Principal Examiner Feedback

Summer 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

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GCSE Mathematics 2MB01
Principal Examiner Feedback – Foundation Paper Unit 2

Introduction

Most students attempted all the questions and answered them in the spaces provided.

It was pleasing to see so many students showing the intermediate stages in their calculations.

Students' annotations of diagrams were often feint and difficult to see.

Students should be reminded that, unless they are asked specifically to measure the lengths of lines or the sizes of angle in diagrams, they should not expect the diagrams to be accurately drawn.

Report on individual questions

Question 1

Part (a) was done well. Most students were able to add up the two decimal numbers correctly. Common incorrect answers were 42.10 and 33. Part (b) was done well. Most students knew that they had to divide 60 by 4. Many divided 60 by 2 then by 2 again. Common incorrect answers were $\frac{60}{240}$ and 45.

Part (c) was done quite well. Many students were able to write down the place value of the 3 in the decimal number. Common incorrect answers were 3 hundredths and 30.

Question 2

Part (a) was done well. Most students were able to write down the order of rotational symmetry of the triangle. Common incorrect answers were 1 and 4. Part (b) was done quite well. In part (b)(i), many students were able to write down the number of faces of the prism. A common incorrect answer was 4. In part (b)(ii), many students were able to write down the number of edges of the prism. A common incorrect answer was 6.

Question 3

Part (a) was done quite well. Many students were able to shade $\frac{3}{4}$ of the shape. Students should be advised to take more care in their shading ensuring that each part the diagram is shaded completely. A common incorrect answer was to shade only 3 parts of the diagram. Part (b) was not done well. Few students appreciated that they had to change one, or both, of the numbers to a comparable form. A significant number of students thought that the numbers were equal.

Question 4

This question was done well. Most students were able to find the smallest number of boxes for all the 40 eggs. Many students drew diagrams of egg boxes or wrote lists of multiples of 6. A common incorrect answer was 6.

Question 5

Part (a) was done quite well. Many students were able to write down the volume of the prism. Common incorrect answers were 24 and 2. Part (b) was done well. Most students were able to draw a rectangle with the given area. By far the most common correct answer was a 2 × 6 rectangle. A common incorrect answer was to draw a rectangle with a perimeter of 12 cm. Here, as elsewhere, students should be advised to use a soft pencil so that their diagrams can be seen.

Question 6

This question was done quite well. Many students were able to work out whether there was enough sticky tape to wrap the parcel. Many students were unable to work out 15 × 25 efficiently and accurately. A significant number of students performed this calculation by repeated addition, e.g. by listing 25 fifteens and adding them in a list or in groups. This was often not done accurately. Students should be advised to take more care with their use of notation, e.g. not to write 12/300 when 300/12 is intended.

Question 7

Part (a) was done quite well. Most students were able to write down the mathematical name for the line drawn inside the circle (diameter). A common incorrect answer was radius. Part (b) was not done well. Few students could write down the mathematical name for the line drawn outside the circle (tangent) A common incorrect answer was chord. Part (c) was done quite well. Many students were able to draw a sector of the circle. A common incorrect answer was a segment.

Question 8

Part (a) was done quite well. Many students were able to write down the mathematical name of the quadrilateral (trapezium). Common incorrect answers were rhombus and triangle. Part (b) was done well. Most students were able to draw the line of symmetry of the quadrilateral. Here, as elsewhere, students should be advised to use a soft pencil to draw lines in diagrams. Part (c) was generally done well. Most students were able to mark the point on the grid. Some students did not use a cross (×) to mark the point but simple labelled the point P. A common incorrect answer was to plot the point at (4, 3).

Question 9

This question was done quite well. Many students were able to use the rule to work out the cooking time for the chicken. A common incorrect answer was to not only multiply the 20 by 4 for the minutes but also to multiply the 10 by 4 as well, thus arriving at a starting time of 10 30am. Many of those students attempting the calculation 2 ÷ 0.5 were unable to do it correctly. A surprising number of students used pm instead of am in their final answers, thus losing a mark for accuracy.

Question 10

This question was done. Most students were able to write down the next two terms in the sequence and explain how they got their answer. A common incorrect answer in part (ii) was "all multiples of 5".

