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Principal Examiner Feedback

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GCSE

GCSE Mathematics 2381

Foundation Calculator Paper (12F)

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1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 12

1.1 GENERAL COMMENTS

1.1.1 This paper was of a similar demand to recent papers and no question proved to be inaccessible to the great majority of the candidature.

1.1.2 Even though this was a calculator paper, many candidates often worked out calculations 'long hand' and ignored their calculators.

1.1.3 The use of a protractor in measuring and drawing angles was poor. This is clearly an issue centres need to address.

1.1.4 The lack of clear working out is still an issue.

1.2 REPORT ON INDIVIDUAL QUESTIONS

1.2.1 Question 1

This question was generally well answered. However there were a number of typical errors which prevented candidates gaining full credit. Many candidates correctly worked out the sum of just three items, usually omitting the second pencil, giving an answer of £4.88

Some candidates, not reading the question carefully enough simply found the sum of the 4 items and never attempted to find the change from £10

1.2.2 Question 2

Most candidates demonstrated an understanding of the term 'cuboid' and were able to offer a reasonable sketch of a 3-D configuration. A few drew nets of a cuboid and some weaker candidates attempted to draw other 3-D shapes, cone, cylinder, etc.

1.2.3 Question 3

In part (a), measuring was usually accurate although a great many candidates ignored units and consequently threw a mark away. Most candidates measured the line in centimetres; millimetres was perfectly acceptable.

Use of a protractor in parts (b) and (c) was less good. In part (b) many candidates gave an answer of $132/3^{o}$ and some were clearly very careless in the positioning of the centre (+) of their protractor, resulting in obscure angles.

In part (c) many candidates drew an angle of 105^{o} at P, again reading the wrong scale on their protractor. Some drew an angle of 65^{o}, misreading the correct scale, and some drew their angle at different positions along the line. This was accepted provided that labelling made clear which angle was meant to be 75^{o}

1.2.4 Question 4

Many candidates scored well on this question but often, incorrect units on the answer line prevented many from getting full marks. 0.93 or £0.93 was often the answer given even though there was a strict instruction to give the answer in pence. A significant number of candidates gained no marks by dividing 32 by 29.76

1.2.5 Question 5

In part (a), the great majority of candidates gained full marks for an answer of £87.75 or £87.75p

Part (b) was also well answered although a few candidates mixed the information from the two parts and became confused. Some candidates attempted repeated subtraction (or equivalent) methods, usually unsuccessfully.

1.2.6 Question 6

Generally very well answered indeed. Only a few candidates misplaced the right vertex. This was sometimes a result of carelessness rather than a lack of understanding of the question. A tolerance of ¼ square was allowed.

1.2.7 Question 7

In part (a), the majority of candidates correctly identified $\frac{6}{11}$ as the proportion of girls. Part (b) was also quite well answered but the most common incorrect answer was $\frac{2}{11}$.

1.2.8 Question 8

Only a few candidates were not able to correctly identify the two congruent rectangles in part (a). F and G were common errors. In part (b), although well done, many candidates thought the scale factor was 3.

1.2.9 Question 9

In part (b), most candidates gained at least one mark by writing down a fraction equivalent to 20%, usually $\frac{20}{100}$. Many were then unable to simplify the fraction fully. Some weaker candidates offered answers of $\frac{1}{4}$ and sometimes $\frac{1}{3}$. A few candidates converted 20% correctly into a decimal fraction; these gained just one mark.

1.2.10 Question 10

The correct answers of 5 and 3 were most common. Weaker candidates often gave an answer of 24 (30 – 6) in part (a) and 31 (14 + 17) or – 3 (14 – 17) in part (b).

1.2.11 Question 11

Candidates who understood the concept of scale, usually drew a correct 7cm by 4cm rectangle. The most common incorrect rectangles drawn had dimensions 5cm by 1cm (misunderstanding of the given scale) or 5cm by 2.6cm (the dimensions of the given rectangle, which was "NOT accurately drawn")

Some candidates used alternative scales and credit was given for an accurately drawn rectangle, enlarged by scale factor 0.5 or 2.

1.2.12 Question 12

Although it was encouraging to see a good number of candidates solving this multi-step problem, many simply used arithmetic operations on the numbers given without really thinking about the problem.

The most common incorrect approach was to add 5986 and 4176 and then either multiply or, in many cases, divide their answer by 13.9 or, in some cases,13.09

It was also common for candidates to multiply both of the meter readings by 13.9 – one mark so far – but then add the results instead of subtracting them.

