MATRIC REVISION

MATRIC REVISION 2008

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Department:
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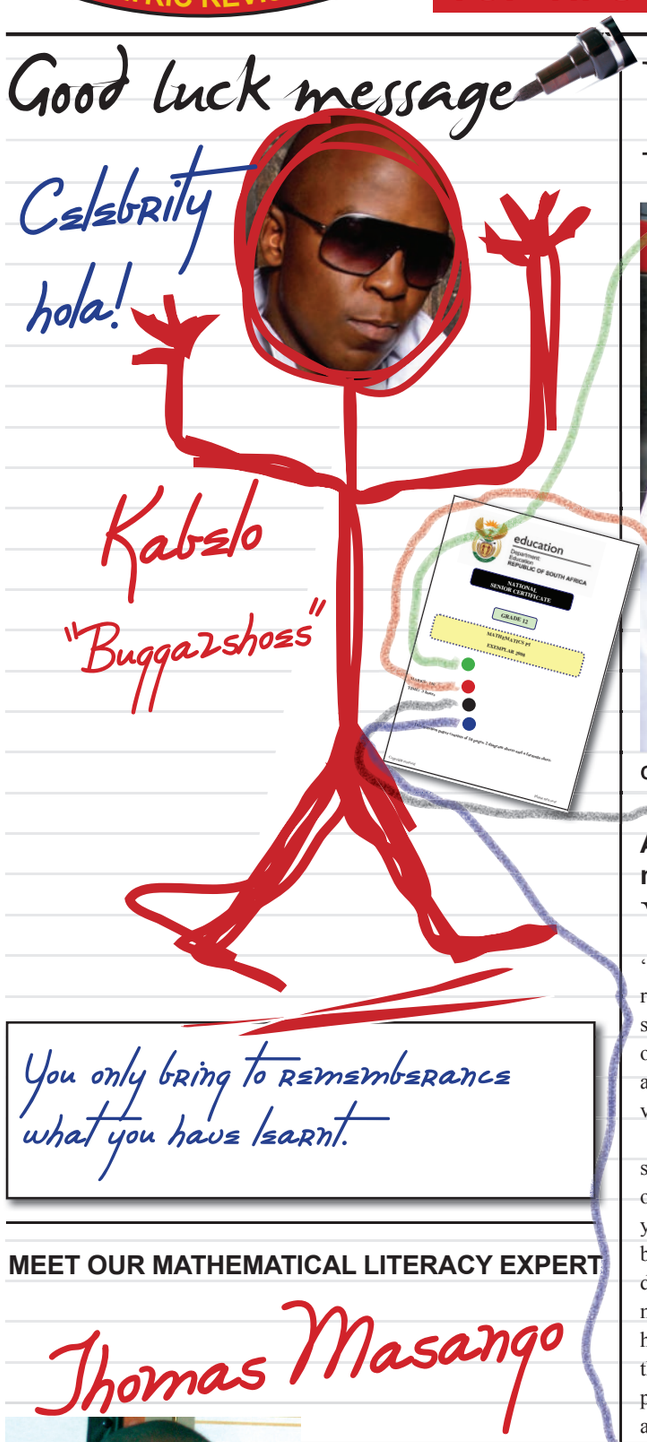
REPUBLIC OF SOUTH AFRICA

TOP TIPS FROM THE EXPERTS: EDITION 6 OF 13

MATHEMATICAL LITERACY 1



Master your Maths Literacy exam

CALL A FRIEND: The matrics of Providence Academy in Johannesburg say they need all the help they can find for their forthcoming exams

An overview of Mathematical Literacy as a new subject

Welcome to the new world of Mathematical Literacy. Some of you may have been worried about having to take 'mathematics' as one of your subjects, but you have hopefully by now realised that Mathematical Literacy helps you handle real-life issues such as hire purchase, mortgage bonds, investments and the reading of maps, etc. It has also hopefully helped you acquire a critical stance about some of the mathematical arguments presented in the media and via other platforms.

