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:**	**3**

DATE OF EXAMINATION:	**3 / 12 / 2009**	**DURATION:**	**2 HOURS**

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

This question was set to assess the candidate's knowledge and understanding of recursive formulae.

1.1 Most candidates did not score full marks in 1.1; they either left out the restriction on n, eg $n \geq 2$, as well as the reference terms, ie $T_1 = 1$ and $T_2 = 1$.

1.2 Not more than 50% of the candidates got the answer in 1.2. Many candidates were looking for a formula to get to the answer, instead of simply continuing the sequence manually.

QUESTION 2

This question was set to assess the candidates knowledge, understanding and application of descriptive statistics. The candidates were also challenged to motivate their answers. The question also posed some language problems, especially to the 2nd and 3rd language candidates.

Nandi's proposal is confusing, only after reading the second sentence you can really see that there is a difference between the two proposals.

2.1 Most candidates scored full marks in this question.

2.2 This question was not answered well, and where candidates answered "NO" they could not really motivate. The word "size" should have been excluded because according to the memo the examiner expected the candidate to build a motivation using other factors. OR the word "any" should have been inserted before sample size.

2.3 Many candidates answered this question correctly, although candidates really struggle to give good motivations based on facts rather than experiences.

2.4 Fairly well answered, most candidates could see that gender was not considered in both proposals.

QUESTION 3.

This question assessed the candidates understanding of standard deviation and sd-percentages. Since the question was basically asked in the reverse order, many candidates were caught off-guard and they simply guessed answers. Those candidates that had enough practice did not have any problems in this questionand scored full marks.

3.1 - 3.3 were fairly well answered. Candidates either knew the answers or not.

NB – Textbooks and other sourced differ slightly on percentages.

QUESTION 4

This question assessed the candidate's knowledge, understanding and application of Probability.

4.1 Most candidates had a good idea of what was expected of them to do in this question. It should be stressed, however that candidates should label branches clearly by name and probability/percentage. They should also make it a habit to write down the outcomes, ie draw a complete tree diagram.

4.2 Fairly well answered. Candidates got this question either right or wrong.

4.3 Not well answered. Candidates was confused with when to multiply or add. Candidates should practice calculator usage for fractions.

QUESTION 5

This question assessed the candidate's knowledge, understanding and application of bivariate data.

5.1 Labelling the axes, and especially the scale to be used was a problem. Some candidates simply just plotted the points in the order given in the table, resulting in a totally wrong representation. Many candidates scored good marks in this question.

5.2 Some candidates still used the pen-and-paper method – so time consuming. Those who did, actually did well getting the answers for a, b and r. Those that used the calculator also did well.

5.3 Very few candidates could draw the required line. Candidates simply did not know they just had to substitute points into the equation. The fact that the equation had decimal numbers for a and b contributed to the problem.

5.4 Candidates got this either right or wrong. Tested calculator usage.

5.5 Many candidates only wrote about the correlation coefficient, ie positive / weak but failed to comment on the actual relationship between age and resting heart rate.

5.6 Very few candidates actually used the line or the fact that the points are scattered as reason, most candidates just referred to the value of r.

QUESTION 6

This question tested the candidate's understanding of contingency tables.

6.1 Most candidates did well in interpreting which values to use. The question also posed a language problem in the way it was set out, hence the memo made provision for this. Many candidates only wrote down a number instead of a probability/fraction.

6.2 Poorly answered. Only the stronger candidates got this question correct. A lack of knowledge regarding independent / mutually exclusive events etc was clearly visible.

QUESTION 7

This question tested the candidate's knowledge and understanding of combinations and permutations. This question was not well answered. Candidates either knew what to do or not.

7.1 Fairly well answered.

7.2 Not well answered.

7.3 Poorly answered. Very few candidates could answer this question.

QUESTION 8

This question tested the candidate's knowledge, understanding and application of Geometry.

8.1 The fact that the word "THEOREM" did not appear in the question, most learners just referred to the Theorem itself and this cost them dearly. Most learners did not score any marks in this question. It was also the first time that a formal proof was asked, it was definitely unexpected and educators and learners were all caught off-guard. Centres where proofs were emphasized did well. The examination guidelines should be more clear on the matter regarding which proofs are examinable.

8.2 This was a routine geometry question.

8.2.1 Many candidates took many steps to get to the answer. This shows a lack of practice and sharpness. Many candidates also assumed certain crucial things without any proof. Unfortunately/Fortunately this led to the correct answer, since the question allowed for this. Fairly well answered by those who were taught.

8.2.2 Not well answered. Again candidates just assumed certain facts.

8.2.3 Poorly answered – Candidates should practice this type of question more. They have to make use of the converse to prove what is needed.

QUESTION 9

This question tested the candidate's knowledge and understanding of proportional right-angled triangles. The question as a whole was fairly well answered, especially the use of the Theorem of Pythagoras.

9.1 Recall question. Well answered.

9.2 Well answered. Some candidates still struggled due to lack of practice.

9.3 Poorly answered. Although a few candidates got this correct, many candidates just used any sides for the base and height. Since the triangles are proportional, it led to the correct answer.

QUESTION 10

This question assessed the candidate's knowledge and understanding of proportionality. This question was not well answered at all. Candidates really struggled to get the correct answers. This is mainly due to lack of practice. Candidates should be taught to look a little "deeper", because that was what was required in 10.1.1 and 10.2.

10.1.1 Poorly answered. Candidates failed to see the relationships between the sides/lengths.

10.1.2 Many got this answer. Direct deduction – no calculation was needed.

10.2 Poorly answered. Most candidate's simply wrote 6 x 2 = 12, which means they simply made AD=AC.

QUESTION 11

This question assessed the candidate's knowledge, understanding and application of geometry to solve problems/to prove statements.

11.1 Fairly well answered by some. Most candidates struggled due to lack of practice. Their "eye" is not sufficiently practiced to pick up the "route" through the diagram.

11.2 Most candidates knew what was expected and did well to score at least 2 marks. Some failed to include either the 3rd angle and/or the reason.

11.3 Not well answered. Candidates just assumed certain critical information. Eg AF = 0.5 AO.

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

Firstly, I know that educators struggle to fit in the contents of this Paper in their normal teaching and that it is mostly done after hours. Learners should get sufficient practice in all the different ways questions can be asked on a certain topic. Educators should not be entirely dependent on exemplars to guide them, but should ensure that the candidates are adequately prepared to tackle any problem. Learners should also be taught different methods to solve problems. The use of the calculator should be emphasized in the Data Handling questions. Learners should really be drilled to know the Geometry Theorems and practice the application thereof.

8. ANY OTHER COMMENTS

Although this question paper adds more content it is not a difficult paper, and should therefore not be seen as a paper for the "brighter" learners only. Educators should open it up to all learners who commit themselves to extra work.

It would also be highly appreciated if the NDoE can give clear guidance on the future of Mathematics Paper 3. The word optional attached to the paper creates tremendous confusion regarding its status.

Also the Examination guidelines should be clear regarding the proofs of theorems.

Plans to motivate educators and learners to do this subject should be put in place, depending on the status and future of the paper.

SIGNATURE OF EXAMINER/MODERATOR: _____