Question 11

Part (a) was not done well. Many students were unable to work out 30% of 60. A common correct approach was to find 10% of 60 and multiply this by 3- often incorrectly. A significant number of students thought they were being asked to reduce 60 by 30%. Common incorrect answers were 42, 20 and 18%. Part (b) was done quite well. Many students were able to divide the given integers incorrectly. Common incorrect answers include −5 and −12. Part (c) was not done well. Few students appreciated that they were expected to use BIDMAS in the calculation, often simply doing the calculating from left to right. Common incorrect answers were 49 and 61.

Question 12

Part (a) was done quite well. Most students could simplify the algebra correctly to ab. Common incorrect answers were 1 and ab2. Part (b) was not done well. Few students could simplify the algebra correctly to 3x2. Common incorrect answers were x6 and 3x8. Part (c) was not done well. Few students could simplify both the terms in x and the terms in y. Common partially correct answers were 4x + 5y, 4x +−5y, 2x − 5y and 4x + y.

Question 13

This question was generally done quite well. Many students were able to work out the height of the cuboid, usually by an embedded calculation, e.g. 5 × 8 = 40 followed by 3× 40 = 120 rather than by division. A common incorrect answer was 5 × 8 = 40 followed by 120 − 40 = 80.

Question 14

This question was not done well. Many students were unable to use the graph accurately to change to the measurements to consistent units. A typical incorrect conversion using the graph was 2 m = 8 (or even 5.3) feet. Often students had used changed units without stating how they had obtained them. Students should be advised to take more care when interpreting the scales of axes in graphs. A significant number of students did not use the graph to change the units but simply quoted a conversion factor- often inaccurately, e.g. 1 m = 3 feet. Many students did not include the units with their final answer. Students should be advised to give the units with their final answer. Common incorrect answers include 360 – 50 = 310 and calculation errors such as 360 – 165 = 295.

Question 15

This question was not done well. Few students were able to score full marks. Most students chose to annotate the diagram with their calculated angles. A significant number of students did not appreciate that triangle CED is an isosceles triangle, and consequently were unable to make any progress with the question. A common error was to assume incorrectly that triangle CBD is an isosceles triangle. A surprising number of students thought that the marks on the line CE and CD indicated that these lines are parallel. Many students were unable to write down accurate reasons for their calculations, often omitting some of the key words, e.g. angles in "angles in a triangle add up to 180". A common incorrect error in calculation was 180 – 110 = 50.

Question 16

Many students were able to compare accurately the boxes of paper clips to find the better value for money. A significant number of students were able to write down the correct calculations, e.g. 50 ÷ 40 and 120 ÷ 90 but were then unable to work these out accurately. Other popular approaches include working out how many paperclips could be bought for £3.60 for each type of box and how much it would cost to buy 600 paperclips for each type of box. Some students were not clear about whether they were comparing paperclips per pence or pence per paperclip, often arriving at an incorrect conclusion. A common incorrect approach was to double the values for the small box and conclude that the large box was the better value for money because an extra 20 clips would cost only 10p.

Question 17

Part (a) was not done well. Few students could factorise even one factor of the expression. A common incorrect answer was 24xy2. Part (b) was not done well. Few students could simplify the algebraic fraction. Common incorrect answers were w2 and w9. Part (c) was not done well. Few students could simplify the algebraic expression. Common incorrect answers were a9 and 9a.

Question 18

Few students were able to score full marks in this question, though many were able to score 1 mark for either a correct area, usually 9 × 4.5 = 40.5, or for a correct placement of floor board along one side, e.g. 9 ÷ 1.5 = 6. A surprising number of students, having found the correct number of floor boards for both the length and the width of the floor, then incorrectly added these values rather than multiply them, e.g. 45 + 6 = 51. Many students were unable to either multiply or divide by the width of the floor board 0.1 m.

Question 19

This question was not done well. Few students were able to work through the various stages of the problem to arrive at a correct final answer. By far the biggest hurdle to progress was dealing with the ratio. In the rare cases where students had divided a quantity in the given ratio this was often done on an incorrect quantity. Many students were able to score 1 mark for showing the calculation 3000 ÷ 20 but were not always able to do it correctly, e.g. 1500. Common incorrect answers were 150 × 3.99 = 598.5 and 150 × 7.98 = 1197; the surprisingly large values of which going without question.

Summary

Based on their performance on this paper, students are offered the following advice:

- use a soft pencil so that their diagrams can be seen
- take more care with their use of notation, e.g. not to write 12/300 when 300/12 is intended
- take more care when interpreting the scales of axes in graphs
- give the units with their final answer.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx