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Examiners' Report November 2007

GCSE

GCSE Mathematics (2544)

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Contents

1. PRINCIPAL EXAMINER'S REPORT - PAPER 8 (FOUNDATION)

1.1. GENERAL COMMENTS

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

1.1.2. Candidates are to be encouraged to show working, particularly when a question is worth more than one mark. Those candidates who gave an incorrect response gained marks wherever their method was sound, whereas giving an incorrect answer without working inevitably lost marks in many questions. This was particularly noticeable in Section A Question 4 where an answer of 25.2 was found which scored no marks but it is likely that they would have scored a method mark had the working been shown, as many had shown 126 ÷ 5 which would have scored a method mark for the sight of 126.

1.1.3. Poor basic arithmetic let many candidates down, even on the calculator section! In Section A Question 4 it was not uncommon to see 0 × 5 = 5.

1.1.4. Where a question requires an explanation, candidates are to be encouraged to write their answer legibly in the space provided and should refrain from using text language.

1.2. INDIVIDUAL QUESTIONS

1.2.1. Question A1

Nearly all candidates scored all 3 available marks on this question which gave them a good start to the paper. Where candidates did make errors, it tended to be in part (c) where 'Daniel' was the most common error. Here candidates focussed on the words 'less than 10 years of age' ignoring 'and has one brother'.

1.2.2. Question A2

Most candidates scored at least 1 mark on this question, generally for getting 7 and 17 correct. Those who scored 2 marks tended to get the bottom 'Total' row incorrect. Even though this was on the calculator section of the paper, many calculations were seen in the space below the question suggesting quite a few candidates did not have access to a calculator. Nearly 80% of the candidates scored all 3 available marks.

1.2.3. Question A3

In part (a)(i) over 70% of the candidates knew that 10 students said that 'cycling' was their favourite holiday. In (a)(ii)' calculating how many students took part required the realisation that the 30º sector

on the pie chart represented 5 students. Further working indicated that each sector in turn was being translated into the number of students, thus 'cycling' at '60º' became '10 students'. Beyond this point, however, the calculations appeared to go astray in a significant number of cases. There was little evidence of any other type of method being used. The majority of candidates simply wrote the '60' in the answer space without any working with over half the candidates scoring full marks for a correct response. By far the most popular incorrect response was '360°' showing little understanding of what the question was asking.

In part (b) there was less success with just over 40% of the candidates scoring the mark.. Some candidates are still writing probability answers in the incorrect form such as '1 in 6' and '1 out of 6' which scored no marks.

1.2.4. Question A4

The third blank column in the table of values was not always used and, where working was shown, the values were repeated in the working space which used up valuable examination time. Totals from the two given columns of values were often obtained and sometimes used to obtain a final answer. For those realising that the values in the two columns were to be multiplied together the first entry of '5 × 0' appeared as '5' rather than '0' in many instances. Some candidates saw a connection between a pie chart and the table of values and went on to produce a calculation which seemed to be connected to the number of degrees in each sector totally ignoring the fact that they had been asked to 'find the mean'. In spite of the fact that the question was topical there were some very unrealistic answers with the average person buying thousands of pounds of lottery tickets each week. Many responses indicated that the candidates had little idea what to do, with many writing 126 (or 131) ÷ 5 or 126 ÷ 56 or even 56 ÷ 5. Others attempted to write the cumulative frequency values and then tried to use these values to calculate the mean. Over half the candidates failed to score any marks on this question with only around 20% scoring 2 or 3 marks.

1.2.5. Question A5

The probability appeared written as a fraction in a large proportion of the working seen but there were still expressions such as 'likely' scoring no marks where this was given alone. Some gave the probability of obtaining a '2' as '2/6' and '3' as '3/6' and combined them together to produce variations of '2/6,3/6' or '5/6' as the final answer. Those who perhaps gave more thought to each outcome came up with '1/6' as the required individual probability and scored 1mark for showing this fraction. Combining together the two '1/6' values proved to be troublesome. A more logical approach might have been to consider taking the two events out of a total of six and writing the fraction as '2/6' directly. Giving the final answer in the form '2 out of 6', or similar, received only a method mark for identifying the '2' and

the'6'. Some statements were seen which tried to resolve the issue with 'it might but it might not' offering a flavour of the more bizarre. Around 56% of the candidates scored both available marks.

1.2.6. Question B1

Nearly all candidates were able to complete the bar chart correctly and 'Guppy' was given as the mode by over 80% of the candidates. Again, nearly all candidates were generally able to provide the correct total number of fish in the tank. In part (d) nearly all candidates were able to provide at least one correct criticism of the bar chart, generally for recognising that the 3rd bar did not have a type of fish written. However one candidate did write 'Molly is not a type of fish, it's the name of her fish!'. Most candidates recognised that there was something wrong with the frequency axis but some responses were not accurate enough to score the mark. Many wrote that the numbers were not in order, which is not strictly true, or 'not even' without referring to the interval. There were quite a few students who mentioned that 'the bar graph shouldn't go to 11 because the highest bar was only 9'. Over ¾ of the candidates scored both marks.

