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

Report on the Examination

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Unit 2: Foundation Tier

General

This was the third examination available to candidates. The vast majority of questions were attempted by most students but with varying degrees of success. As would probably be expected on the foundation tier, the questions which posed the greatest problems to students were those requiring an explanation within their answers. A number of marks were lost unnecessarily through students failing to read the question carefully. Another common problem was with the quality of students' written working. Many students either failed to show any of their working, meaning a single mistake resulted in losing all the marks for a question or students not writing their working in sufficient depth. For example, many students adopt a trial and improvement approach to solving the AO3 type questions which is perfectly acceptable but fail to write their totals down before proceeding to their next attempt. This often means that unless the correct answer is recorded, it is very difficult for students to be awarded more than a single mark. A significant number of students lost marks by using 'pen and paper' methods rather than a calculator to evaluate problems. This could be due to confusion as to the correct way to 'show their working'. Overall the arithmetic and algebra skills were weak.

Topics that were well done included:

- coordinates
- refection
- symmetry
- area
- angles.

Topics which students found difficult included:

- translations in vector notation
- prime numbers
- equation solving and simplifying.

Question 1

This was well answered and most students were aware of the meanings of the terms used.

Question 2

This was well answered and very few students 'reversed' their coordinates. The majority of students managed to draw an isosceles triangle but the line of symmetry was not always vertical.

Question 2(b)(ii) was better answered than in previous series, with few students mistaking area with perimeter.

Question 3

This was well answered and the main issue was with those students who were not aware that fractions involved a division and who chose to subtract.

Question 4

This was a well answered question.

Question 5

This question was reasonably well attempted. A number of students were obviously unfamiliar with using calendars.

Question 6

Students have a good understanding of money offers and part (a) was very well answered.

Part (b) caused more confusion although most students were awarded marks for a systematic approach. A very common error was to ignore the 'multi-buy discounts' and arrive at an answer of £4.20.

Question 7

The first parts were well answered but many students struggled to express the perimeter in part (c) algebraically.

There were some excellent responses to part (e)(ii); others were let down by drawings not clearly showing how 5 shapes could fill the space without gaps.

Question 8

This was a well answered question but was misread by a significant number of students who gave an answer of '5' apparently thinking that this number had to be squared rather than starting with a square number.

Question 9

Part (a) was well answered.

Many students struggled with the fact the solution to part (b) involved negative numbers.

Part (c) was the most poorly attempted part with many students apparently unaware as to how to expand brackets. Very few solutions, involving division by 3 as a first step, were seen.

Question 10

This was well answered by many students. The most common approach was to draw a grid on the diagram and use this to count the number of unshaded squares (with varying degrees of success). The fact the area of one square was 4 cm^2 appeared to confuse a number of students who proceeded to multiply their total number of unshaded squares by 16 rather than 4.

Question 11

Parts (a) and (b) were very well answered questions.

Part (c) often resulted in students being awarded one mark for correctly finding the size of angle x but many were unable to obtain the QWC mark for stating that they were 'alternate' angles.

Question 12

In part (a), 10 was often the students' final answer.

In part (b) many students calculated values of 15 and 10 for the number of large squares along the length and width of the patio but failed to see that multiplying would give the number of small squares. Most then recognised the 1 : 4 and thus gained at least 1 mark.

Question 13

Both parts were reasonably well answered although students did forget to write in the '+' sign to link the terms in part (b).

Question 14

This multistep problem caused difficulty. For some a list of primes to begin with would have helped – although, when seen, this list often included 1 and the numbers 39, 51 and 57. As with all trial and improvement questions, the better presented attempts scored the most marks.

Question 15

68 + 76 was often seen as the final answer. Otherwise there were some good responses to part (a) but in part (b), although $8n$ was regularly seen it was often in an incorrect expression.

Question 16

Vector notation was not understood particularly well.

Question 17

In part (a) many students recognised that 630 000 had to be divided but less able students did this using 60 + 20 + 25.

Incorrect answers in part (b) used 27 × 25 after failing to spot there were only 9 layers needed.

Mark Range and Award of Grades

Grade boundaries are available on the Results statistics page of the AQA Website.

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