



SOUTH AFRICAN MATHEMATICS FOUNDATION

TEACHER PROBLEM SOLVING COURSE

A short course in mathematical problem solving skills

“It is still true that the quality of an education system cannot outstrip the quality of its teachers. Invest in teacher development and one generation of pupils after another will benefit from teachers who are confident and competent to teach.”

Jonathan Jansen

Endorsed by





INVEST IN TEACHER DEVELOPMENT

Mathematics as the language of modern science should play a big role in society and can be vital to address social problems such as unemployment. The poor state of mathematics education in South Africa is well documented and can be attributed to a number of reasons, amongst others, unqualified and under-qualified mathematics teachers. No serious career after school can be pursued without a good pass in mathematics and it is therefore important that the teaching and learning of mathematics in schools should be improved.

B-BBE points

Our short course is categorised as F (uncertified external training) and funders will receive the value of the amount spent, in relation to overall monetary target; capped at 15% of the overall training spend.

SOUTH AFRICAN MATHEMATICS FOUNDATION

The South African Mathematics Foundation (SAMF) is registered as a non-profit company aiming to advance the mathematics development and education of South African children and young people through improved quality teaching and learning of mathematics as well as through public awareness activities. The company was founded in 2004 by the Association for Mathematics Education of South Africa (AMESA) and the South African Mathematical Society (SAMS).

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AIM

The aim of the project is to provide a hands-on training of teachers by exposing them to a variety of mathematical problem solving strategies and techniques. It is expected that this training will enhance the problem solving skills of teachers and also improve their skills of solving Olympiad/ non-routine type problems. In turn, this will result in an improved appreciation for solving mathematical problems on the part of the learners.

FORMAT & ASSESSMENT

The teachers will be offered a 16 hour workshop (normally presented on 2 Saturdays) in any area of South Africa where a group of 20 or more teachers are interested. Each teacher will receive resource material consisting of a workbook, a set of notes and a DVD/CD for the high school levels.

Assessment comprises an assignment and a test with the writing of the test at the end of the course compulsory for certification:

- Pass (obtained at least 50% as overall mark).
- Merit (obtained at least 75% as overall mark).

The course is endorsed by the South African Council of Educators (SACE) and teachers can earn 10 CPD points per level.

COURSE LEVELS

Non-standard mathematical problems require considerable insight and creativity. Our methodology involves a review of problem solving strategies, with illustrations, as well as a collection of problems for hands-on problem solving. The evaluation tasks are designed to motivate teachers to work through the problems and to understand the solution processes.

Primary mathematics teachers (Grades 4-7)

Learning about problem solving (strategies, specialisation and generalisation, induction and deduction). Medium through which the course is presented is through problem solving, i.e. teachers learn to solve problems by problem solving. The end objective is that teachers will enter and prepare their learners for the South African Mathematics Challenge.

10 CPD points for primary maths teachers

Secondary mathematics teachers:

The full suit consists of four levels:

10 CPD points per level for high school maths teachers, i.e. 40 for the full suit.

GET Level 1

Introduction to problem solving strategies; offered to all teachers who are doing the course for the first time. The course comprises of the Junior First Round questions of the South African Mathematics Olympiad and involves a range of problem solving strategies:

- Read and Understand the Question
- Draw a Figure
- Look for a Pattern
- Introduce Appropriate Notation
- Use a Logical Argument
- Games and Puzzles

FET Level 1

Offered to all teachers who have passed GET Level 1. The course comprises of the Senior First Round questions of the South African Mathematics Olympiad and involves a range of problem solving strategies:

- Read and Understand the Question
- Draw a Figure
- Look for a Pattern
- Introduce Suitable Notation
- Restate the Problem as an Equivalent Problem
- Use the Options in Multi-Choice Questions
- Consider Special Cases

GET Level 2

Offered to all teachers who have passed GET Level 1 or FET Level 1. The course comprises of the Junior Second Round questions of the South African Mathematics Olympiad and involves the range of problem solving strategies as well as:

- Expansion on strategies discussed in GET Level 1 essentially drawn from the pioneering work of Prof George Pólya, a Hungarian mathematician.

GET Level 3

Offered to all teachers who have passed GET Level 1, GET Level 2 or FET Level 1. The course comprises of the Junior Third Round questions of the South African Mathematics Olympiad and involves a range of advanced problem solving strategies including producing a convincing proof or argument to substantiate a certain conclusion.

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