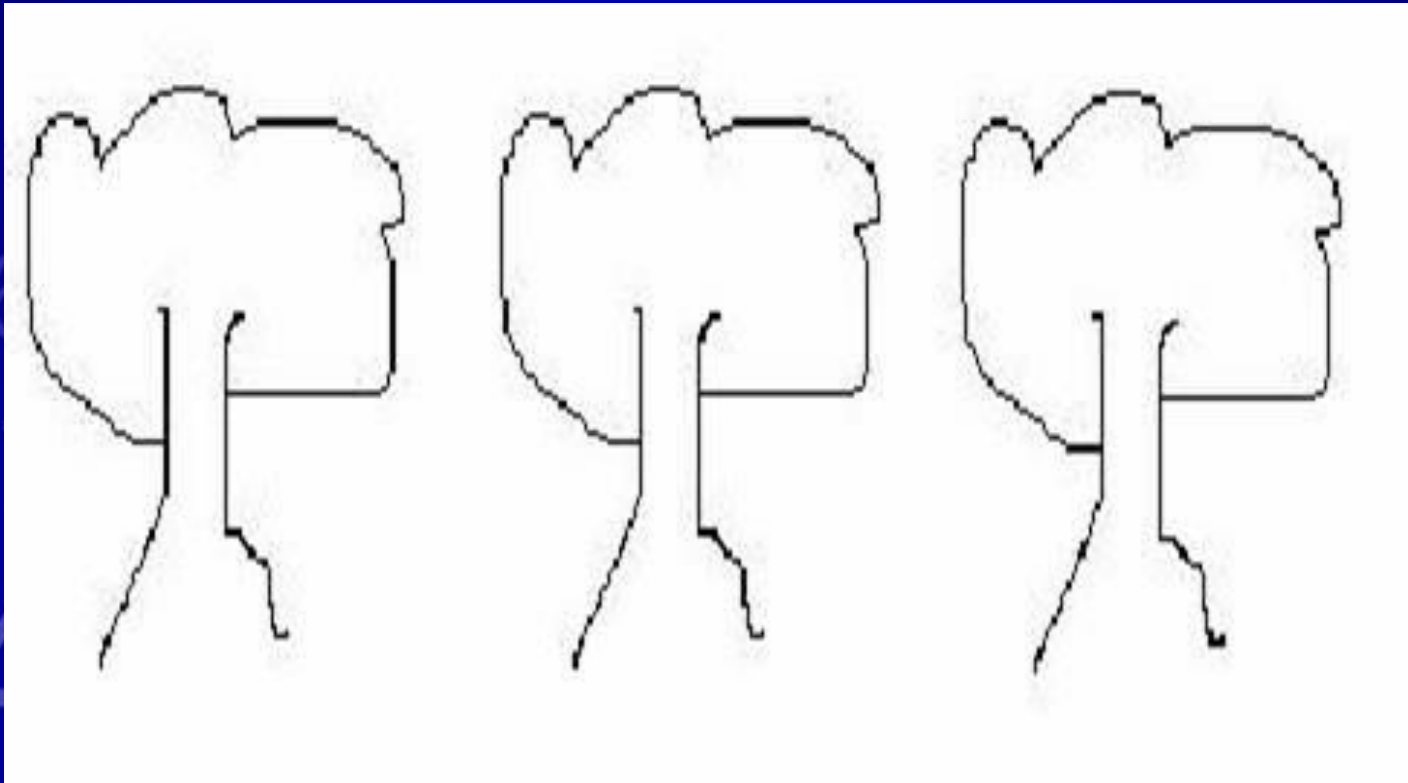
A vertical column of large, light blue numbers is positioned on the left side of the slide. The numbers, from top to bottom, are 1, 5, 6, 7, 9, 4, 8, 3, and 0. They are arranged in a slightly staggered, descending fashion.

An Irish Maths test

Paddy wants a job, but the foreman won't hire him until he passes a little maths test.

Here is your first question, the foreman said. "Without using numbers, represent the number 9.

