Province of the
EASTERN CAPE
EDUCATION

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CHIEF MARKER'S REPORT

INSTRUCTIONS

1. The Chief Markers are required to complete this report during the marking session. The aim of the report is to provide a feed back and to help subject advisors and educators to improve teaching and learning.
2. The report should be informed by discussions between the **Chief Marker, moderator, senior markers and markers** of the particular subject. **NB: There should be one report per subject per paper.**
3. The report must be detailed, informative and indicate question by question performance of the candidates and mark distribution of centres.
4. Reference may be made to the topics identified below as well as any aspect the Examiner wishes to bring to the attention of the subject advisors and educators.
5. **The report must be submitted in hard copy and an electronic version to the centre manager at the marking centre**.
6. All markers reports must be handed in with the hard copy.
7. The electronic report should be emailed to varkchan.joseph@edu.ecprov.gov.za
6. The centre managers then forward the reports to the Directorate of Assessment and Examination (Att: Mr. V A Joseph) in King William's Town.

SUBJECT:	**MATHEMATICS**

GRADE:	12	**PAPER:**	**2**

DATE OF EXAMINATION:	**7 NOVEMBER 2009**	**DURATION:**	**3H**

1. **ANALYSIS OF QUESTION BY QUESTION PERFORMANCE OF THE CANDIDATES**

    Give a detailed account of how the candidates performed in each question. In doing this, the following steps should be followed:
    1.1 The aim/objective for setting the question (what skills, knowledge, values and attitudes were being tested by asking the question)
    1.2 Relevance or relation of the question to the Los and Ass.
        How did the candidates perform in the question?
    1.3 Where did candidates lack expertise or fail in giving an appropriate answer to score high marks in the question?

QUESTION 1

1.1 This question tested basic statistics
1.2   LO4 – 11.4.1(a) 11.4.4
1.3 Performance varied but mostly poorly answered. Many candidates failed to draw a proper box and whisker diagram. Interpretation of the said diagram was in many instances very bad. Candidates lacked the necessary skills to answer 1.4 properly. The concept of a " 5 number summary " seems to be unknown to many candidates. Open-ended questions in Mathematics seem to be problematic. Simple statistical calculations are still lacking at many centres – modes of central tendency and quartiles.

QUESTION 2

1.1 This question tested learners skills on scatter plots

1.2 LO4 – 11.4.1(b)

1.3 This question was fairly well answered but there is strong evidence that this is not yet properly taught in the classroom. Many learners could not answer 2.6 from the graph which was a fairly straight forward question. Many did not grasped the concept of "best fit line"

QUESTION 3.

1.1 This question also tested learners skills on graph sketching and interpretation – the ogive graph.

1.2 LO4 – 11.4.1(b)

1.3 This was the first of its kind – where the ogive graph was given instead of the learners being asked to draw it. In the exemplars and study material you do not find many of it which may be the reason why learners struggled with this question. Many scored little or no marks although this can be regarded as one of the easier sections of the curriculum.

QUESTION 4

1.1 Basic applications on analytical geometry were tested. Recall and the use of basic formulae were required.
1.2 LO3 – 11.3.3

1.3 Basic skills were well applied in this question but some centres showed that there is a lack of proper teaching. However, the assumption that AB and BC were perpendicular let many learners down in 4.3

QUESTION 5

1.1 This question tested knowledge on circles and lines – including tangents. Basic skills like mastering formulae were required as well as proof of geometrical statements

1.2 LO3 – 11.3.3 & 12.3.3 & 12.3.6

1.3 The majority of the learners struggled to do well in 5.3 and 5.7. High order thinking and complex procedures were needed in these sections. This shows that problem solving skills are lacking.

QUESTION 6

1.1 Applications in the Cartesian plane were tested.(Transformation Geometry)

1.2 LO3 – 11.3.4

1.3 Reasonably well answered but many still struggled to find their way in the Cartesian plane. Some candidates did not understand the concept of enlargement – instead of (2x ; 2y) they did the following: (x +2 ; y + 2)

The combination of transformations(three) could not be handled continuously but rather as individual transformations independent of each other.

