

# *Mathematical Literacy*

*Melek Matematika*



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# Definition 1

- **Numeracy is the ability to process, interpret and communicate numerical, quantitative, spatial, statistical, even mathematical, information, in ways that are appropriate for a variety of contexts, and that will enable a typical member of the culture or subculture to participate effectively in activities that they value.**

*Evans J. (2000). Adults' Mathematical Thinking and Emotion.p.236*





## Definition 2

- **Mathematical literacy is defined (in PISA) as: the capacity to identify, to understand and to engage in mathematics and make well-founded judgments about the role that mathematics plays, as needed for an individual's current and future private life, occupational life, social life with peers and relatives, and life as a constructive, concerned, and reflective citizen.**

*OECD (1999). Measuring Student Knowledge and Skills: A new Framework for Assessment, p. 50*





## Definition 3

- **The term numeracy as used here describes an aggregate of skills ,knowledge, beliefs, dispositions, habits of mind, communication capabilities, and problem solving skills that individuals need in order to autonomously engage and effectively manage numeracy situations that involve numbers, quantitative or quantifiable information, or visual or textual information, that is based on mathematical ideas or has embedded mathematical elements.**

*Gal I. (ed.) (2000). Adult Numeracy Development (p.12)*





## Definition 4

- **Mathematical Literacy provides learners with an awareness and understanding of the role that mathematics play in the modern world. Mathematical Literacy is a subject driven by life-related applications of mathematics. It enables learners to develop the ability and confidence to think numerically and spatially in order to interpret and critically analyse everyday situations and to solve problems.**

*South Africa, Department of Education, 2003*



**From**

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**To**

The image shows a white board with the following content:

- Logos for MTN (hello the future) and MAFCOM (CELLULAR COMMUNICATION).
- M-Tel logo in the top right corner.
- The word "SPECIAL" in large blue letters.
- Handwritten phone numbers in black and red ink:
  - N. 3310-799.00 (with "NEW" written above in blue)
  - N. 5210-899.00 (with "DEMO OPEN" written above in blue)
  - N. 8210-899.00 (with "DEMO OPEN" written above in blue)
  - N. 3410-649.00 (with "DEMO OPEN" written above in blue)
  - S. A35/6-399.00 (with "DEMO OPEN" written above in blue and the entire number crossed out with red X's)





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bar	140 - 10	160 - 10
ltr/h	600	780
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kW	3,6	4,9
V/Hz	230 / 50	400 / 50
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mm	390x290x860	390x290x860
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## What is the difference between Mathematical Literacy and plain Arithmetic or Basic Mathematics.

### *In arithmetic/mathematics*

- It is all about exercises.
- Answers are right or wrong.
- You understand exercises or you do not.
- It is all about notations and techniques.

### *In mathematical literacy:*

- It is about interpreting.  
(What is it all about?)
- It is about reasoning.  
(What should I do with this?)
- It is about a critical attitude.  
(Is it correct? Does it make sense?)
- It is about forming impressions and opinions.



# International developments

The Netherlands: Realistic Mathematics Education (RME)

Brasil: Etnomathematics Ubitaran d'Ambrosio

Africa: Etnomathematics Paul Gerdes

England: National Numeracy Strategy

South Africa: National Curriculum Statement on Mathematical Literacy

Philippines; See next



# Cultural, regional views

*Mathematical Literacy has to reflect:*

- Techniques used in the workplace
  - Ethnomathematical practices
  - Problems of practical and material importance for the community
- Imply pedagogical change: activities and projects

Examples:

- Borba (1995): project on fund raising for soccer games with children from slums
- Knijnik (2000): project with settlers of the Landless People's Movement (MST) in Brazil



**The key question**

**How does education in  
Mathematical Literacy  
look like?**





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**[K.Hoogland@aps.nl](mailto:K.Hoogland@aps.nl)**

**Or look at the website:**

**[www.mathematical-literacy.eu](http://www.mathematical-literacy.eu)**