"Without numbers?" Paddy says, "Dat's easy."



What's this?" the boss asks, "Have you no brain Paddy?"

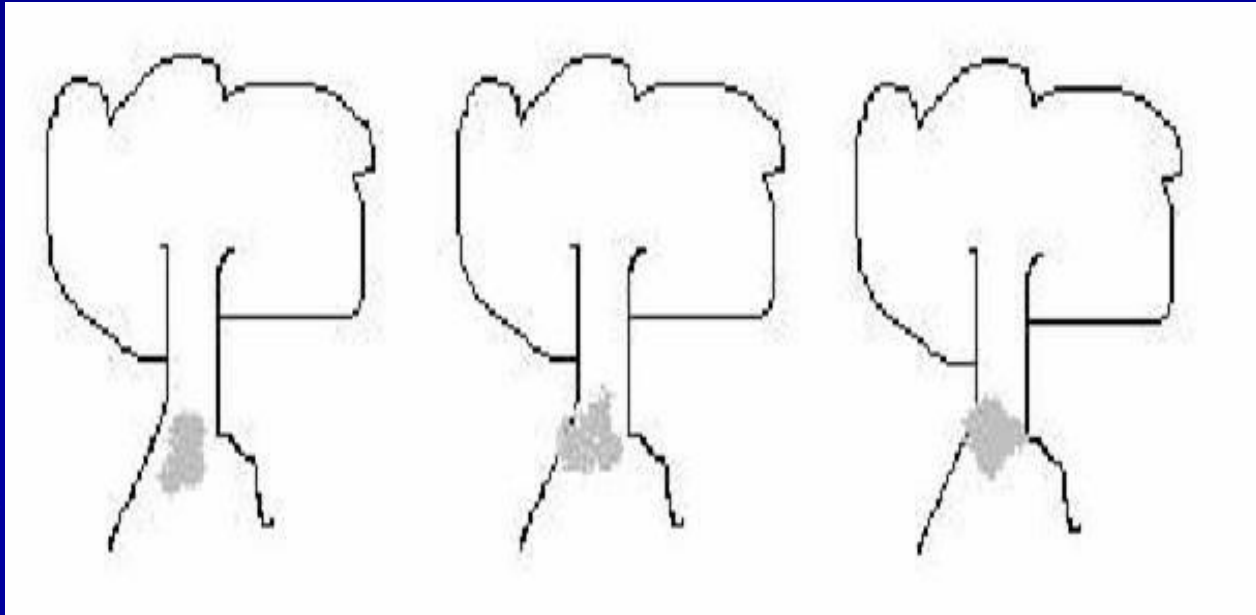
"Tree and tree plus tree makes 9" says Paddy .

"Fair enough," says the boss.

"Here's your second question. Use the same rules, but this time the number is 99."

Paddy stares into space for a while, then picks up the picture that he has just drawn and makes a smudge on each tree ...

... "Ere ye go."