The Mathematical Literacy examination papers will be set in such a way that the questions are based predominantly on the kind of issues you are likely to encounter in life – for example, paying your household bills (such as your electricity, water and telephone bills), dealing with tariffs and town plans, etc. However, you will definitely be expected to use mathematical content knowledge to make sense of and solve these real-life problems – and in order to help you demonstrate your content knowledge in the examinations, the examiners may set a few basic questions not related to a specific, practical problem. For example: calculate 450 – 45,2 × 36; write 0,45 as a percentage; or decrease R600 by 15%.

The Mathematical Literacy examination

The Grade 12 Mathematical Literacy examination consists of two papers:

Paper 1: This paper is 3 hours long and it is out of 150 marks. It will consist of between five and eight questions. Basic content knowledge will be required to answer the questions.

Paper 2: This paper is also 3 hours long and out of 150 marks. It will consist of between four and six questions. These questions will require more interpretation and application of the information provided.

Please note that Paper 2 will be discussed in more detail in next week's Matric Revision page so be sure to look out for it. Today we focus on Paper 1.

With both papers, make sure that in each hour of the examination you answer questions that are worth at least 50 marks. It will also help you to manage your time better if you start with the questions you understand better – just remember to number them as they appear in the question paper.

There are four broad content areas dealt with in Mathematical Literacy:

- Numbers and operations
- Functional relationships
- Space, shape and measurement
- Data Handling

Both papers will be set on all four content areas. They will differ only in the level of difficulty of the questions. Paper 1 will be less demanding than Paper 2.

An analysis of Mathematical Literacy Paper 1

What follows is an indication of the type of questions you can expect in Paper 1 in each of the four broad content areas. Be aware that mathematical problems drawn from a real-life situation usually overlap in two or more broad content areas.

1. Numbers and operations (30 – 45 marks)

Make sure you are able to:

- Add a set of numbers to calculate total income/expenses;
- Calculate profit/loss if income and expenses are both given;
- Calculate a direct percentage of a given amount;
- Write a ratio of two quantities which are already in the same unit;
- Substitute into a given formula;
- Round off to a given number of decimal places;
- Read information directly from a financial table;
- Convert fractions to decimals;
- Convert decimals to fractions;
- Convert a decimal to a percentage;
- Convert a fraction to a percentage;
- Understand and use appropriate vocabulary such as: equations, formulae, Cartesian plane, table of values, ratio, rate, average, etc;
- Calculate simple interest;
- Calculate compound interest compounded annually;
- Increase or decrease a given amount by a certain percentage;
- Determine a ratio when the quantities are not in the same unit;
- Calculate a one-step currency fluctuation;
- Calculate exchange rates; and
- Show awareness of the significance of digits.

2. Functional relationships (30 – 45 marks)

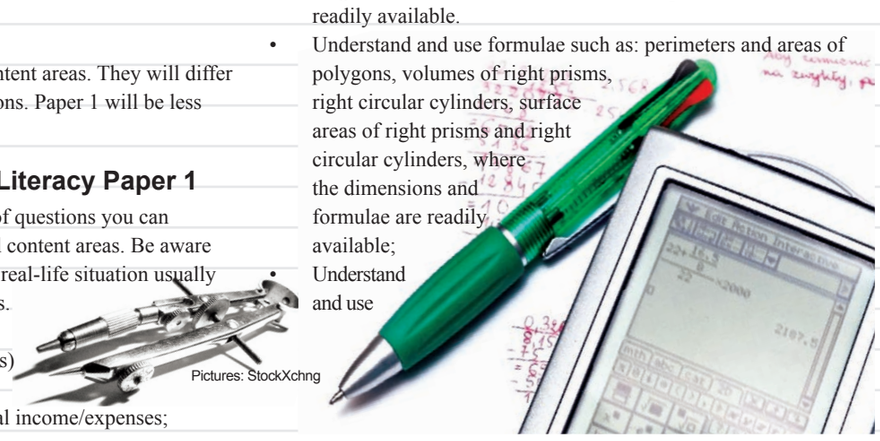
Make sure you are able to:

