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Principal Examiner Feedback

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GCSE

GCSE Mathematics 1380

Foundation Non-Calculator Paper (1F)

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1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 1

1.1 GENERAL COMMENTS

1.1.1 The paper proved to be accessible to most candidates with the majority of the candidates attempting all questions.

1.1.2 Candidates appeared to be able to complete the paper in the allotted time.

1.1.3 It was noticeable that candidates tended to not show working on questions worth 2 marks. This meant that many candidates did not score method marks in some questions when the answer was incorrect. For example, those candidates who did show their working and got the answer wrong often picked up a method mark in question 8c for showing the time of 08 50 and many might have scored a method mark in 11b for showing $3 \times 2 + 4 \times -1$

1.2 REPORT ON INDIVIDUAL QUESTIONS

1.2.1 Question 1
This proved to be a good starter question with over 95% of candidates scoring on the first two parts. Part (c) proved more difficult with many even numbers seen. Others used numbers that were not on the cards given. Only ¾ of the candidates got this final part correct.

1.2.2 Question 2
The bar chart was completed accurately and the correct total given in over 93% of the scripts.. In part (b) 6 + 8 was much in evidence but adding 5 to this was sometimes missed.

1.2.3 Question 3
Candidates coped well with this question with a success rate of over 80% on all four parts. The most common error in (a) was to write the digit 6 at the end instead of "six".

1.2.4 Question 4
Nearly all candidates got both parts correct.
The occasional wrong answer in (b) was "Jane" or "Angus and Jane".

1.2.5   Question 5

(a) Over 95% success rate on this question is encouraging.

(b) Candidates found this part considerably more difficult with over 60% of candidates failing to score. A considerable number of candidates left their answers in fraction form (ie 3/4 or 6/8) or gave the percentage that was shaded, suggesting that they had not read the question carefully. Many candidates appeared to think that each square represented 10% and used this in a variety of ways leading to answers of 20, 40, 60 and 80

(c) 83% of candidates were able to shade 6 squares demonstrating a good understanding of what was required.

(d) There were many fully correct recognition of fractions not equivalent to 2/3.   Virtually all candidates were able to identify one of the correct answers with 6/10 or 66/100 an equally likely response. Over 2/3 of the candidates could correctly identify both correct answers.

1.2.6   Question 6

(i) The correct answer of 6 was by far the most frequent response, but of the incorrect responses the most common was 5.

(ii) and (iii) Only half the candidates were able to get these parts correct with by far the most common incorrect response being 8 in (ii) and 12 in (iii) demonstrating a confusion in the understanding of edges and vertices.

1.2.7   Question 7

(a) Nearly all the candidates could draw the correct 2 lines of symmetry on the shape. Unfortunately around a quarter of the candidates then went on to draw the two 'diagonals' of the shape thereby losing one of the marks.

(b) Just over half the candidates answered this question correctly. Some common incorrect responses included 'clockwise', '120°'and other angles. However, the majority of incorrect answers were either blank or a numerical guess with the numbers 1 and 2 frequently seen.

1.2.8   Question 8

(a) Over 86% of the candidates got this part correct. The most common errors were to provide an answer adjacent to the correct one in the table. i.e. 07 47, 09 02 or 08 51

(b)(i) Only 60% of candidates could work out how many minutes Peter needed to wait.

(ii) There were more correct responses to this part. The most common incorrect response was 8.51

(c) The reading of times from a bus timetable was generally handled well with the recognition of 0850 being rewarded. There were some sensible calculations for 0850 – 0726. Unfortunately this sometimes led to an answer of 24 minutes rather than the correct result of 84 minutes. Just over 56% of the candidates scored both available marks.

1.2.9   Question 9

(a) Nearly all candidates got this part correct.

(b) By far the most common response was 2 with candidates ignoring the rules of BIDMAS and doing 20 – 12 first before dividing by 4. Only a third of the candidates got this part correct.

(c) Candidates were more confident with working out the brackets first with over 80% of candidates providing the correct answer.

(d) Only half the candidates scored the mark for this part. It was astonishing to find how many candidates wrote that $(3 + 5)^2 = 7^2$

Many incorrect answers resulted from poor knowledge of tables such as $8 \times 8 = 62$, etc. Others stopped at 8^2 whilst there was the inevitable $8^2 = 16$.

1.2.10 Question 10

(a)(i) 82% of the candidates were able to select the correct value but a few students gave the answer 3, obviously confusing the terms factors and multiples.

(ii) 90% of candidates recognised that 7 was a factor of 14

(iii) Over 90% of candidates got this part correct.

(b) There were many references to the square root of a number. Many candidates showed square numbers but with no evidence of adding the two together.

Several candidates stated in writing that ODD + ODD = EVEN   and

ODD + EVEN = ODD without giving an example in numerical form to back this up.   A large number of candidates have no idea what a square number is, and many could not work out how to obtain a square number with, for example, $3^2 = 6$. Adding the two square numbers caused a few problems.   Many candidates gave more than one example, and on a couple of occasions got one of these sums wrong.   Nearly 60% of candidates failed to score. However it was pleasing to note that a third of the candidates were able to provide two square numbers and a correct total that was odd.