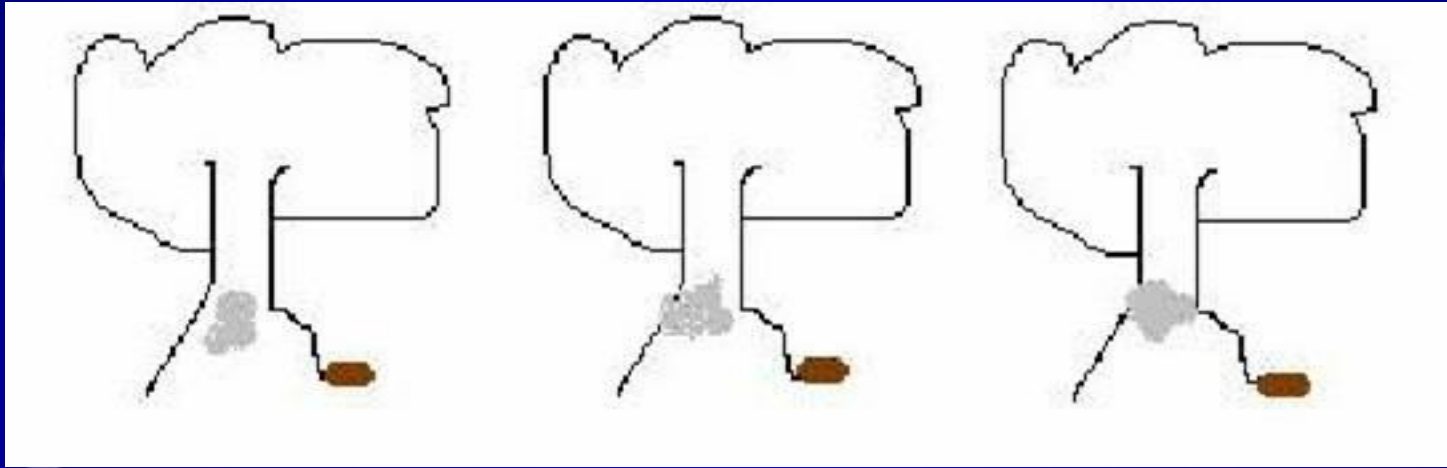


The boss scratches his head and says,
"How on earth do you get that to represent 99?"
"Each of them trees is dirty now. So, it's dirty tree,
and dirty tree, plus dirty tree. Dat makes 99."

The boss is getting worried that he's going to actually have to hire Paddy, so he says, "All right, last question. Same rules again, but represent the number 100."

Paddy stares into space some more, then he picks up the picture again and makes a little mark at the base of each tree and says...

"Ere ye go. One hundred."



The boss looks at the attempt. "You must be nuts if you think that represents a hundred!"

Paddy leans forward and points to the marks at the base of each tree and whispers, "A little dog came along and pooped by each tree ..."

So now you got..

dirty tree and a turd, dirty tree and a turd,
and dirty tree and a turd, ...

which makes ONE HUNDRED!"

Paddy is the new supervisor!

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SENAME

Successfully Engendering
Numeracy in Adult
Mathematics Education

Core Principles

1. Underpinned by a broad conceptualisation of numeracy

Core Principles

2. Addresses the roles of the tutor

- Student of numeracy
- Tutor of numeracy
- Student of teaching
- Collaborator
- Agents of change working within a particular social-political environment
- Lifelong learner

Core Principles

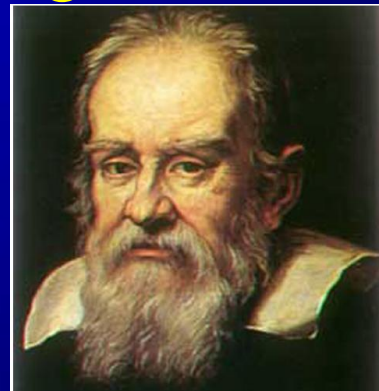
3. Builds on adult learning principles
4. Incorporates a pedagogy congruent with the pedagogy you want tutors to use in their own teaching
5. Challenges tutors to examine their own beliefs, values and attitudes
6. Incorporates a process of reflection and evaluation and provides opportunities to set goals for continuing professional development

Core Principles

7. Develops Maths Eyes

“The great book of Nature lies ever open before our eyes ... But we cannot read it unless we have first learned the language and the characters in which it is written. It is written in the language of mathematics and its characters are triangles, circles, and other geometric figures, without which it is humanly impossible to understand a single word ... ”

