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Principal Examiner Feedback

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GCSE Mathematics (1380)
Paper 1F

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1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 1

1.1. GENERAL COMMENTS

1.1.1. The absence of working was an issue and many candidates threw marks away simply through not explicitly showing their method; Q2b, Q6, Q8a, Q9b, Q15b, Q17 and Q23 often reflected this. Many candidates had problems presenting a solution to a problem in any organised manner and lack of structure and methodology in the presentation of their answers made their working extremely difficult and often impossible to follow. This was particularly evident in Q2b and Q17c.

1.1.2. Once again indifferent arithmetic let many candidates down. This was particularly evident in Q2a, Q8a, Q15, Q17 and when working with angles in Q9 and Q23.

1.1.3. Despite "Diagram NOT drawn accurately" signposted, some candidates are still measuring the angles in geometry questions.

1.2. REPORT ON INDIVIDUAL QUESTIONS

1.2.1. Question 1

Very few errors were seen in part (a).

In part (b) a number of candidates wrote 'four hundred, or forty thousand and sixty seven' and some wrote 'seventy six'.
An answer of just 'tens' was common in part (c); this gained no marks.
In part (d) 1480 and 1400 were not uncommon.

1.2.2. Question 2

Whilst most candidates employed a correct method in part (a), poor arithmetic skills prevented many from gaining full marks. The subtracting of 23 from 960 was particularly poor.

In part (b), a common error was to count the initial 8 30 as one hour, resulting in a total of 8 hours being quoted for the length of the school day. This usually resulted in an answer of 7 hours, gaining 2 of the 3 marks available. However a significant number of candidates simply offered 7 hours, without any working at all shown. This received no credit. Others treated the times as decimals and offered 5 (8.30 – 3.30) hours as their length of school day.
Many showed a lack of understanding of basic time being 60 minutes in an hour. Several wrote expressions such as 7.00 – 60 = 6.40.

1.2.3. Question 3

All parts to this question were answered well.

In part (b) an answer of 15 or 8 was a common error, while a number of candidates showed their lack of understanding of mode in part (c).

1.2.4. Question 4

Again all parts to this question proved little challenge to the majority of candidates.

In part (a) some made up their own rule and an answer of 21 was a common error.

In part (b), a number of candidates demonstrated their understanding of the rule by computing subsequent terms in the sequence without actually stating the rule. Also, sloppy writing of the '+' sign sliding into a '×' put marks in jeopardy here. Some were distracted by the rule in part (c) and offered rules such as "×1 + 3" or "+5 – 2" These of course gained full credit.

In part (c), the first two terms, 3 and 7 were often just quoted and sometimes 7 alone. Candidates must read questions carefully.

1.2.5. Question 5

This was another question where the majority of candidates were able to pick up most of the available marks. Errors usually stemmed from misreading of the information in the table.

In part (d) the mark was often thrown away with answers such as 3 only.

1.2.6. Question 6

Many candidates failed to read this question carefully enough and simply measured, in cm, the height of the man and length of the bus as shown in the diagram. This gained no credit.
Other attempts often mixed up units and it was common to see the height of the man given in feet and inches with the length of the bus in metres. This could gain full credit if answers fell within the accepted ranges even when the estimated height of the man was never used to estimate the length of the bus.
When using their estimate in (i) to answer (ii) many used an incorrect scale factor of 3 or less.
A very common error was to find the height rather than the length of the bus.

1.2.7. Question 7

Both parts of this question were answered well by candidates.

1.2.8. Question 8

Many candidates, in part (a) were unable to correctly add the two weights 3.45 kg and 1.8 kg. Often 1.8 was read as 1.08 with some candidates explicitly writing 45 + 8 = 53 and as a consequence accuracy marks were lost. Even when added correctly many were unable to subtract 5.25 from 10. Many attempted to find the complement of 5.25, often resulting in 5.75

In part (b) many candidates did not know the conversion factor of litres to millilitres, many divided 300 by 2. It was not uncommon to see a decimal or fraction or even a worded (6 and a bit) answer instead of a whole number of glasses.
The build up method of adding 300's until the water had been used up was very common and usually successful.

