

Principal Examiner Feedback

Summer 2013

GCSE Mathematics Linked Pair Pilot
Application of Mathematics (2AM01)

Foundation Paper 2F

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GCSE Applications in Mathematics 2AM01

Principal Examiner Feedback – Foundation Paper Unit 2

Introduction

Candidates generally responded well to the questions testing quality of written communication (QWC). However, not all showed all necessary working in an ordered fashion. It is important in all questions that working is set out appropriately but this takes on even more significance in questions of this type. Candidates should also ensure in such questions that any necessary decisions are clearly communicated as well as the final answer, complete with correct units if appropriate.

It is disappointing to see so many arithmetical errors made on a paper for which candidates have access to a calculator.

Report on individual questions

Question 1

The vast majority of candidates were able to at least 2 out of the 4 marks available in this question.

Many candidates were unable to deal with the conversion of 4357 metres to kilometres in part (b).

In part (c), the most common error was to give the value of 6 to be 0.6 ie still in decimal form.

Question 2

Evidence of a clear method was not always seen, particularly in using the given scale in converting from their counted squares. Although inclusion of units was often forgotten, many were able to pick up this mark. Many candidates simply counted the complete squares ignoring the part squares. Some worked out the area of a surrounding rectangle, usually 9cm by 4cm, and went no further.

Question 3

Many correct answers were seen. Errors tended to be arithmetical, even with access to a calculator. Some candidates simply found the difference between figures in just one month, usually March, and failed to continue with a solution.

Question 4

Both parts to this question were answered well. Arithmetical errors in multiplying 19 by 3 in part (a) were sometimes made.

In part (b), 143 was often divided and sometimes multiplied by 19 before either subtracting or adding 10

Question 5

Few candidates gained full marks on this question. This was usually through lack of an organised approach. The vast majority were able to identify the times of the 5 stages of the journey, although the time from Saxon to Ganby was often misread as 1hr 15 mins. The 30 minute rest at Saxon was often ignored. The major cause for concern was in the addition of the times. 1hr 15 mins and 1hr 5 mins were often written as 1.15 and 1.05 (sometimes 1.5) and errors were then made in decimal addition. The most successful candidates worked in minutes from the start and found the total time to be 300 minutes. A few getting this result were then unable to convert to hours and ultimately a specific time.

Question 6

Parts (a) and (b) were usually correctly answered.

Part (c) was also generally well done, with very few not gaining at least one mark.

Question 7

Although generally well done, many candidates did make mistakes by not reading the question carefully. $£2.35 \times 3$ (instead of 4) was common and many thought that each of the 4 friends had to pay £2 in addition to the taxi mileage charge.

Question 8

Part (a) was generally well done with few mistakes.

In part (b), most candidates identified items taking a total of 7 days to make and therefore gained at least one mark. The most common error was 2 tables and a cupboard, but this gained 2 marks if the profit on these was correctly calculated.

Question 9

All parts were answered correctly in the majority of cases.

Question 10

This was a very well answered question with the modal score being full marks. Only a few candidates offered additional reversed combinations. These were ignored.

Question 11

$s = m + 8$ was the most common error of those attempting to write down a formula in part (a). $s = m - 8$ was also often seen, but this was awarded one mark for a correct formula for s in terms of m . More success was gained in part (b).

Question 12

Parts (a) and (b) were usually answered correctly showing accurate reading from the given conversion graph.

Part (c) was less well done. Many simply compared the number 320 with the total weight in pounds (650) of the four. Attempts at using the graph to either convert 650 pounds to kg or the weights of each person to kg were mixed. Many ignored the correct conversion already made ($10\text{kg} = 22\text{lbs}$) and used a factor of $2\text{kg} = 4\text{lbs}$. leading to poor estimates. The most popular approach was to convert the weights of the 4 people. The most successful approach was to convert 320kg into lbs.

Question 13

Very many candidates were able to score at least 3 marks in this question. Understanding of the requirements was good and often it was simply careless use of the calculator which prevented full marks. This was a QWC question and candidates were required to give all units with their totals and in their conclusions. Many failed to do this.

Question 14

Accurate constructions of the given triangle were rare, many choosing instead to try to simply draw the triangle, usually with at least one side incorrect.

In part (b), the majority of candidates tried to argue the case, unsuccessfully, by calculation instead of drawing a rectangle inside their triangle. Those who did realise that this was required were usually successful.

Question 15

Most candidates were able to sketch a cuboid but only a minority gave all three dimensions. Two dimensions, 6cm by 8cm was often the only ones seen.

In part (b), most candidates were able to draw a net of a cuboid and pick up the two marks available.

Question 16

The majority of candidates were able to fully understand the travel graph and few failed to correctly answer part (a).

Part (b) was less successful, particularly with the return journey home at 3pm. Some ignored the one hour spent at her friend's house and started the return journey at 2pm. Carelessness in the drawing of the graphs often prevented the award of these marks.

In part (c), the correct answer of 5km was the modal answer even when the marks in part (b) had not been earned. Some only considered either the outward or return journey and gave 2.5km as their answer.

Question 17

Several different approaches to this question but very few candidates failed to correctly find the volume of the sandpit. A small minority did add the three dimensions or attempted to find the surface area. Attempts to find the amount of sand that could be bought for £50 or the cost of buying enough sand to fill the sandpit were good, failing occasionally through arithmetical error or poor calculator use. Again this was a QWC question and units were required throughout.

Question 18

Another QWC question where units and clear explanations were required. This was not always the case and often working was very difficult to follow. The majority correctly determined the need for 50 cookies although a significant number misread the question resulting in 40 ($14 \times 2 + 4 \times 3$) cookies. This misread was heavily penalised since it trivialised the question. Very few quoted a scale factor of 2.5 but many followed equivalent paths, either by finding the amount of each ingredient for one then fifty cookies or 20, 20 and then 10. Many did not score the final mark, failing to make comment on all three ingredients as requested in the question. Simply saying that there was not enough butter was insufficient in securing this mark.

Question 19

Many candidates who did identify Chloe's results giving the best estimate were unable to give acceptable reasons why. Simply saying that "she counted more letters" was not enough.

Question 20

In part (a) the great majority of candidates were able to draw a correct pentagon. A common error however was to draw the apex 4m, instead of 3m, above the ground.

Part (b) proved to be a challenge for many. Very few candidates were able to find the area of each end of the shed, 8m^2 (4×2) being the usual offering, and so full marks were rare. However, finding the area of each side was less problematic and this enabled many candidates to pick up marks for being able to find the number of litres of paint required for their total area. Having found an amount of paint required, most were then able to work out its cost.

Question 21

Correct substitution in part (a) was usually seen, although $21d$ often became 2190 or $\sqrt{21d}$ became $\sqrt{21} \times 90$. Those who did correctly substitute into the given formula usually correctly found the square root of 1890.

Success was less in part (b), often 21×50 was calculated.

Question 22

Many candidates correctly and accurately drew the locus of points 10 metres (1 cm) from ED , and often shaded correctly. The locus of points equidistant from A was less well done, often with 3 cm by 3 cm squares being drawn.

Question 23

Completing the tree diagram, in part (a), was usually well done although 0.91 was a common error for 0.1. In part (b), very few showed any understanding of the concepts involved. $0.9 + 0.85$, sometimes then halved, was a common method.

Grade Boundaries

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