- Galileo Galilei





maths
eyes

1
15
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How big is a
Billion

Have you got your  **maths eyes?**



GAA and
Rugby

supporters
are good at

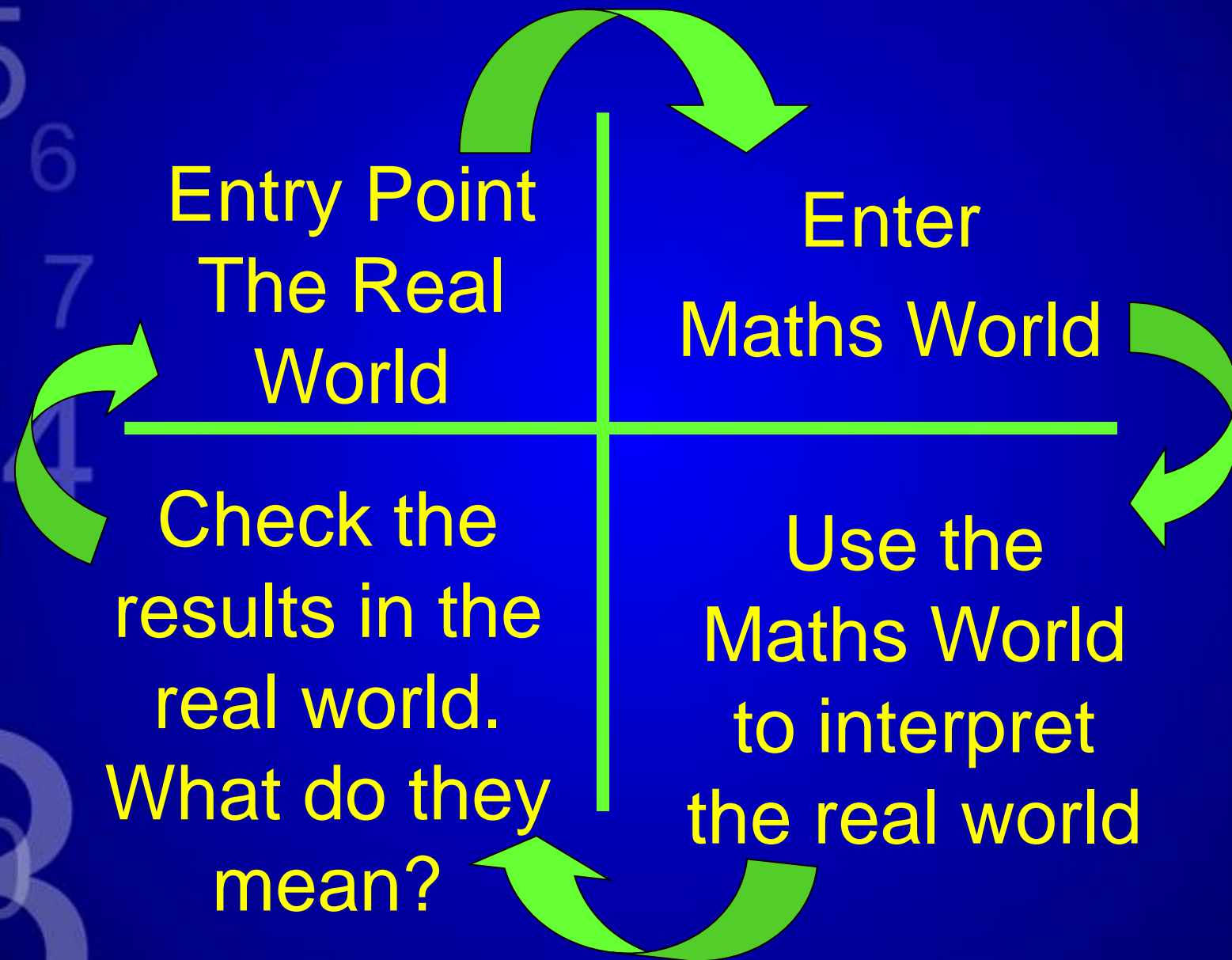


ALGEBRA

Have you got your  **maths**
eyes?

Much of Mathematics is about abstract ideas, but for the vast majority of people it is accessible only if it can be understood in a context they are familiar with

Real World/ Maths World Cycle



Developing Maths Eyes Means:

- **New ways of looking** at familiar things
- **New ways of considering** familiar things
- **New insights** into our daily life, leisure and work
- **New approaches to** teaching and learning

‘The real voyage of discovery consists not in seeking new landscapes but in having new eyes’

Marcel Proust