- Substitute number(s) into a given formula when there is a functional relationship (finding output values);
- Solve equations (finding input values for simple equations);
- Read answers directly from a given simple graph and/or table;
- Plot data on a point-by-point basis;
- Solve equations (finding input values for complex equations);
- Determine output values for given input values;
- Work with formulae to establish points to plot;
- Plot graphs on a point-by-point basis when data is given;
- Read answers directly from a complex graph and tables;
- Estimate answers to simpler equations and calculations;
- Solve equations by trial-and-improvement method or by inspection; and
- Identify maximum, minimum and critical points from a given graph.

3. Space, shape and measurement (30 – 45 marks)

Make sure you are able to:

- Calculate and estimate values using basic operations that involve length and distance, where each of the required dimensions is readily available.
- Understand and use formulae such as: perimeters and areas of polygons, volumes of right prisms, right circular cylinders, surface areas of right prisms and right circular cylinders, where the dimensions and formulae are readily available;
- Understand and use appropriate vocabulary such as: equation, formulae, Cartesian plane, area, surface area, perimeter, radius, diameter, length, breadth, height, base, circumference, volume, circle, cylinder, polygons, right prisms, triangular, rectangular and square.
- Read information directly from a table and use some given information and simple operations to complete a table of values;
- Measure values which involve length, distance, weight and time using appropriate measuring instruments sensitive to levels of accuracy in a familiar context;
- Draw simple scale drawings where the scale is given and based on the application of simple routine procedures in a familiar context;
- Describe relationships between input and output values in a table of data concerning space, shape and measurement;
- Use grids and maps in order to determine locations in a familiar context, applying routine procedures; and
- Convert units of measurement between different scales and systems using provided conversion tables, including:
- Converting to a smaller unit of length, time, weight, etc;
- Converting to a bigger unit of length, time, weight, etc;
- Converting units of area; and
- Converting units of volume.



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4. Data-handling (30 – 45 marks)

Make sure that you are able to:

- Understand terminologies like mode, mean, range, quartiles, etc;
- Arrange data in ascending order;
- Identify the mode;
- Determine the median when data is already arranged in ascending order and n is odd (*n = number of scores*);
- Construct frequency tables from arranged data;
- Read information from graphs and frequency tables;
- Construct tally tables;
- Determine the median when data is already arranged in ascending order, and n is median *(n = number of scores)*;
- Calculate mean and the range of given scores;
- Draw graphs from given data (these graphs include pie charts, single and compound bar graphs, line and broken line graphs, and histograms);
- Calculate simple probability; and
- Express the probability of choosing a score in terms of fractions, ratios and percentages.

CONCLUSION

The questions you will be asked will require some reading of the given scenario. Take time to understand the problem before you attempt to solve it. It helps to ask yourself questions about the problems. Often, the questions you ask yourself are actually in the paper! Good luck!

MEET OUR MATHEMATICAL LITERACY EXPERT

Thomas Masango

PRACTICALLY SPEAKING: Our Maths Lit expert, Thomas Masango, Chief Educational Specialist at the national Department of Education, believes that his subject equips you to solve everyday problems in real-life situations

Mathematical Literacy helps you handle real-life issues such as hire purchase and investments.

Thomas Masango matriculated at Makhosana Secondary School in Mpumalanga in 1983. He holds a BA degree (Mathematics and Psychology) and HDE from Fort Hare, a BSc Honours degree and a Post Graduate Diploma in Science Education from Wits. He taught Mathematics before becoming a Mathematics subject adviser and then the regional head of subject advisers in Mpumalanga. He was a moderator and examiner in Mathematics in Mpumalanga and also served on the national panel of Mathematics examiners. He joined the national Department of Education in 2006 as a Chief Education Specialist for Mathematics and Mathematical Literacy, a position he still holds.

NEXT WEEK : MATHEMATICAL LITERACY 2

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