1.2.9. Question 9

Although many candidates recognised the equilateral triangle in the diagram and were able to quote an answer of 60^o in part (a), there were many who did not. The most common error was to use the angle of 230^o, subtract it from 360^o and halve their answer, usually giving an angle of 65^o which many considered to be also the value of the angle x.

This same error was then often continued into part (b) where the base angles of the isosceles triangle were also quoted as 65^o, leading to a value of y of 50^o. This was worthy of a method mark if the working was clear, however this was not always the case. Some candidates thought that the whole quadrilateral was a parallelogram and gave an answer of 60^o for everything.

1.2.10. Question 10

Although mostly answered well, a significant number of candidates confused congruency with similarity and gave answers of D and F in part (a). A and F was also a common error here.

B and C or A and F were common errors in part (b).

1.2.11. Question 11

This question was generally well done.

1.2.12. Question 12

It appeared that many candidates were anticipating a long multiplication question and saw their chance to demonstrate their skills in this question. Many spent an inordinate amount of time generating an exact answer when a simple estimation was required. The most common correct answer was £95, choosing to work with 19 rather than 20. At times poor arithmetic let some candidates down in simply multiplying 19 by 5. Some candidates estimated an answer of £95 or £100 and deducted a small amount realising that their estimated answer was too large. This was condoned and full marks were still awarded.

1.2.13. Question 13

The vast majority of the candidature gained at least one mark for drawing a rectangle in part (a). Drawing a rectangle of area 20 cm^2 was less successful, many producing a 5 by 5 square and many drawing a rectangle of perimeter of 20 cm.

In part (b), an isosceles triangle was often seen but rarely of area 12 cm^2. Far too often the product of the base and the perpendicular height was equal to 12. Some candidates did not make good use of the cm. square grid, instead drew triangles using fractions of the sides of the squares.

1.2.14. Question 14

Substituting the correct values into the expression in part (i) was good but many mistakes followed in the evaluation. $2 \times \frac{1}{2}$ was often seen equal to $2\frac{1}{2}$ sometimes 1.5 and even when correctly calculated careless errors were not uncommon. $45 + 2\frac{1}{2}$ was another common error here.

In part (ii) + 15 was the most common incorrect answer seen but many candidates were able to secure the mark. It was not uncommon here to get 20 and 1 and then multiply the two together or even just leave the answer as 20 + 1

1.2.15. Question 15

Whilst many candidates were able to correctly work out the subtraction calculation in part (a), a great many showed weakness in this area. The method of decomposition was the most popular method attempted but this was often poorly executed; 444, 446, 426, 432 and 438 were incorrect answers regularly seen. 'Build up' methods often lead to incorrect answers as a result of basic arithmetic errors along the way.

In part (b), although a correct answer was the modal answer, many candidates showed a weakness in the knowledge of 'times tables', particularly in computing the product of 4 and 7; 21, 24, 25 and 35 were common attempts. A significant number of candidates also struggled to multiply by 5. Few saw the easier option of 4x5 before multiplying by 7.

A few candidates demonstrated a complete lack of understanding by finding 4 x 7 and 7 x 5 and adding the products.

1.2.16. Question 16

Part (a) was usually answered correctly, however in part (b) many candidates clearly did take care in viewing the given shape. Often an isosceles triangle was drawn, usually of base 2 and height 5 units.

1.2.17. Question 17

This was one of the most poorly answered questions on the paper, largely because a great many students just could not interpret a mileage chart correctly. In finding a distance between two towns, many calculated the differences between the numbers beneath each town. This was evident immediately in part (a).

In part (b) many, who could read a mileage chart correctly, often correctly selected just two of the 3 required distances.

In part (c), many candidates demonstrated a complete inability to communicate a structured, organised and clear solution to the problem. Calculations dotted about the working space without explanation were rife. A small number of candidates were able to correctly solve the problem fully, many stumbling by incorrect distances from the table but more often the inability to deal with any distance, speed, time calculation. The most common mistake was to assume that 1 mph equated to 1 minute so distances of say 95 miles or 105 miles instantly became times of 1 hour 45 minutes and 1 hour 55 minutes` respectively. When a total time of travel was found by a reasonable method (usually incorrect however), many candidates were then able to gain credit for correctly attempting to work out the time for the end of the journey.

