



**General Certificate Secondary of Education
June 2011**

Methods in Mathematics (Pilot) 93652F

(Specification 9365)

**Unit M2: Methods in Mathematics
(Algebra and Probability) - Foundation**

Report on the Examination

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Unit 2: Foundation Tier

General

This was the first examination and the majority of candidates would have been in year 10. The vast majority of questions were attempted by most candidates but with varying degrees of success. This was suggestive of candidates having covered the content of the specification but possibly, due to time constraints, not always in sufficient depth. For example, most candidates demonstrated a good understanding of how to perform transformations but struggled to describe how a shape had been transformed. A number of marks were lost unnecessarily through candidates not reading the questions correctly, as well as not writing down any working.

Question 1

This was a very well answered question. Few candidates used coordinates written the wrong way round. The majority of lost marks were due to candidates finding the coordinates of the vertices of 3×2 rectangles rather than a square.

Question 2

This was very well answered. The most common error was to misread the question and use 72p instead of calculating 28p.

Question 3

Another well answered question. The majority of marks lost were due to candidates not spotting the requirement that the number had to be even in part (c), although writing the largest number did result in one mark.

Question 4

Part (a) was not well answered. A number of candidates tried to refer to the diagram given and discuss the properties rather than answering the question.

Part (b) was well answered. A number of candidates drew a diameter which was accepted as a special case of a chord.

In part (c), the majority of candidates drew a sector.

Question 5

This was very well answered. Very few candidates attempted to solve the problem by using trial and improvement.

Question 6

Another well answered question. If not getting a completely correct solution, most candidates secured 1 mark, often for starting their sequence with A and D.

Question 7

In part (a) a large number of candidates gained a mark for either correctly working out the volume or stating the correct units. A number of candidates did not write down any units at all. Part (b) was reasonably well answered.

Question 8

Part (a) was extremely well answered. A few candidates scored a single mark for a reflection with the image on the mirror line. The candidates awarded zero marks had usually performed a rotation. In part (b) approximately 50% of candidates gained the correct answer on each part. The most common error was to state 4 lines of symmetry on part (i).

Question 9

About 50% of candidates were awarded full marks on this question. This was almost exclusively by a trial and improvement approach. Of the remaining candidates, most either scored zero marks or failed to attempt the question at all. However, a number of candidates who were not awarded any marks, failed to write down their working in sufficient detail, using a valid approach, but not stating the result of their calculations, which would have gained them a maximum of 2 of the available marks.

Question 10

This was another example of a question which candidates had less success with, due to a misread. Most candidates started by calculating a fifth of 30; a route which led to no marks being awarded.

Question 11

Part (a) was very well answered. Candidates who lost the mark for (b) invariably discussed multiples of 6 rather than the fact that all the numbers in the sequence were even. Many candidates correctly calculated the next terms in the sequence and correctly stated that -63 could not be in the sequence as -64 was the correct value. A significant number of candidates started to add numbers to the start of the sequence rather than subtracting 6.

Question 12

Part (a) was a challenge to many candidates who struggled to express their ideas on the paper. The best answers referred to the need for a 4×4 square which wasn't present in P.

Part (b) was well answered although a number of candidates ignored the shapes in the question and chose their own. Part (c) was poorly answered. A number of candidates correctly calculated the areas of the 2 shapes as 4 and 36 but instead of dividing these answers, subtracted them to obtain an answer of 32. Very few answers involving squaring the scale factor were seen.

Question 13

This question was very poorly answered. Any correct solutions seemed to be arrived at by trial and improvement but often there was no evidence of any working at all. Most incorrect answers started by dividing the perimeter by the number of rectangles (6) and then trying to split in the ratio of 1 : 4. There was little evidence of attempts to find the perimeter in terms of the width.

Question 14

This was well answered. Common mistakes included listing one obtuse angle or not choosing three different acute angles. These attempts scored 1 mark.

Question 15

Part (a) was reasonably well done, but there were many different answers being given by candidates, suggesting they were unfamiliar with the correct way to use their calculators. It was possible to be awarded a mark on part (b), for correctly rounding their answer. A number of candidates incorrectly rounded to 5.24 and a similar number multiplied their original answer by a power of 10, suggesting they had little understanding of the concept of rounding to decimal places.

Question 16

This was reasonably well answered. Very few candidates used a 'multiplier' approach. A common approach was to find 3.5% by finding 1% etc, using a non-calculator 'build-up' approach. Very few candidates managed to perform this method without making an arithmetic error. A number of candidates correctly calculated 16.8 but then failed to add this on to the initial 480. A number of candidates lost the QWC mark for writing their 'correct' final answer as £496.8

Question 17

This question was poorly attempted although many candidates picked up a mark for writing the value 6 inside the universal set. There seemed to be a lack of understanding of the meanings of the various regions, highlighted by the number of candidates who failed to pick up the mark on part (b), despite only having to read from their diagram.

Question 18

Part (a) was reasonably well attempted with the best answers showing evidence of splitting the quadrilateral into other shapes or counting the squares. There was a significant number of candidates who calculated the perimeter instead of the area. Almost all candidates correctly identified the right angle in part (b), but part (c) was surprisingly only answered correctly by about half of the candidates.

Question 19

This was correctly answered by about a third of candidates. However, a number of candidates appeared to know how to calculate the area of a circle, demonstrated by writing down the correct formula, but then proceeded to double the radius rather than square it.

Question 20

Part (a) was extremely well answered but another misread meant that some candidates in part (b) used the 'zero' from the question as their input. Part (c) was poorly answered, with over a third of the candidates failing to attempt it. A mark was available for an attempt at calculating the output for any value between their answers to (a) and (b). However, many candidates wrote down a random value with no evidence of their calculation. There were hardly any algebraic approaches seen.

Question 21

This was very poorly answered. There were very few fully correct answers. Candidates needed to state that the transformation was a rotation ('turn' was not accepted), a size and direction for the rotation and a centre of rotation (very few attempts at this part). A large number of candidates used a combined transformation of a translation and a rotation. As the question asked for a single transformation these answers were not awarded any marks.

Question 22

This was answered very well and most candidates were awarded some marks. The most common reason for not awarding the full 3 marks was the area condition not being satisfied.

Question 23

Parts (a) and (b) were generally well answered. Part (c) often suffered from a rearrangement error when collecting the terms after expanding the brackets. This led to a common answer of 10 and resulted in the loss of a mark (if no other errors were made). A number of candidates obviously adopted a trial and improvement approach as they showed no evidence of expansion or rearrangement and their answers were embedded.

Question 24

This question was very poorly attempted. A number of candidates picked up 1 mark for drawing a triangle with the correct dimensions but it appeared that many had little idea of the concept of centre of enlargement. Part (b) was very poorly answered with hardly any correct values seen for the centre of enlargement.

Mark Range and Award of Grades

Grade boundaries are available on the [Results statistics](#) page of the AQA Website.

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