Examiners' Report/
Principal Examiner Feedback

Summer 2014

Pearson Edexcel International GCSE
Mathematics A (4MA0/4HR)

Paper 4HR

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International GCSE Mathematics A
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Introduction to Paper 4HR

The most able candidates performed well throughout the paper, including the more challenging questions towards the end.

On questions where there is more than one step needed to get to the final solution, candidates would be well advised to keep full accuracy until the final answer.

Candidates are advised to take care when copying formulae from the formula sheet. In questions involving angle calculations, candidates should make it clear unambiguously which angles they are calculating either by using the standard three letter angle notation or writing found angles on the diagram in the correct place.

Report on Individual Questions

Question 1
A common error occurred in the rearrangement of the formula with a significant number of candidates either working out -4×-5 as -20 or $-22 - 20$ as -44 rather than -42.

Question 2
The majority of candidates were able to find the correct duration of the journey but then a significant number multiplied 3.27 or 327 by the speed without changing the time to a decimal.

Question 3
$n + 3$ was a common incorrect answer to (a), but many correct answers were seen.

In part (b) the common error was to substitute 88 for n rather than equate the expression for the nth term to 88.

Question 4
Part (b) was generally correct.

In part (a) those who attempted to describe a rotation followed by a translation gained no marks. Candidates are reminded that questions of this type often ask for a **single** transformation. A significant number of candidates gave the direction of the rotation as 90° clockwise rather than anticlockwise.

Question 5
The two most common errors in this question were to either subtract the area of just one circle from the area of the rectangle or to use $\pi \times 6^2$ rather than $\pi \times 3^2$ as the area of the circle. Some used the formula for circumference of a circle rather than area.
Question 6
The best work was well ordered showing logical sequential steps leading to the correct answer. Many candidates got confused part way through the question but were able to gain some method marks. A number of candidates managed to find the numbers 36 (drinks) and 45 (dollars) but then made an error in the next step showing 36/45 rather than 45/36.

Question 7
Part (a) was well answered.

The majority of answers in part (b) were also correct although some candidates used their answer from part (a) rather than 0.1

Question 8
Writing a number as the product of its prime factors was clearly well understood. A small number of candidates listed the factors rather than writing the number as a product of its prime factors and therefore lost the final mark.

Question 9
A significant number of candidates formed incorrect equations. These usually came from thinking that opposite angles of a parallelogram sum to 180^o. Candidates who displayed correct knowledge about angles of parallelograms generally went onto gain full marks. A significant proportion also equated $x+24$ with $x+2y$, or thought that the three angles identified sum to 270.

Question 10
Part (a) was well answered.

Candidates found part (b) more demanding, whilst many correct answers were seen there were a significant number who divided 0.75 by 1 and by 2 and by 3 and added all the results.

Question 11
Many candidates were able to gain one mark in part (a) for realising that the sum of the four numbers must be 32, but then were unable to find the correct four numbers.

In part (b) some found an expression for the mean rather than substituting their values for *a*, *b*, *c* and *d* and coming up with the correct value.

Question 12

Whilst the majority of candidates understood that to factorise a quadratic, two brackets were necessary, some took *t* outside a bracket for the first two terms only. A few candidates misunderstood the question and attempted to solve the equation $2t2-7t+3=0$ by substituting into the quadratic formula and so gained no marks.

In part (b), some candidates failed to gain the accuracy mark through failing to deal correctly with a negative sign. Others failed at the first step by misplacing a negative sign at this early stage.

Question 13

Finding the interquartile range from a set of discrete data was not done well; a common error in part (a) was to find the mean or the range rather than the interquartile range.

Answers in part (b) were very varied. Those who realised that the interquartile range was the correct measure to use, generally gained a mark in (b). However, a significant number of candidates referred to the median rather than the interquartile range.

Question 14

Too many candidates failed to use consistent units throughout the question and so did not gain full marks. Thus, in part (a) a significant number of candidates ended up with the answer of 9.75×10^7 rather than 9.75×10^{10}. In part (b) a common error was to use 1.9×10^{10}, rather than the upper bound of 1.95×10^{10}

Question 15

A common error in part (a) was to only put in one pair rather than two pairs of right hand branches.

Part (b) was well done.

In part (c) many candidates included the option of white, and so gave an incorrect answer. A large proportion of candidates lost one of the marks on part (a), but gained full marks in (b) and (c).

Question 16

Whilst much correct algebra was seen there were also a number of careless errors, the most common of which was to simplify $3x-(x+1)$ incorrectly.

Part (b) was well answered.

In part (c) many candidates failed to realise that the length $3x$ was the longest side and just substituted into $4x-3$ and gave the answer as 6.92

Question 17

Many correct answers were seen for part (a), although a significant number of candidates had 8 or 16 in place of 4.

There was evidence of much correct factorising in part (b) but not all candidates simplified their answer fully. A small minority of candidates who did simplify their answer fully then went on to attempt to simplify further incorrectly and so lost the final accuracy mark.

Question 18

Part (a) was generally well done but candidates frequently failed to quote the relevant circle theorem correctly in part (b), many just mentioned tangent and line from the centre.

In part (c) many candidates listed their calculations without linking them clearly to the angle they were trying to calculate, in which case no marks could be awarded. Those who did find the correct size of angle *CGF* did so by finding and then summing angles *CGO* and *FGO*.

Question 19

Many candidates were unable to make any progress in this question. Those that made a successful start generally gained 3 marks for using the cosine rule correctly to work out the length of *BC*. From there, many went onto work out angle *B* rather than *C* and gave the bearing of *C* from *B* rather than the bearing of *B* from *C*. A minority of candidates created a right-angled triangle using *AC* as the hypotenuse and worked from there.

Question 20

A significant number of candidates failed to realise that the use of Pythagoras's theorem was necessary to work out the slant height of the cone and thus scored no marks. The omission of brackets when working out $(5a)^2$ was condoned in the use of Pythagoras's theorem but not subsequently in responses.

Question 21

The most common method was to expand both sides of the identity and show that the expansions were identical. Those candidates who started with the right hand side of the identity, expanded, simplified and then re-factorised to get the left hand side were generally more successful than those who attempted to do the same but started with the left hand side of the identity. Some candidates failed to get full marks due to sight of incorrect algebra, for example, writing a^2c^2 as ac^2 or ac^4.

Part (b) proved to be beyond all except the most able candidates because they were unable to spot that 650065 = 10001 x 65

Grade Boundaries

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