

# Principal Examiner Feedback

June 2011

GCSE Mathematics (2381)

Higher Paper (5383H/10)

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# 1. PRINCIPAL EXAMINER'S REPORT – HIGHER PAPER 10

## 1.1. GENERAL COMMENTS

- 1.1.1. This paper was well understood and well attempted by the majority of candidates entered for it.
- 1.1.2. It was disappointing to see poor responses to questions where a description of a process was asked for or for where a reason for an answer was required. In particular candidates could not write a convincing algebraic proof.
- 1.1.3. The quality of basic algebra was sound but when candidates were asked to do more complex algebraic manipulation it was very poor with many candidates making elementary errors in their attempts to factorise, simplify expressions and simplify algebraic fractions.
- 1.1.4. Questions 1 – 3, were tackled with the most success.
- 1.1.5. Questions 4 – 9 were less successfully completed.

## 1.2. REPORT ON INDIVIDUAL QUESTIONS

### 1.2.1. Question 1

This question was very well understood and very well answered with 73% of candidates gaining both marks for writing the correct answer. A further 21% gained 1 mark usually for writing  $6a + 4b$ . Only 6% of candidates scored no marks.

### 1.2.2. Question 2

The concepts in this question were well understood and fully correct solutions were produced by 50% of candidates. Those candidates who only managed to find 7.5% of £3600 were awarded 2 marks (7%) and those candidates who could show that they understood how to find 7.5% of 3600 scored 1 mark (3%). A surprising number scored no marks (40%) usually for attempting to find 7.5% of £400 or for attempting to divide 3600 by 7.5 and multiply by 100.

### 1.2.3. Question 3

Straight line graphs occur frequently on these papers and candidates demonstrated that they could draw them reasonably well. Fully correct straight line graphs were seen from 62% of candidates and correctly plotted points without a straight line scoring 2 marks by 5% of candidates. One mark was awarded to 5% of candidates either for a line passing through  $(0, -4)$  or for a straight line with gradient 2 or for plotting their points correctly from wrong values in a table.

#### 1.2.4. Question 4

Part (a)(i) was answered correctly by 30% of candidates but only 5% of candidates could successfully put together the correct reasons in part (a)(ii). Candidates often only gave one reason where two were needed as in the case of vertically opposite angles and corresponding angles or if they went for the vertically opposite angles, alternate angle and vertically opposite angle route they missed out one or two of the reasons. A disconcerting number of students referred to "parallel angles" and when articulating their responses very few were capable of correctly describe angles using three vertices.

In part (b) two marks were awarded to 30% of candidates either for the correct answer of  $75^\circ$  or for following through their incorrect answer from part (a). A disappointing 30% of candidates scored no marks at all on this question.

#### 1.2.5. Question 5

In this standard algebraic manipulation question 48% of candidates were able to expand two linear brackets correctly and a further 23% gained one mark for writing 3 out of 4 terms correctly or for writing 4 terms without the correct signs. A minority (28%) of candidates were able to correctly factorise an quadratic expression that was the difference of two squares.

#### 1.2.6. Question 6

This standard form question was well understood with 44% of candidates gaining both marks for a correct solution to the question. One mark was awarded to 27% of candidates either for giving the correct answer as an ordinary number or for the correct answer with an incorrect power of 10

#### 1.2.7. Question 7

In this question 25% of candidates obtained the correct answer of  $95^\circ$ . One mark was obtained by the 26% of candidates that realised that the angle between a tangent and a radius is  $90^\circ$  or realised that the triangle formed with sides that are two radii is isosceles and managed to find the missing angles in the triangle. Two marks were awarded to those candidates that were able to demonstrate both these properties and these marks were obtained by 7% of the candidature. A large number of candidates marked the angle  $ACB$  as  $90^\circ$ , obviously mistaking the chord for a radius and a line to the circle as a tangent.

### 1.2.8. Question 8

Though candidates understood what they had to do in this question that is a regular visitor to these papers it was not very well answered. No marks were awarded unless an algebraic method was used so candidates that tried to demonstrate that 28 divided by 99 equalled  $0.\dot{2}\dot{8}$  achieved no marks. One mark was obtained by 16% of candidates for demonstrating that if  $x = 0.28$  then  $100x - x = 28$  and two marks for a fully correct solution was awarded to 21% of candidates. Many students let themselves down by incorrectly equated terms (e.g.  $99x = 28 = 28/99$ ) and making other rudimentary algebraic mistakes others know they needed to multiply  $0.282828$  by 100 but many were not able to correctly multiply it to get  $100x$

### 1.2.9. Question 9

This question was poorly attempted with only 4% of candidates gaining all three marks. One mark was awarded to the 13% of candidates that tried to write the common denominator as  $(x + 1)(x - 1)$  or who were able to write  $5(x - 1)$  or  $2(x + 1)$  and the two marks if they were able to combine these terms correctly were awarded to 9% of the candidature.

Some Students had clearly been taught cross multiplying techniques, but in many cases they became confused about the exact method for this, with some students inverting the fractions or mixing up numerators and denominators, for which they did earn some partial credit. Surprisingly, many candidates started this question correctly with the correct denominator of  $(x + 1)(x - 1)$  and wrote  $5(x - 1) - 2(x + 1)$  on the top but by the answer line they would have managed to reduce their answer to 3 over x! It was a pity that  $\frac{3}{4}$  of the candidates did not score any marks at all.



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