QUESTION 7

1.1.   More complex transformations were tested in this question

1.2 LO3 – 12.3.4

1.3 Although the first 2 sections of this question were based on the recall of a formula, this was very poorly attempted. The formula required here is a new and difficult one. The 3rd section of the question was particularly badly answered. Algebraic manipulation let most of them down. Some used a calculator while the question clearly stated leave your answer in surd form.

QUESTION 8

1.1 Basic trigonometry was tested.

1.2 LO3 – 11.3.5 & 12.3.5

1.3 Most of the candidates attempted this question with much success. Many candidates experienced problems with the reduction formulae as well as the basic definitions of trig ratios.

QUESTION 9

1.1 Reduction formulae and the solving of general triq equations were examined.

1.2 LO3 – 11.3.5 & 12.3.5

1.3 From the sample of 100 candidates' scripts, this question has the highest average mark per candidate. Very good responses were received. Algebraic manipulation let some candidates down as well as their knowledge of special angles – i.e. 30˚, 45˚... and multiples there of eg 225˚. Unfortunately many schools that did not offer higher grade in the old Nated 550 syllabus(so it seems) are evidently still struggling with the general solution of trig equations. This was former higher grade work and the shift from SG to HG has not been affected.

QUESTION 10

1.1 Trig identities were tested in this question.

1.2 LO3 – 12.3.5

1.3 The first section of this question was well attempted but algebraic manipulation let candidates down. The second part of the question was too difficult for the majority of candidates. Nobody scored any marks here. Those who lack the necessary problem solving skills were lost here. Mere recall of knowledge would not help here.

QUESTION 11

1.1 Solution of triangles and practical applications

1.2 LO3 – 11.3.6

1.3 Learners failed to apply academic knowledge to real life situations. The distance between the two ships was particularly problematic. Learners struggled with the drawing. Terminology such as " bearing " seemed to be foreign to many candidates. The Afrikaans version however was not a problem. It would have been better if the diagram was completed.(and not for them to completed) The movement of the ships may possibly have caused a problem of visualization.(not being able to " see " the triangle in which they were supposed to work
The proof in 11.2 was very poorly answered – proving once again the lack of problem solving skills and higher order thinking among most candidates.

QUESTION 12

1.1 Trig graphs were tested in this question

1.2 LO3 – 11.2.2

1.3 Many candidates attempted the graph but the important aspects were not mastered. The important aspects are the turning points and the intercepts on the axes. Interpretation and reading off from graphs are skills that candidates struggle with. It was certainly the case here. It is disappointing to see that candidates have still not mastered the skill to sketch the basic trig curves(sin, cos and tan graphs)

7. **ANY ADVICE THAT YOU COULD GIVE TO EDUCATORS TO HELP LEARNERS TO REACH THE EXPECTED LEVELS.**

❖ Follow the NCS, SAG and other necessary documents for Mathematics

❖ Teachers must teach all the sections of the work.

❖ Expose learners to problem solving as well as open – ended questions.

❖ Practise calculator manipulation as well as algebraic manipulations

❖ Learners must learn to answer the question that was asked

❖ Subject advisors must be deployed to see that the above-mentioned is being done.

❖ Teachers must draw learners' attention to the formula sheet(many candidates use wrong formulae instead of using that on the formula sheet)

❖ Learners must be encouraged to read more

❖ Learners must be made aware of the inter-connectedness of the NCS curriculum.

8.   ANY OTHER COMMENTS

The general perception is that the paper was very difficult – at least more than last year's paper. There seemed to be some "unexpected" questions in the paper. There were

 Many "otherway round " questions were asked which caught many learners unaware – eg q.3, 5.3, 5.7, 4.2, 4.3, 7.3. The paper was a real challenging one. It is clear from learners' responses that in many centres all the sections of the NCS curriculum is not being taught.

Many learners are clearly lacking in problem solving skills. Questions such as 5.3 and 5.7 need good reading skills and many learners also lack that. Basic mathematical skills need to be drilled more.

The Statistics section at the beginning of the paper was a good one. This allowed for learners to settle down before they would get to the more difficult trigonometry.

SIGNATURE OF EXAMINER: _____

(F.I.M. Mc CABE – 10 December 2009)