EXAMINERS' REPORT

LEVEL 2 CERTIFICATE IN ADDITIONAL MATHEMATICS

SUMMER 2011

Statistical Information

The Examiners' Report may refer in general terms to statistical outcomes. Statistical information on candidates' performances in all examination components (whether internally or externally assessed) is provided when results are issued. As well as the marks achieved by individual candidates, the following information can be obtained from these printouts:

For each component: the maximum mark, aggregation factor, mean mark and standard deviation of marks obtained by *all* candidates entered for the examination.

For the subject or option: the total entry and the lowest mark needed for the award of each grade.

Annual Statistical Report

Other information on a centre basis is provided when results are issued. The annual *Statistical Report* (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

ADDITIONAL MATHEMATICS

General Certificate of Secondary Education

Summer 2011

Chief Examiner: Linda Mason

General Comments

There was no evidence to suggest that the examination paper were too long for candidates, as there were clearly responses in later questions.

A number of candidates were obviously well prepared for the examination. Other candidates did not seem to have been ready, mature enough for this examination.

As item level data is available to all centres, by centre and for individual candidates with comparison of all candidates sitting these examinations, this report will focus on common errors and misconceptions to aid the interpretation of the data available rather than focus whether each question was well answered or not.

Q.1   There were errors with signs, demonstrating that candidates do not check once factorised. This was the main error, as candidates obviously showed they had good knowledge of what was required.

Q.2   The most difficult parts were the negative and the fractions. This demonstrated some insecurity with subtracting one from a negative number or a fraction.

Q.3   (a)   Although many candidates worked accurately, a common error was to find the difference of the squares of differences rather than the sum. Meaning, an incorrect formula has been learnt.

        (b)   Many candidates had a method to find a gradient. Once a gradient is found 'm', some candidates incorrectly believe that the perpendicular gradient is '-m'. Candidates actually have more difficulty in finding the mid-point than finding 'm' or '-1/m'.

Q.4   Many candidates work correctly, however the most common error was to consider multiplying throughout to start, not realising that this was a question to prove an identity.

Q.5   Candidates have good knowledge. Where errors occurred it was usually in the last part, in the division or the direct evaluation of the coefficients of the terms.

Q.6   A number of candidates did not work with surds. However, for those working with surds there was some difficulty with rearrangements.

Q.7 Many candidates formed the correct equations. Some candidates appeared not to have a strategy to solve. Candidates attempting to solve sometimes made slips with expansions, particularly with negative terms.

Candidates were assessed on the quality of their written communication in this question. Many candidates did clearly show which equation linked to which rectangle and then noted which equation was to be substituted and progressed to give an answer with units.

Q.8 Candidates need encouragement to be absolutely accurate with their notation, and state limits. Incorrect notation was the main error.

Q.9 (a) A common error was to stop after differentiating once, or to integrate.

(b) The middle term caused the main difficulty, and often candidates did not write down that a constant was also produced.

(c) Most knew that limits needed to be substituted and the terms subtracted. An error was to forget to integrate first.

Q.10 After differentiation and equating to zero, a number of candidates only found one of the two stationary points. The method of solving '$6x^2$ -6' was the weakness for a number of candidates, who otherwise clearly understood the processing required.

Q.11 (a) Working with indices is not a strength, with a number of candidates unsure about fractional and negative indices.

(b) Working with fraction indices is not a strength for many candidates. A number of candidates did not have a correct strategy from clear knowledge.

Q.12 Many candidates integrated and used limits. Errors were mainly numerical.

Q.13 Candidates often are not accurate with the use of brackets and this leads to all kinds of errors. Application of the quadratic formula is usually good, but often with an incorrect equation. A long line of algebraic terms needs careful consideration to avoid errors.

Q.14 (a) Even with calculators to hand, candidates did not look at sufficient points in order to sketch. Sketches often had 'flat' pieces, for example between 30° and 60°, as no other values where considered.

(b) Responses were not good, with answers from incorrect manipulations of the equation given.

Q.15 A number of candidates visualised the three-dimensional cone and found the radius. For other candidates, they clearly did not have this visual interpretation, so found the area instead.