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Principal Examiner Feedback

November 2010

GCSE

GCSE Mathematics 2381

Foundation Non-Calculator Paper (11F)

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1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 11

1.1 GENERAL COMMENTS

1.1.1 There was no evidence to suggest that candidates had difficulty completing the paper in the given time.

1.1.2 Poor algebra continues to be an issue for many candidates. Candidates should be advised to show their algebraic process on both sides of the equation. Solution of algebraic equations by trial and improvement continues to be an all or nothing strategy for many candidates.

1.1.3 Candidates should be advised to show all the details in their decomposition methods, e.g. 5% = 25, so 1% = 25 ÷ 5

1.2 REPORT ON INDIVIDUAL QUESTIONS

1.2.1 Question 1

This question was done quite well. Most candidates were able to complete the missing entries in the Bill correctly and use a correct notation for money. Common errors include £5.00 for the De-icer (instead of £6.00), £9.00 for the Wiper blade (twice the cost instead of half the cost) and £21.98 for the Total cost (an incorrect Total cost from a correct entry of £6.00 for the De-icer). Relatively few candidates gave their answers in the for £22.98p or £4.5

1.2.2 Question 2

Only the first part of this question was done well. Most candidates were able to write down the number of faces of prism, but many were unable to identify the number if edges and the number of vertices of the prism. A common incorrect answer here was to give the number of edges as 8 and the number of vertices as 12 (i.e. the wrong way round).

1.2.3 Question 3

Part (a) was done well. The vast majority of candidates were able to substitute d = 6 and work out the values of the formulas. A relatively small number of candidates gave their answers as 9d and 8d. In part (b), many candidates were able score a mark for substituting f = 2 and g = −1 into the formula, but many were unable to work this out correctly. Common incorrect answers here were 6 + −4 = −10, 6 + −4 = −2,
6 + −4 = 10, 3×2 + 4 – 1 = 9 (the wrong order of operations),
3×2 + 4×–1 = 9 and 32 + 4 – 1 = 35.

1.2.4 Question 4

Part (a) was done quite well. Most candidates were able to draw the two line of symmetry of the shape, but a significant number of candidates incorrectly drew an extra two 'diagonals'. A significant number of candidates did not use a ruler to draw the lines of symmetry. In part (b), the many candidates were able to write down the order of rotational symmetry of the shape. A common incorrect answer here was 1

1.2.5 Question 5

This question was done well. The vast majority of candidates were able to read the graph and change Hong Kong dollars to pounds and visa versa though some had difficulty interpreting the pounds scale in part (b). Common incorrect answers in part (b) were £6.7(0) or £6.8(0) and £7.05

1.2.6 Question 6

This question was done well. The vast majority of candidates were able to write down the mathematical name of each shape. A common error for part (ii) was cuboid. The spelling of technical terms remains an issue for many candidates.

1.2.7 Question 7

This question was not done well. Many candidates were able to write down the value of $\frac{3}{5}$ as a decimal. Of those candidates who realized that a division was required, many did not know whether they should be dividing the 5 by the 3 or the 3 by the 5. Some candidates were able to score a mark for writing 3 ÷ 5 even if they then went on to divide the 5 by the 3. Of those candidates that incorrectly attempted to divide the 5 by the 3 common incorrect answers were 0.12 and 1.2 (presumably 1 remainder 2). A very common incorrect answer for those students who did not realize that a division was required was 0.35 (and in some cases 3.5).

1.2.8 Question 8

This question was generally done well. In part (a), most candidates were able to work out the sum and difference of the given integers. A common incorrect answer in part (ii) was 2.

In part (b), most candidates were able to divide and multiply the given integers. A very common incorrect answer in part (ii) was −12

1.2.9 Question 9

This question was not done well. Algebraic solutions were very rare. The vast majority of candidates simply wrote down the answer or attempted to use a trial and improvement approach. Many candidates thought that the angle at the bottom left of the triangle was equal to 30□ and consequently calculated the value of a as 75□, usually by writing (180 – 30) = 150 ÷ 2 = 75 or similar.

1.2.10 Question 10

This question was done well. The vast majority of candidates were able to write down the solutions to the given equations. In part (a), some candidates incorrectly expressed p + p + p = 15 as p3 = 15, but then went on to correctly solve for p.

1.2.11 Question 11

This question was done quite well, but it was evident that many candidates had not brought a pair of compasses and/or a ruler to the examination. Some candidates were unable to draw a complete circle with a constant radius or without gaps. A common incorrect answer in part (b) was to draw a circle with a diameter of 5 cm.

1.2.12 Question 12

Many candidates were able to work out the number of tissues taken from the box, i.e. $\frac{2}{5}$ of 150, but a significant number of these did not then go on to find the number of tissues remaining in the box. A small number of candidates converted $\frac{2}{5}$ to 40% and then attempted to work out 40% of 150, with varying success. Some wrote the fraction $\frac{2}{5}$ as 10 (presumably 5 × 2) to obtain a final answer of 150 – 10 = 140.

1.2.13 Question 13

This question was not done well. Only the best candidates were able to calculate the simple interest for 2 years. By far the most popular approach was to find 10%, 5%, 1% and then 4% by a process of decomposition. Candidates should be advised to show all the details in their decomposition methods, e.g. 5% = 25, so 1% = 25 ÷ 5. Common mistakes in this question were to calculate the interest for only 1 year, to give the final answer as the interest + the original amount (£540) and to calculate the compound interest for the 2 years. A significant number of candidates having worked out that 5% = 25 then went on to state that 4% = 24.

