Province of the
EASTERN CAPE
EDUCATION

ASSESSMENT & EXAMINATIONS
Bundy Park, Schornville, KWT * Private Bag X 4571, KWT, 5600
REPUPLIC OF SOUTH AFRICA, Website: www.ecdoe.gov.za

NSC 2011 CHIEF MARKER'S REPORT

SUBJECT	MATHEMATICS

PAPER	3

DATE OF EXAMINATION:	2 NOV. 2011	DURATION:	2 HOURS

SECTION 1:

(General overview of Learner Performance in the question paper as a whole)

In general the candidates of this year performed very well. The majority of the candidates
who wrote the paper were well prepared.
This can be supported by the fact that 86,4% of the candidates were successful, obtaining
a level two and above. Only 13,6% of the total number of candidates obtained a level one
this year.
It was also good to see the acceptable manner (Mathematically correct) in which candidates
presented their solutions to the various questions.
Many learners also presented some good creative solutions in topics where applicable.
It was clear that most of the learners who registered and wrote this paper were well prepared.
Well done to the Mathematics Paper 3 Class of 2011.

SECTION 2:

Comment on candidates' performance in individual questions
(It is expected that a comment will be provided for each question on a separate sheet).

QUESTION 1
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
1.1 This sub question was attempted by all learners and they also performed well in this
question. Very few learners were unable to get to the answer.
1.2 This sub question was fairly well answered. Candidates made use of both methods.
Some candidates misunderstood this question, thinking it wanted the term which = 0.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
1.2 Candidates misinterpreted the question and simply found $T_7 = 0$ and stopped.
They did not realize that the sum had to be = 0.

(a) Provide suggestions for improvement in relation to Teaching and Learning.
Candidates should read the question at least 3 times before answering. They should read
the question until they have a clear understanding of what has been given and what is
required and from there plan the solution strategy.
(d) Describe any other specific observations relating to responses of learners
It was good to see that learners could see the relationship with content covered in Paper 1
and actually applying that knowledge in Paper 3, ie Arithmetic Sequence.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Topics should not be taught in isolation as it will equip the learner to be able to solve
problems using different methods.
QUESTION 2
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
2.1 Overall candidates underperformed in this question. Learners still struggle to interpret and
read off precisely from graphs. Some learners simply gave the answer as 42.
2.2 Many learners wrote 85 kg. Again here it is a reading off problem – estimation.
2.3 This question was not answered very well by most candidates. They could not see the
ratio factor.
2.4 Most learners gave some kind of an explanation using arrival time as an external factor.
Learners still find it difficult to support an argument.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Incorrect reading off.
Not realizing that they must use ratios.
Difficulty in supporting an argument.
(c) Provide suggestions for improvement in relation to Teaching and Learning
Learners should get more practice in reading of techniques and the interpretation of graphs
and values.
Learners should practice to write supporting argumentative statements.
Understanding link between ratios and percentages.
(d) Describe any other specific observations relating to responses of learners
Well prepared learners did well in this question.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Learners to should get a good grounding and understanding of the topic and also see
how it is applied daily all around us.
QUESTION 3
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
3.1 Learners underperformed in this question. It was quite a straight forward question but
some learners had no understanding or were confused with the terminology “mutually
exclusive” and “independent” events.

3.2 This question was poorly answered because learners thought it was a continuation of 3.1.
The manipulation of decimals also posed a problem
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Due to lack of understanding of terminology.
Struggling with manipulation of decimal fractions.
(c) Provide suggestions for improvement in relation to Teaching and Learning
Make sure that learners have a good understanding of the terminology relevant to this
topic.
Make learners aware of the use of calculator to do decimal fraction calculations.
(d) Describe any other specific observations relating to responses of learners
It was pleasing to see that although many learners struggled with this question there were
quite a number of candidates scored full marks.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Educators should be aware and make learners aware of the different ways questions on
this topic can be posed.
QUESTION 4
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
4.1 This question was well answered. The fact that the Normal Distribution Curve was given
helped.(Note : It will not always be given, learners have to know it). Many learners
stopped at 68%.
4.2 This question was fairly well answered. Refer to 4.1 comment.
4.3 Not well answered. Many learners gave an interval as an answer or an answer > 30 min.
using 3 standard deviations instead of only 2.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Many learners used 1 sd (–ve sd and +ve sd) giving them an answer of 68% instead of only
the –ve 1 sd = 34%.
Many learners were totally confused by 4.2 adding any %'s showing a lack of understanding.
Many learners used three sd's giving 24+3(3) = 33 minutes instead of 2 sd's 24+2(3) = 30 min
(c) Provide suggestions for improvement in relation to Teaching and Learning
Learners should get a good understanding of the normal distribution curve and how to apply
it to a given scenario.
Note : The diagram will not always be given. Learners should know it.
(d) Describe any other specific observations relating to responses of learners
Again it was good to see that the learners that had a good grounding and understanding of
this topic had no problems in getting full marks for the question.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
This is a topic in which learners can actually score good marks if they are prepared well for
it. Make sure that learners are prepared to answer different types of questions, especially
where they have to interpret the information.