1.2.11 Question 11

(a)(i) Over 85% of candidates got this part correct. A few candidates wrote 3 + 6 on the answer line. Other incorrect responses were $3d$ and $6d$.

(ii) There was a lack of understanding of basic algebra demonstrated in this question by some candidates. However over 70% of candidates did get this part correct. There were the usual misunderstandings of algebra with 2 + 6 = 8 seen many times.

(b) Working out the value of 'h' by substituting in the given values produced a variety of outcomes. Writing $h = 3 \times 2 + 4 \times -1$ was rewarded as was $h = 6 + - 4$.   However there was an inability to deal with the combined + – signs resulting in a final answer of 10 rather than 2. Over half the candidates failed to score on this part with a third of the candidates scoring both available marks.

1.2.12 Question 12

(i) Approximately two thirds of candidates correctly stated grams or g. Many included a number with the unit which was acceptable. The most common incorrect response seen was kilograms. Other measures, including imperial, were also seen. However, pleasingly these were at least weights. A small proportion of candidates left the answer line blank.

(ii) There were many completely incorrect units given and many of these were not even measures of length. Just over half the candidates provided the correct answer.

(iii) Only 40% of candidates could provide one of the acceptable metric unit for the volume of toothpaste in a tube of toothpaste. Sometimes candidates struggled with spelling with responses such as 'mills' and 'millyletters' seen.

1.2.13 Question 13

(a) Over 90% of candidates got this part correct. The most common incorrect response was 50 with numbers just outside the range such as 78 and 82 seen.

(b) Many misread the scale on the horizontal axis with 7.2 or 7.3 or 6.8 or 6.7 seen many times. Only 64% of candidates were able to provide an answer within the acceptable range.

1.2.14 Question 14

Writing out an expression in both parts (a) and (b) was tackled much better than on previous papers. only 35% of candidates achieved both marks. This was mainly due to the common approach of writing similar expressions for both parts such as $2n$ with $3n$, $n + 2$ with $n + 3$ and n^2 with n^3. A further 29% got one of the parts correct. There were fewer instances of A (for Alfie) and J (for Jasmine) or N (for Nimer) being absorbed into the expressions. Stressing the need to adhere to the instruction 'in terms of n' would be of benefit to all.

1.2.15 Question 15

Virtually all candidates got part (a) correct.

In parts (b) and (c) using the information on the pie chart the fraction represented by petrol was usually correctly identified as ¼ or 90/360. Some believed the angle was required and gave 90 as the result. Nearly two thirds of the candidates got these two parts correct which is very encouraging.

1.2.16 Question 16

The geometry question always poses problems and this was no exception. The required key words in part (a) were opposite and equal. Unfortunately the word 'parallel' featured in some descriptions in spite of the lines merely intersecting each other. Others took the diagram to be accurately drawn and compared the size of the angles in the diagram with their own measurements!. In part (b) an argument which resulted in angle x being 30° rather than 40° was more confidently dealt with. Many did not score the mark In (b) because there answer was incomplete. Just stating that the angles should add up to 360 was not sufficient. Others did continue but spoilt it all by stating that they only add up to 340°!

Overall, Only 19% of candidates scored in both parts with a further 39% getting just one of the parts correct.

1.2.17 Question 17

(a) Over 94% of candidates usually gave the correct answer to this part. The most common incorrect answer was "red", which was the most likely colour.

(b) 65% of candidates got this part correct. Many did not score the mark as they used incorrect notation such as 2:6 or 2 in 6.

1.2.18 Question 18

Candidates are beginning to get more confident with naming solid shapes and it was pleasing to note that over 80% of candidates scored both marks on this question. Even the incorrect responses tended to be mathematical terms for 3D shapes, (ie prisms, spheres and pyramids).

1.2.19 Question 19

It would be helpful to emphasize that the word 'estimate' means being able to work out the product without performing a calculation. In this case 30×50 was expected (and reward given for either written down). In reality calculations like 27×53 and even 27×52.9 frequently appeared and hence did not score. 72% of candidates failed to score any marks on this question generally because they had not estimated in any way.

1.2.20 Question 20

There were a significant number (45%) of fully correct answers reached in a variety of ways. Most made the starting point of 540 – 240=300 and then attempted to find 15% of the 300 using a variety of correct methods. The greatest error was made in subtracting 45 (the actual answer) from 300 to get 255 as the final answer. Re-reading the original question having answered it avoids such mistakes. Some could not partition the 15% properly, finding 50%, 25% etc. It was rare to see 15 ÷ 100 × 300. To find 15% of 300 many candidates found 300 ÷ 15. Only 22% of candidates failed to score with a further 27% scoring only one mark generally for
540 – 240 but frequently for the special case of correctly providing 15% of 540 or 240.

1.2.21 Question 21

Using x + y = 4 allowed the direct plotting of points on the graph without the need for constructing a table of values. Only 14% of candidates plotted the correct and joined them up correctly with a line. The negative x-values however proved to be troublesome for some. Unsurprisingly at this level very few candidates made use of y = mx + c and y = 4 – x was rarely seen. It was really disappointing to find that over ¾ of the candidates failed to score on this question.

