

Examiners' Report March 2010

GCSE

GCSE Mathematics (2381)

Foundation Paper (5383F/09)

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1. PRINCIPAL EXAMINER'S REPORT - FOUNDATION PAPER 9

1.1. GENERAL COMMENTS

1.1.1. This was an accessible paper that gave candidates ample opportunity to demonstrate their understanding. Some very good attempts at the paper were seen. It was encouraging to see that most candidates attempted all the questions on this paper.

1.1.2. Candidates should be encouraged to consider whether their final answers are reasonable and of a sensible size.

1.1.3. It was pleasing that many candidates showed working out to support their answers. However, there are still too many candidates disinclined to display any working out which means that the available method marks cannot be awarded when the final answer is incorrect. This was particularly evident in questions 3, 6 and 11.

1.2. REPORT ON INDIVIDUAL QUESTIONS

1.2.1. Question 1

The correct volume was found by more than half of the candidates. Some candidates who failed to get the correct answer were awarded one mark and often this was for a volume of 11 cm^3 which resulted from counting only the visible cubes. Answers of 18 cm^3 were also quite common as some candidates attempted to work out length x width x height.

1.2.2. Question 2

This question was well understood with the majority of candidates giving the correct answer of 70%. Common incorrect answers were 10% and 25% with no working out to indicate how candidates had arrived at these answers.

1.2.3. Question 3

Almost two thirds of the candidates worked out that Adam bought 11 lollipops, often without showing any working out. Some of the successful candidates divided 400 by 34 or 4 by 0.34. Many candidates did not use a calculator and resorted to repeated addition of 34s with varying degrees of success. This method often resulted in the wrong answer due to arithmetic errors. Those candidates who divided 400 by 34 but rounded 11.76 up to 12 were awarded a method mark as were those who used an addition method that led to a total within 34p of £4. Far too many, though, showed no working out at all and could not be awarded a mark if their answer was incorrect. Common incorrect answers were 8, or 8.5, from dividing 34 by 4, and 136, from multiplying 34 by 4. Candidates need to think about the

reasonableness of their answers. Could they really buy 136 lollipops costing 34p each if they had £4 to spend?.

1.2.4. Question 4

Almost half of the candidates could draw both a radius and a sector and fewer than one in seven failed to draw either. The most common errors were to draw a diameter instead of a radius and a segment instead of a sector. Tangents were seen in both part (a) and part (b).

1.2.5. Question 5

In part (a), three quarters of the candidates were able to use their calculators to find the square root of 529. Some candidates gave the answer as a fraction, presumably because this was how their calculators displayed the answer. Part (b) was answered almost as well. Not surprisingly, the most common incorrect answer was 54. Candidates were less successful in part (c) with less than half able to work out the cube of 4. Common incorrect answers were 16 and 256.

1.2.6. Question 6

Just under half of the candidates were successful. A variety of methods were seen with the better candidates subtracting the fixed charge and dividing by £1.50. Repeated addition, or subtraction, was popular but candidates often failed to count correctly how many £1.50s had been used. Many candidates did not understand the significance of the fixed charge and used more than one £2.20 in their solution or ignored it completely. A large proportion of candidates gave an answer without showing any working and when this answer was incorrect it was not possible to award any method marks. When working was shown it was sometimes very difficult for examiners to follow, particularly when more than one approach had been used. Some candidates had clearly not thought about whether their answers were sensible as taxi journeys of more than 10 000 miles were seen.

1.2.7. Question 7

In part (a) almost three quarters of the candidates were able to simplify $f + f + f$ correctly. The most common incorrect answer was f^3 . Candidates were less successful at simplifying $2 \times c \times d$ in part (b). Answers such as $2 \times cd$ and $2cx d$, which contained multiplication signs, were frequently seen. It was pleasing that almost 30% of candidates could expand $5(x + 2)$ correctly in part (c). Some candidates, though, only multiplied the x by 5 which meant that $5x + 2$ was a common incorrect answer.

1.2.8. Question 8

Just over one third of the candidates gained full marks for this question. It was pleasing to see many candidates showing the intermediate answers from their calculators and those who failed to get the correct answer were frequently awarded a method mark for evaluating either the numerator or denominator, or both, correctly. A

surprising number of candidates worked out both 12.11 and 1.66 but then failed to get the correct final answer, often because they added or subtracted instead of dividing. A common incorrect answer was 6.756... which resulted from candidates keying in the whole calculation without inserting brackets. Some candidates failed to note that the question asked for all the figures on the calculator display to be written down and for the answer to be given as a decimal.