Many candidates using correct methods to solve the problem often gave an answer in incorrect units or without units.. Many were happy to say that Kumal's bill was for £25159 without question.

A few tried to estimate the answers to their calculations using 14p, etc. This gained no credit.

1.2.13 Question 13

All parts of this question were generally answered correctly, however answers of 1 and – 1 in part (b) and 12 in part (c) were common errors made.

1.2.14 Question 14

The vast majority of candidates found the unknown angle to be 65oin part (i).

However a great many fewer were able to offer an acceptable reason in part (ii), 'because the angles must add up to 360o' was often quoted without any reference to the type of shape. Many just put the mathematical process they used in part (i) in words.

A few weaker candidates used 380o as the sum of the angles in a quadrilateral.

1.2.15 Question 15

This was generally well answered with most candidates gaining at least 2 marks. The most common approach was to attempt to find the cost of a single yoghurt from each shop; 0.36p and 0.35p were common sights and provided that units were used consistently the units were largely ignored. This was usually followed by an answer of 'Jim's Store' which gained full marks, however often no explanation was given and indeed, 'Food Mart' was also selected by many. Centres must be aware of this in preparing students for examinations in the "new" 2010 specifications when addressing the Quality of Written Communication. A significant number of candidates calculated 5 ÷ 1.80 (= 2.7..) and 3 ÷ 1.05 (= 2.8..) without understanding what their answers represented, thus giving 'Food Mart' as their answer.

Some candidates found the cost of multiple amounts of yoghurts in each shop. This method often failed particularly when equal numbers were not compared.

1.2.16 Question 16

Very few candidates made any mistake in part (a), misreads of 'arriving home' leading to an answer of 3-15 were the most common error made. In part (b), 35 (distance from her friend's home) and 15 (distance from the 'rest' period) were the most common errors. In part (c), only weaker candidates failed to score.

1.2.17 Question 17

In part (a) the correct answer of 3.5 was often seen though formal algebra was little used. Weaker candidates often ignored the 3 and seemed to solve the equation $2x = 10$ giving 5 as their answer.

In part (b), c30 and e3 were common errors. Answers of 11c and 8e were not uncommon.

1.2.18 Question 18

This question was very poorly answered. Only a few candidates recognised the transformation as being a reflection and even fewer were able to adequately define the mirror line; the 'x axis at -2' being the closest incorrect attempt. The correct mirror line was often correctly drawn but this alone scored no marks. Many candidates described a combination of transformations; 'reflection followed by a translation of 6 units to the right' or similar was common. Such responses scored no marks since the question required a SINGLE transformation to be named.

1.2.19 Question 19

The most common typical error was to ignore the order of operation, showing no working out, and giving 21.01346457 as the answer. However many candidates gained at least one mark for showing intermediate working of either 19.56 or 8.0518 Many of these candidates failed, even so, to gain the final mark as a result of a premature approximation, usually of 8.0518 A great number of candidates went on to write their answer to one or two decimal places. This was ignored provided the correct answer had already been seen in the working. Others who failed to show their answer before rounding again lost this final mark.

1.2.20 Question 20

In part (a)(i), the majority of candidates evaluated a correct substitution without error, although $2^3 = 6$ was seen often. In (a)(ii), many struggled with the cubing of the negative value and errors were plentiful.

It was pleasing to see a good number of candidates giving the correct value of $4x^2$ (when $x = 1.5$) in their explanations in part (b). Some others recognised the need to carry out the squaring of 1.5 first before multiplying by 4 Weaker candidates would generally give incorrect alternative vales of $4x^2$; most often 12, 16 or 24.

1.2.21 Question 21

Here, division by a ratio is showing signs of improvement; many giving the correct answers. 22.5 and 37.5 were accepted in this question. The usual incorrect approach was to divide 60 by 3 and then 5; 20 and 40 being a common wrong answer. Some candidates attempted 'build-up' methods were 3 and 5, then 6 and 10 etc were often in evidence. This rarely led to the correct answer but going as far as 21 and 35 (total = 56) did gain one mark.

1.2.22 Question 22

Correct use of Pythagoras' theorem was patchy. Sight of 92 – 52 usually led to the correct answer although many were happy to leave 56 as the required length. Some rounded their square root of 56 to 7.5 without first writing down the digits from their calculator. This should be discouraged. A significant number showed no working and gave their answer as 7.5 thus gaining no marks. Other candidates, recognising that Pythagoras' theorem was required, wrote 52 + 92 initially. This gained no credit. A few candidates attempted to find the length of the unknown side by scale drawing. This method is not accepted and gains no credit.

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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