

Introduction

This report is based on the 2009 NCS grade 12 examination for mathematical literacy paper 2. The report highlights various issues about the question paper itself, its content coverage, levels of questions, mark allocation, the marking guideline (memo), language use and the marking process. It ends with some recommendations for both DoE and WCED.

The paper

Content coverage:

The paper had a good spread of content across the four learning outcomes. However certain sections of the syllabus were either over-tested or under-tested. For example, all data on which the questions were based was in the form of tables or numbers. Only one question (1.2.3) had data in the form of a graph and even then, there was only one interpretation question asked from the graph. There were no charts, e.g. pie, bar graphs or histograms for interpretation and these form our everyday experience with data. For example food prices, fuel prices, votes, sports, etc. Omission of these from a national paper, particularly in paper 2, where interpretation questions feature most does not serve well the purpose of the subject in the curriculum. Another important aspect of the syllabus which was completely omitted is maps and grids, which deals with finding places on the map and plan trips/journeys. With the country hosting the soccer world cup in 2010, and where the skill of using maps and directions will be mostly used by the people on the ground, the NCS examination has missed on a once-in-a life time opportunity to make the subject more relevant to the people.

The learning outcome on measurement was also under-tested. Only circular objects were used in calculations using formulae. For example, question 4.4, 5.1.1 and 5.1.2 all deal with cylindrical shapes and this was really not necessary. A learner, for example, who is struggling with these types of shapes loses approximately 20 marks and this is not fair.

Another area which was over-tested is the probability concept. Questions 2.1.1, 2.1.2, 4.1.1 and 4.1.2 all test this concept. Again a learner who was, unfortunately, not taught this NEW concept stands to lose 13 marks from this over-testing of the same concept.

Levels of questions:

The requirement for questions to qualify as paper 2 questions is that they must be level 2, 3 or 4 questions. This is stated in the examination guideline for the subject. However, this poses a serious challenge for learners and examiners. Examiners, for example cannot start a question with simple sub-questions that would provide learners with some form of scaffolding for higher order questions. So even questions requiring simple mathematical concepts become inaccessible to learners as they are stated in broad terms trying to avoid level 1 questions. Examples of such questions are 2.2.3 and 5.1.1.

Mark allocation:

In general mark allocation was fair and consistent. However, there needs to be a balance between testing a mathematical concept and just its application. For example the issue of rounding-off and the use of units in answers. Rounding-off as a mathematical concept has specific rules that are acceptable in the context of mathematics. For example, if the last digit to be 'dropped' is less than 5, then the last remaining digit is retained as is, the answer to a question with numbers that have different digits after the decimal point usually has the number of digits as the number with the largest number of digits after the decimal point. Although, question 3.3 deals with money with the expected number of digits after the decimal point (two digits), numbers in the conversion relations given in the question paper have 5 and 7 digits after the decimal point. Yet, candidates are expected to round-off the answer to two-decimal places and there is a penalty for rounding off. Rounding-off as a mathematical concept would require the answer to have 7 digits after the decimal point.

The use of units in all calculations needs to be emphasised in mathematical literacy for this subject to remain context-based. There is no complex mathematics in the subject, so if the inclusion of units in calculations is not emphasised, the subject could be reduced to simple arithmetic that could be done by any learner in the senior phase. This refers to question 5.1.1 (memo)

Language

Most of the learners in the country write their examinations in languages that are not their home languages. Understanding what the question requires may be problematic in a subject like mathematical literacy where contexts are at the centre of questions. For example most learners whose home language is not English chose the wrong cake in question 5.1.1 and lost 2 marks. The reason for this was their lack of the meaning of the phrase 'value for money' in the question. Simple language needs to be used to avoid this unfairness as a result of language. For example that question could have been phrased as 'which of the two cakes would you buy and why?'

The marking process

WCED approach to the marking of the 2009 matric examinations had some challenges this year. The challenges ranged from the distribution of pre-marking scripts to senior markers and no properly arranged training for senior markers. This affected senior marker performance on quality assuring the marking process. To compound the problem even further, there is a lot of admin work the chief marker and deputy chief marker is expected to do. There is limited time to focus on moderation and support to senior and ordinary markers. Other provinces, eg. Gauteng appoint a deputy chief marker-admin to deal with admin issues leaving the chief and the other deputy chief marker with enough time to support senior markers and markers. If WCED wants to improve on the quality of marking, then it should either consider appointing deputy chief marker-admin or invest more in the training of its senior markers in terms of time and money.

Recommendations

Some recommendations for each of the issues raised in the sections above have been mentioned in the sections above to simplify and make the report as short as possible.