WJEC
CBAC

GCSE EXAMINERS' REPORTS

MATHEMATICS - ADDITIONAL PILOT

SUMMER 2010

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.

MATHEMATICS ADDITIONAL PILOT

General Certificate of Secondary Education 2010

Chief Examiner: L. Mason

There was no evidence, from either paper, that candidates were short of time to answer the questions asked. Many candidates had good knowledge of new techniques and were able to apply this knowledge within a variety of questions. Many candidates found application of GCSE techniques demanding, not always recognising which aspect of their mathematical knowledge was applicable to the situation.

Specific comments on individual questions are given below. Examination centres now have question level data to make comparisons. These comments can be read in conjunction with this data analysis.

Paper 1

Q.1 Many candidates were able to form simultaneous equations; having done this some candidates seemed to have forgotten techniques to solve them! However, many other candidates answered this question accurately. A number of candidates thought incorrectly that the length added to the width gives the perimeter.

Q.2 In part (a) many candidates demonstrated their skills in completing the square, but omitted answering the question not continuing to state the least value. Very few candidates were able to answer part (b) correctly.

Q.3 Many candidates had learnt methods of differentiation; the negative indices and fractions indices caused the main problems.

Q.4 Many candidates were able to understand what was required to answer part (a) with many correct responses. However, a number of candidates incorrectly thought that the answer to part (b) was simply part (a) answer subtracted from one! There were some errors with arithmetic, working with decimals.

Q.5 Many candidates answered the question correctly. The majority of candidates used the second derivative test to establish the nature of the stationary point.

Q.6 There were many difficulties with part (a), including the manipulation to equate to zero and for other candidates they were able to manipulate the given equation, equated to zero and then stopped, unable to recall techniques to solve quadratic equations. Part (a) was answered well, with many candidates able to establish the second equation and use substitution techniques to solve the simultaneous equations.

Q.7 Many candidates did not know a relationship between miles and kilometres so were unable to engage with this question. This was the major problem candidates' encountered with this question. Unfortunately in part (b), a number of candidates mixed units within a fraction.

Q.8 Many candidates had learnt and could demonstrate new skills in working with the remainder theorem. The stumbling block for many candidates was the final factorising of a trinomial quadratic expression.

Q.9 This question assessed candidates thinking related to the transformation of simple functions. Many candidates found the question very testing, both in finding the points and drawing the reflection with the correct intersections with the *x*-axis.

Q.10 In part (a) a common incorrect entry for the second box was 9, simply subtraction problems perhaps? Many candidates were able to describe the impact on the cumulative frequency diagram of the different spread for the different group of plants.

Q.11 Part (a) was fairly well answered, but part (b) was not. Many candidates could not visualise the general situation in the final part, moving from the 2 by 3 model to generalise proved to be very demanding for candidates, with very little working shown.

Q.12 Many candidates demonstrated knowledge of surds and trigonometry. Candidates had more difficulty with the manipulation in part (a) than the application of the cosine rule in part (b). A number of candidates do not understand the requirement of "show that", in part (a) many simply solved the quadratic equation.

Q.13 Candidates with sound manipulate algebraic skills answered this question well, sometimes with minor slips. Other candidates did not have good algebraic skills.

Paper 2

Q.1 A number of candidates attempted to answer this question incorrectly without Π! Many other candidates had a correct strategy, but made errors with place value, conversion of units did cause some candidates a problem.

Q.2 Notation is the key to accessing all the marks available in part (a). A number of candidates have poor notation; this is often centre specific. The understanding of limits is important. A number of candidates did not understand what part (b) required.

Q.3 Part (a) was generally well answered; candidates understood what was required to answer this part of the question. In part (b) many candidates understood what was required, but made some errors in the manipulation of the given equation to find the gradient.

Q.4 Many candidates were able to expand the brackets, but lost the final mark for not understanding the nature of proving an identity. This final step demonstrates, or not, the overall understanding of the process.

Q.5 Many candidates used their knowledge of circle theorems to start their solution. There were errors in the application of the cosines rule and sine rule.

Q.6 Many candidates made good attempts at answering this question. However, a number of candidates thought that the 11 they calculated was a *y*-coordinate rather than the gradient. Other candidates answered the question correctly.

Q.7 Many candidates had learnt techniques for solving simultaneous equations involving a quadratic, however there were a number of algebraic errors.

Q.8 Sketching an initial diagram was crucial. A number of candidates did not sketch one diagram for both masts; this made the connection to the second calculation difficult. Many other candidates demonstrated sound application of right angled triangle trigonometry.

Q.9 Many candidates demonstrated some knowledge of differentiation and integration. Errors were mixed, including difficulties with negative indices. There is some misunderstanding with definite integration.

Q.10 There were some interesting incorrect assumptions made in attempting to answer this question! However, other candidates did realise the need to calculate missing lengths by applying Pythagoras' Theorem.

Q.11 A number of incorrect formulae were seen, and many candidates did not think about dimensions at all! Some very good responses, but many candidates did not use any understanding of dimensional impact on their ratios.

Q.12 Many candidates did not have a strategy to find the missing height of the removed cone, but clearly candidates did see the frustum as a larger and smaller removed cone. A number of candidates made up heights, some tried 14 twice, not looking at the related size of the cones. Candidates either did very well with the question, or did not, due to the problems using ratio ideas to find the missing perpendicular height.

WJEC
245 Western Avenue
Cardiff CF5 2YX
Tel No 029 2026 5000
Fax 029 2057 5994
E-mail: exams@wjec.co.uk
website: www.wjec.co.uk