QUESTION 5
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
5.1 & 5.2 The counting principle still poses major challenges to our learners. Although not to complicated these questions were not well answered.
5.3 Learners struggled with this question as it required lots of insight.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Question was poorly answered due to the understanding required to come up with the solutions. Learners are not clear when to add or multiply or use factorial. Question 5.3 required some insight and that caused learners to struggle. Many of them got to 56 but forgot to subtract the 1 to exclude 300, as the question stated > 300.
(c) Provide suggestions for improvement in relation to Teaching and Learning
Get the basics in place and thereafter make sure that learners practice different types of questions. Also make sure that learners understand when to apply which rule and take note of exclusions.
(d) Describe any other specific observations relating to responses of learners
There were quite number of candidates who scored full marks for this question which supports the fact that it was not an unfair question. Many creative solutions were observed.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Educators must be trained so that they can get a good understanding of this interesting Topic.
Do not under estimate the creativity of learners in this topic to come up with solutions.
QUESTION 6
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
6.1 This question was challenging in the way the information was given and this posed a great challenge to learners. Where to subtract the x was problematic and caused further problems.
6.2 Most learners had an idea here that they had to add, equate and solve for x. Following on from 6.1 resulted in many cases in an incorrect value for x, ie –ve or fraction.
6.3 Most learners scored some marks in this question because CA was applied. Many did not know that “at least two” implies “all three” are also included.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Candidates struggled with this question because of the statement, eg “20 complained about the Food and the Menu but not the service” and also subtracted the x from the 20. There were two similar statement with the 11 and the 16. From this point on it was difficult to complete the Venn-diagram.
(c) Provide suggestions for improvement in relation to Teaching and Learning
Learners should be made aware of the meanings of words like and, not, only, etc in the context of the question.
Learners should be given different types of scenarios to work on to get use to the usage of the words mentioned above.

(d) Describe any other specific observations relating to responses of learners.
One of the candidates came up with a solution without the use of a venn-diagram, showing an
absolute understanding of the problem. This alternative was included in the National Memo.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Educators should understand that the Venn-diagram is just a tool/method that is used to
make solving the problem easier.
Get to grips with the terms Sample space, Intersection, Union, Complement, etc
Use the "APIO-order" ,ie First fill in the **A**LL, then the **P**AIRS, then **I**ndividuals and lastly
OUTSIDE. Off course this is not cast in stone, but is of great help.
QUESTION 7
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
This question was well answered by most of the candidates. It seems as if educators has got
the just of this topic (Scatter Plot). It is also done in Paper 2.
7.1 Most learners scored full marks in this sub-question.
7.2 Many candidates also did well in this question. A few attempted to use the straight line
equation to find a and b with no success, while other just left it out completely because
they did not know how to use the calculator.
7.3 Many learners did well in this question, only those that had little practice struggled to find
the correct answer.
7.4 Many learners did well in this question. All the variations were given by the candidates.
Some candidates incorrectly stated "inversely proportional".
7.5 Fairly well answered. Many learners knew what they had to do, whilst others attempted to
get the answer by using a line of best fit or prediction.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
7.2 and 7.3 was the only questions that posed some problems due to lack of calculator
skills. Since 7.5 is a follow-on on question 7.2 it also affected the success rate in this
question.
(c) Provide suggestions for improvement in relation to Teaching and Learning
There is a need for training in the usage of calculator to answer this question.
A few candidates struggled with the interpretation of the correlation coefficient.
Make learners aware of the difference between the line of best fit and the line of
least squares.
(d) Describe any other specific observations relating to responses of learners
Most learners answered 7.1 exceptionally well. Plotting of points not a problem.
1 or 2 learners if any made use of the long table method to solve 7.2 and 7.3.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Learners should always get good marks in this question, since it is very predictable.
The format of this question is basically the same every year with little deviation/variation.
Ensure that calculator skills are good – many marks can be scored in this way.
Understand that the least squares line is a specific line.
It is better not to round off.