1.2.14 Question 14

This question was done quite well. Many candidates were able to multiply the two numbers and get the correct answer. Tabular methods were very common. Common errors here were 50 × 20 = 100, 400 × 3 = 120 and 400 × 20 = 6000. Some candidates having obtained all the relevant entries in a table did not then go on to add them all together- typically omitting to add one of the six elements.

1.2.15 Question 15

This question was not done well. Most candidates could find the number of male workers at the factory 300, but only the better candidates were then able to find 15% of this. By far the most popular method here was to decompose 15% into 10% + 5%. A common incorrect answer using this approach was 75 (from 300 ÷ 2 = 150, 150 ÷ 2 = 75).

1.2.16 Question 16

In part (a), few candidates were able to show the inequality using the correct notation. Most simply copied the notation used in the diagram in part (b). In part (b), few candidates were able to write down the inequality shown in the diagram, but many were able to score a mark for −2 < ... By far the most common incorrect answer here was −2 < x < 3, which simply copies the notation used in the inequality in part (a).

In part (c), few candidates were able to give a completely correct answer for the range of values of t, although many were able to find the critical value 4. Most candidates ignored the inequality sign and then tried to solve the equation 3t + 5 = 17, a significant number by trial and improvement. Many candidates continue to use non algebraic methods in their solutions. A common approach here was 17 – 5 = 12, 12 ÷ 3 = 4 (i.e. the correct processes but without any correct algebraic statements). Some candidates, having determined that t > 4, then went on to write 4 on the answer line, thereby losing the accuracy mark. Candidates should be encouraged to use algebra in their solution of equations and inequalities.

1.2.17 Question 17

This question was done well. The vast majority of the candidates were able to identify the two nets for the square-based pyramid.

1.2.18 Question 18

This question was done quite well. The majority of candidates were able to write down the required ratio 6 : 18, but a significant number of these were unable to simplify this fully. Common partially simplified answers here were 3 : 9 and 2 : 6. Other common errors include writing the ratio the wrong way round (e.g. 3 : 1) and using 24 to form the ratio (e.g. 6 : 24).

1.2.19 Question 19

This question was not done well. Only the best candidates were able to subtract the two fractions correctly to obtain the required answer. Most candidates were able to score the mark for subtracting the whole number (i.e. for 2), but few were able to express $\frac{4}{5}$ and $\frac{1}{4}$ as fractions with a common denominator. A very common incorrect method here was to subtract both the numerators and both the denominators (to get $2\frac{3}{1}$). Some candidates were able to score a mark for a correct attempt to change both mixed numbers to top-heavy fractions, but again most were then unable to express these as fractions with a common denominator. A common incorrect answer here was $\frac{19}{5} - \frac{5}{4} = \frac{14}{20}$ or $\frac{14}{1}$.

1.2.20 Question 20

Many candidates were able to score at least one mark for this question, usually by drawing a line within the guidelines. In general, most candidates showed their construction lines, whether they were drawn with compasses or otherwise, and many drew a line to bisect both sides of the line AB. A common incorrect answer here was to draw an equilateral triangle or to draw only one pair of intersecting arcs with the mid-point indicated mark on the line AB.

1.2.21 Question 21

Only the best candidates were able to do well in this question. In part (a), a large number of candidates attempted to describe the transformation as a combination of transformations, usually by a rotation followed by a translation. Of those candidates who attempted to describe the transformation as a single rotation, few were able to score all 3 marks. Common errors here include using 'turn' for rotation, and to omit to give the centre of the rotation. Candidates should be advised to use the correct notation when describing the coordinates of a point, i.e. to use brackets. In part (b), few candidates were able to translate triangle A by the given vector. Common incorrect answers here were translations downwards or to the left by 3 units, or to reflect the triangle in the x-axis.

2. STATISTICS

2.1. MARK RANGES AND AWARD OF GRADE

Unit/Component	Maximum Mark (Raw)	Mean Mark	Standard Deviation	% Contribution to Award
5381F/05	30	21.5	5.8	20
5381H/06	30	17.3	7.1	20
5382F/07	25	15.7	4.1	15
5382H/08	25	14.8	5.5	15
5383F/09	25	13.4	5.2	15
5383H/10	25	15.4	5.6	15
5384F/11F	60	33.2	10.5	25
5384F/12F	60	39.4	11.5	25
5384H/13H	60	28.8	11.8	25
5384H/14H	60	37.6	10.6	25

GCSE Mathematics Grade Boundaries for 2381– November 2010

The table below gives the lowest raw marks for the award of the stated uniform marks (UMS).

Unit 1 – 5381

	A*	A	B	C	D	E	F	G
UMS (max: 55)				48	40	32	24	16
Paper 5381F				27	22	18	14	10
UMS (max: 80)	72	64	56	48	40	36		
Paper 5381H	29	24	17	11	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				21	17	14	11	8
UMS (max: 60)	54	48	42	36	30	27		
Paper 5382H	23	19	15	11	9	8		

Unit 2 Stage 2 – 5383

	A*	A	B	C	D	E	F	G
UMS (max: 41)				36	30	24	18	12
Paper 5383F				19	15	11	8	5
UMS (max: 60)	54	48	42	36	30	27		
Paper 5383H	24	21	16	12	8	6		

Unit 3- 5384

	A*	A	B	C	D	E	F	G
5384F_11F				41	33	25	17	9
5384F_12F				49	40	31	23	15
5384H_13H	51	40	29	19	10	5		
5384H_14H	58	48	38	29	17	11		

	A*	A	B	C	D	E	F	G
UMS (max: 139)				120	100	80	60	40
5384F				90	73	56	40	24
UMS (max: 200)	180	160	140	120	100	90		
5384H	108	88	68	48	27			

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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