1.2.9. Question 9

Almost two thirds of the candidates gave the correct value of 30° for angle a but only about a quarter of these also managed to provide a correct reason. It was encouraging, though, that many candidates did attempt to give an explanation rather than simply show a calculation. The correct reason of alternate angles, or Z angles, was frequently seen but confusion between corresponding angles and alternate angles was very common and some answers contained contradictory reasons. Co-interior or allied angles were used by a small number of candidates but those who described angle a and the 150° angle as C angles or interior angles gained no mark. There was frequent misuse of the word 'opposite' to describe angle a and the 30° angle and many candidates stated that angle a and the 150° angle added up to 180° because of angles on a straight line. A large number of answers just mentioned parallel lines (or parallel angles).

1.2.10. Question 10

It was pleasing that more than a quarter of candidates were awarded full marks for drawing the correct straight line. Those who drew a table of values for x in the range given and then worked out the values for y were the most successful. Some candidates plotted the points correctly but failed to draw a straight line through them and a few did not draw a line long enough to cover the full range of values. Some candidates were awarded method marks for calculating or plotting one or two correct points. More than half of the candidates, though, showed little or no understanding of this topic and gained no marks at all. Many plotted the points (2, 1) and (-2, 3), sometimes joining them with a straight line.

1.2.11. Question 11

Most candidates attempted this question but it was answered very poorly with less than 10% of the candidates working out the volume of the prism correctly. A common incorrect answer was 84. If candidates' working showed that this answer came from $4 \times 3 \times 7$ then a method mark was awarded. Many candidates did not seem to understand what is meant by volume and added together the lengths of some, or all, of the edges or worked out the areas of some of the faces and added them. Many simply multiplied all the given numbers together.

2. STATISTICS

2.1. MARK RANGES AND AWARD OF GRADE

| Unit/Component | Maximum Mark | Mean Mark | Standard Deviation | % Contribution to Award |
|----------------|--------------|-----------|--------------------|-------------------------|
| 5381F/05 | 30 | 18.6 | 5.3 | 20 |
| 5381H/06 | 30 | 17.3 | 6.7 | 20 |
| 5382F/07 | 25 | 14.6 | 4.2 | 15 |
| 5382H/08 | 25 | 13.9 | 5.0 | 15 |
| 5383F/09 | 25 | 13.1 | 5.4 | 15 |
| 5383H/10 | 25 | 13.9 | 5.4 | 15 |

GCSE Mathematics Grade Boundaries 2381 - March 2010

Unit 1 - 5381

| | A* | A | B | C | D | E | F | G |
|---------------|----|----|----|----|----|----|----|----|
| UMS (max: 55) | | | | 48 | 40 | 32 | 24 | 16 |
| Paper 5381F | | | | 24 | 20 | 16 | 13 | 10 |
| UMS (max: 80) | 72 | 64 | 56 | 48 | 40 | 36 | | |
| Paper 5381H | 28 | 23 | 16 | 10 | 7 | 5 | | |

Unit 2 Stage 1 - 5382

| | A* | A | B | C | D | E | F | G |
|----------------|----|----|----|----|----|----|----|----|
| UMS (max: 41) | | | | 36 | 30 | 24 | 18 | 12 |
| Paper 5382F | | | | 19 | 16 | 13 | 10 | 7 |
| UMS (max: 60) | 54 | 48 | 42 | 36 | 30 | 27 | | |
| Paper 5382H | 23 | 19 | 14 | 10 | 8 | 7 | | |

Unit 2 Stage 2 - 5383

| | A* | A | B | C | D | E | F | G |
|----------------|----|----|----|----|----|----|----|----|
| UMS (max: 41) | | | | 36 | 30 | 24 | 18 | 12 |
| Paper 5383F | | | | 20 | 15 | 11 | 7 | 3 |
| UMS (max: 60) | 54 | 48 | 42 | 36 | 30 | 27 | | |
| Paper 5383H | 23 | 19 | 14 | 10 | 7 | 5 | | |

2.2. UMS BOUNDARIES

| Maximum Uniform mark | A* | A | B | C | D | E | F | G |
|----------------------|-----|-----|-----|-----|-----|-----|-----|----|
| 400 | 360 | 320 | 280 | 240 | 200 | 160 | 120 | 80 |

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