1.2.22 Question 22

(a) This was generally well answered. The most common error was adding 9 + 8 and reaching 18! In part (b) reading values which gave a score of 11 from the table was readily understood. Part (c) proved to be the most challenging. Most now appreciate that a fraction, decimal or percentage are required for a probability although the word 'likely' did appear on its own a few times. Nearly a third of the candidates scored all 5 marks with a further 46% scoring 3 or 4 marks.

1.2.23 Question 23

(a)(i) 58% of candidates got this part correct. Although the correct answer of 36 was the most common response, there were quite a number of different incorrect responses, of which 3 and 32 were the most common.
(ii) 53% of candidates got this part correct.   The most common incorrect responses offered were 2 × 4 or 8.
(b)(i) This was generally done correctly (68% correct) but clearly a large minority did not appreciate or could not deal with the minus sign so 2 was their answer. A very small number misread or misunderstood the question entirely giving 5 or –5 or 15 as an answer.
(ii) Just fewer than half the candidates gained the mark. By far the most common incorrect response seen was –12. There were also several basic computational errors seen.

1.2.24 Question 24

There was some confusion between volume, perimeter and area and it was not always clear which one the candidates were trying to calculate. There were many 2's in the working the correct combination of which delivered the volume of the prism. Many did not read the question carefully and thought that each small cube had a side of 2 cm. Identifying the units gained the final mark. Over 55% of candidates failed to score on this question many of whom did not score because they failed to divide their volume (or area of the cross section) by 2 and no units were provided. It was surprising to see how many candidates failed to put down any units even though they were specifically asked to state the units with their answer. 16% scored 1 mark, a further 16% scored 2 marks 13% scored all
3 marks.

1.2.25 Question 25

Constructing the stem and leaf diagram was more widely known than in the past. An unordered diagram preceded the correctly ordered one in many instances. The key was not always accurately transcribed. Many provided the correct mode in (b) even when they did not know how to draw a stem and leaf diagram. A third of the candidates scored all 4 marks with a further 21% scoring 23 marks generally losing a mark for the key.

1.2.26 Question 26

This straightforward subtraction of fractions was beyond the majority of candidates. The most common answer was $(17 - 2)/(20 - 5) = 15/15$ with 1 often given as the final answer!. Few scored the method mark: if they could find a common denominator, they could usually find the answer correctly. The minority, who answered the question correctly, gave a confident response. It is alarming to note that nearly 70% of the candidates could not make a correct start with subtracting fractions.

1.2.27 Question 27

There was very little in the way of working to indicate the method being used to find the coordinates of the mid-point. A third of the candidates gave the correct coordinates with a further 25% getting one of the coordinates correct.

1.2.28 Question 28

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1.2.29 Question 29

(a) Multiplying out the brackets as the first stage in the working resulted in $3x +15$ and $10x -12$ with 41% of the candidates correctly expanding at least one of the brackets. The second stage of combining these two together was not performed so well with only 17% going on to get the correct answer. The most common answer seen on the answer line was $13x - 3$
(b) Nearly 78% of candidates were unable to factorise $5x + 10$ correctly with $15x$ and $5(x + 10)$ often seen.
(c) Nearly 80% of candidates were unable to factorise $x2 - 7x$ correctly.

1.2.30 Question 30

The transformation described in part (a) did not always follow the instructions of being a single transformation which resulted in no marks being scored. The most common combination of transformations seen was a translation with a rotation. Only a minority realised that a centre of rotation was needed. There were very few correct translations seen for in part (b). Overall, half the candidates failed to score with a further 19% scoring just 1 mark generally for 180° seen or the word 'rotation'.

1.2.31 Question 31

(a) Finding the nth term of the sequence was poorly done with over 80% of candidates failing to score. The most common incorrect response by far was n + 4. Only a few candidates scored 1 mark for 4n ± k.

(b)(i) Many did not attempt this question. Only 11% of candidates wrote down the correct answer. The majority of answers seen were given as expressions in terms of n, e.g 10 +3n. Many of those who did have some idea gave an answer of –1 from 9 – 10.

(ii) Over 90% of candidates did not score the mark for the final question on the paper. 15 was a common incorrect response from 25 – 10.

2. STATISTICS

2.1. MARK RANGES AND AWARD OF GRADE

Unit/Component	Maximum Mark	Mean Mark	Standard Deviation	% Contribution to Award
1380/1F	100	58.2	17.1	50
1380/2F	100	64.4	18.5	50
1380/3H	100	46.9	21.6	50
1380/4H	100	55	19.8	50

GCSE Mathematics Grade Boundaries 1380 – November 2010

	A*	A	B	C	D	E	F	G
1380_1F				70	56	43	30	17
1380_2F				77	63	49	36	23
1380_3H	83	65	47	29	16	9		
1380_4H	87	71	55	39	26	19		

	A*	A	B	C	D	E	F	G
1380F				147	120	93	66	39
1380H	170	136	102	68	42			