QUESTION 8
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
8.1 Although this question was still poorly answered by some, it was clearly evident that more expected a Theorem.
8.2 Was fair well answered – The learners who were taught, in most cases, scored close to full marks in this question. For many learners 8.2.4 was still a great challenge – yet there are so many different ways of proving what was required.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Mainly due to fact that it was not taught and/or revised properly. Not enough practice.
(c) Provide suggestions for improvement in relation to Teaching and Learning
In Geometry learners must know and understand the theory. They should also be made aware that in most cases there is more than one alternative solution.
Practice, Practice and more Practice.
(d) Describe any other specific observations relating to responses of learners
It was also good to see that there are learners who came up with alternatives of their own.
In riders at this stage no real need for extra constructions – but it can sometimes be useful.
Different centres has different proves for Theorems.
Learners used words like “bow tie” and “butterfly wings” as reasons.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Should ensure that learners are well prepared for Geometry.
Use of Technology (Geogebra) in teaching Geometry.
Use of correct reasons/terminology to support statements.
QUESTION 9
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
This question was well answered by a good number of the candidates. Many candidates just assumed certain things, eg $\pi C = 90^0$ and that AE = EC without giving reasons. But overall I would say that learners underscored in this questions.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
One factor that could have contributed is that there was no mention of the fact that O is the Centre of the circle. Learner omitted correct reasons.
(c) Provide suggestions for improvement in relation to Teaching and Learning
Learners must be taught that it is always important to support your statements with valid reasons. In most cases in Geometry there is more than one way to get to the answer.
Make use of the diagram sheet to fill in the given information.
(d) Describe any other specific observations relating to responses of learners
Most learners had no problem what so ever in applying the Theorem of Pythagoras.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Should ensure that learners are well prepared for Geometry.
Use of Technology (Geogebra) in teaching Geometry.
Use of correct reasons/terminology to support statements.
All Theorems are important.
Revision of earlier Geometry.
QUESTION 10
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
10.1 Many learners did well in this sub-question, whilst quite a few also omitted the parallel
lines as a reason and simply wrote (alternate angles) – not acceptable because all
Alternating angles are not necessarily equal.
10.2 Many learners did well in this sub-question. They knew what was expected of them.
Some did not know what reason to give for $\pi D_1 = \pi D_3$.
10.3 In this sub-question most candidates knew what was expected. Some even tried to work
backwards.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Due to lack of practice.
Incomplete or incorrect reasons.
Not utilizing the diagram sheet optimally.
(c) Provide suggestions for improvement in relation to Teaching and Learning
Geometry theory should be taught well and as early as possible in order to give learners
ample time in the application phase to practice.
Some learners still get confused with certain things eg. Angles subtended by same chord,
where both angle are not on the circumference of the circle ($\pi A = \pi G_1$ or $\pi F = \pi H_1$)
(d) Describe any other specific observations relating to responses of learners
It was quite clear that if learners are taught well and had ample revision time that the question
was manageable and full marks could be scored.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Learners should be made aware that they cannot just assume things – valid reasons
In Mathematics/Geometry, “obvious” is a dangerous word.
Should ensure that learners are well prepared for Geometry.
Use of Technology (Geogebra) in teaching Geometry.
Use of correct reasons/terminology to support statements.
All Theorems are important. / Revision of earlier Grades’ Geometry
QUESTION 11
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
11.1 This question was not well answered. Learners knew that it had to do something with
the parallelogram, but could not see the link. A number of learners however did manage
to get full marks.

11.2 Poorly answered – Learners did not know how to apply the converse theorem. They did not write the given information as ratios of sides to see that the ratios are equal and therefore the sides are parallel.
11.3 Poorly answered – Most learners did not prove the similar triangles. They just applied the ratios to be equal. Furthermore, most learners got CD = 30 and FE = 15.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
Lack of understanding and practice.
(c) Provide suggestions for improvement in relation to Teaching and Learning
This topic is done in depth in Grade 11. It must be thoroughly revised in Grade 12.
Learners must get a good understanding of Similarity, Proportion, etc
(d) Describe any other specific observations relating to responses of learners
It was quite clear that learners still struggle with this topic and not enough revision is done.
Learners struggled to get the correct proportions. Lack of the use of the diagram sheet.
(e) Any other comments useful to teachers, subject advisors, teacher development etc.
Should ensure that learners are well prepared for Geometry.
Use of Technology (Geogebra) in teaching Geometry.
Use of correct reasons/terminology to support statements.
All Theorems are important. Revision of earlier Geometry.
Learners should be made aware that they cannot just assume things - valid reasons
In Mathematics/Geometry, “obvious” is a dangerous word.

SIGNATURE OF CHIEF MARKER: _____