1.2.18. Question 18

Very few candidates used any correct algebra to solve this problem. The value of x, Jim's share of the £23 was often correctly found in part (b) by trial and improvement methods.

It was very rare, in part (a), to see a correct equation formed. Some were able to quote $x + 4$ and $x - 2$ as the shares of Gemma and Jo but could go no further.

In (a), there were many statements like $x + 4 - 2 = 23$ followed often in (b) by answers of £17

1.2.19. Question 19

Part (a) was well answered, some left $\frac{4}{20}$ un-simplified and some offered an answer of $\frac{1}{4}$ with no working.

Part (b) was less successful. Candidates were either able to achieve the full two marks or none. Many stated that 10% = £2 and 5% = £1 but could go no further.

Many candidates repeated their efforts in part (a) and gave their answer as a fraction.

In part (c), many candidates` were happy to offer incorrect answer which if checked couldn't possibly be correct. The most common incorrect answer was £6.50 (£10 ÷ 2 + £1.50). Many simply subtracted £1.50 from £10 leaving an answer of £8.50 which they believed to be the final answer.

1.2.20. Question 20

Part (a) was answered correctly more than not, the majority of candidates spotting the patterns of numbers in the table.

Part (b) proved to be more of a challenge and only a small minority were able to complete line 10. Often line 6 or 7 were attempted. Even when the first two columns in line 10 were correct, the final total of 244 was rarely seen; again poor arithmetic skills preventing full credit.

Even fewer candidates were able to spot the connection between part (c) and what had gone before, the vast majority again practicing their long multiplication techniques.

Even when $2 \times 1000^2 + 2$ was quoted the correct answer did not always follow as candidates struggled with squaring 1000.

1.2.21. Question 21

The majority of candidates knew how to find range although many did not use the key reading the extreme values of the stem and leaf diagram as 52 and 13 and gave 39 instead of 3.9 as their answer in part (a).

Similarly in part (b), 31 was the most common incorrect answer. Many tried to write out the data in order (not realising that this was done in the diagram) and often left out one or more entries.

In part (c) most candidates gained at least one mark and often two. The most common error was $\frac{3}{18}$.

1.2.22. Question 22

One mark was awarded in part (a) for any correct expanding of a bracketed expression. Many candidates picked up this mark but poor algebraic manipulation prevented further credit. $2x - 2y - 3x - 6y$ was a common error showing weakness in dealing with directed numbers.

In part (b), although a correct answer of -2 was often seen, rarely did it result from sound algebra, more often it was the result of a trial and improvement method. Many candidates using this method however seemed unable to consider a negative value.

In part (c), few understood the concept of factorisation and $10x$ was the most common answer.

1.2.23. Question 23

Only the most able candidates were able to correctly solve this problem although some were able to pick up marks for part solutions, for example in dividing 360° by 6 or showing the exterior angle of a square on the diagram. The interior angles and exterior angles of the hexagon were often confused, many taking 60° as the size of an interior angle.

Several wrote 145 on the answer line again suggesting the use of a protractor.

1.2.24. Question 24

Plotting of the extra points in part (a) was usually accurately done, although many misread the scale on the axes.

Part (b) was generally answered well. Some candidates attempted to quantify a relationship and got confused, many though it was a 'negative' and some 'positive' relationship. Neither gets any marks.

In the majority of cases the answer to part (c) was taken directly from the scatter diagram without any consideration of a line of best fit. This was often successful but when not, no marks could be awarded. Students should be encouraged to draw a line of best fit, demonstrating their method.

In part (d) very many candidates referred to a temperature of 100^{o} being too hot or too high instead of relating their response to the constraints of the actual data in the experiment. Explanations such as "the ice would melt too quickly at 100^{o}" were rife. Many often thought that the data couldn't be used because the graph was in minutes not seconds.

1.2.25. Question 25

Misreading of the scale in part (a) prevented a great number of candidates gaining full marks; one mark was awarded for any correct translation.

In part (b) only a very small minority showed any understanding of the line $y = x$. In fact more candidates gave a correct reflection in the line $y = -x$. This gained one mark. Many just reflected the shape in either $x = 0$ or $y = 0$

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