1.2.7. Question B2

The vast majority of candidates who scored a mark on this question tended to score it in part (b). Many circled two words in part (a) with 'even chance' being the most popular incorrect answer. There was a 51% success rate for part (a) whereas over 84% of the candidates were successful in part (b).

1.2.8. Question B3

Over 70% of the candidates recognised that the further you went from the city centre, the cheaper the cost of the water or the closer you were to the city centre the dearer the water became, enabling them to score the available mark. Some candidates only mentioned the extremes such as 'if you are far from the city centre the water does not cost a lot' which does not demonstrate the continuity of the relationship. Candidates should be made aware that just using the word 'negative' to describe the relationship is not sufficient. However 'negative correlation' would have scored the mark.

Many candidates were able to draw a satisfactory line of best fit but there were still many zigzag lines that joined all the points seen. Often candidates did not use their line of best fit to estimate the cost of a bottle 4.5 km from the city centre with a wide variety of incorrect responses seen. If their line was used, the reading of 4.5 on the *x*-axis was generally good, but candidates struggled to read their value from the *y*-axis accurately and interpret the unit required. Nearly 40% of the candidates scored both marks in parts (b) and (c) with at least 73% scoring at least 1 mark.

1.2.9. Question B4

Many candidates were unable to interpret the stem and leaf diagram with '9' being a common incorrect response in (a) from 9 − 0 and 3 in (b). Other candidates demonstrated that they knew they had to work out the range but wrote '98 − 79 = 19' or '92 − 71 = 21'. Another common incorrect response in (b) was '4' being the middle number in 01234455789. It was pleasing to note that over 36% of the candidates scored all 4 marks, although nearly 37% scored no marks at all on this question.

2. PRINCIPAL EXAMINER'S REPORT – PAPER 9 (HIGHER)

2.1. GENERAL COMMENTS

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

2.1.2. Candidates are to be encouraged to show working, particularly when a question is worth more than one mark. Those candidates who gave an incorrect response gained marks wherever their method was sound, whereas giving an incorrect answer without working inevitably lost marks in many questions. This was particularly noticeable in Section A Question 1 where an answer of 25.2 was seen which scored no marks but it is likely that they would have scored a method mark had the working been shown, as many had shown 126 ÷ 5 which would have scored a method mark for the sight of 126

2.1.3. Poor basic arithmetic let many candidates down, even on the calculator section! In Section A Question 1 it was not uncommon to see 0 × 5 = 5.

2.2. INDIVIDUAL QUESTIONS

2.2.1. Question A1

The third, blank column, provided a hint that a calculation was expected from the statistics provided. Many realised that the 'money' and the 'frequency' were to be multiplied together even though '5 × 0 = 5' was much in evidence. Allowing for this error it was possible to obtain the two method marks by showing that the sum of the third column was divided by '30'. The weaker candidates merely added together the items in the money column and either gave this as being the 'mean' or divided the value of '56' by '4'. Some responses indicated that the candidates had little idea what to do, with many writing 126 (or 131) ÷ 5 or 126 ÷ 56 or even 56 ÷ 5. A minority calculated the cumulative frequency values and then tried to use these values to calculate the mean. Nearly half the candidates scored 2 or 3 marks on this question although over 26% were not able to access the first generous mark.

2.2.2. Question A2

The fact that the question involved a 'six-sided' dice gave a clue as to the nature of the problem and attempts at probability appeared in most of the working seen with over 80% of the candidates scoring both marks. The fraction 1/6 led to the calculation of '1/6 + 1/6 = 2/6' which some went on to cancel down to 1/3 thus scoring full marks for either answer. Others wrote '1/6 + 1/6 = 2/12 = 1/6'! The unsure gave the probability of getting the '2' as the fraction '2/6' in conjunction with the probability of rolling the '3' as '3/6'. Attempts

at producing a probability tree to help in their calculations proved to be unsuccessful as this lead to '1/6 × 1/6'.

2.2.3. Question A3

The three things which were wrong with the questionnaire were often recognised correctly as being 'no time period', 'overlaps' and 'no less than £1' of which two had to be stated to obtain the two marks. Generally this part was well answered with very few being unable to score at least one mark. In part (b), the redesign of the question with response boxes proved to be less well handled. Time was usually correctly identified as being an essential part of the question but the response boxes often ignored the overlap, even where this had been stated in the previous part or else they left gaps in their response boxes by providing 1 – 3, 4 – 6, etc. There was a lack of understanding of the correct use of inequalities with £3 < £4, <£2 to $\leq$ £3, £2 $\geq$ 0 < £3 and 2 < $n \geq 3$ seen. Other attempts restructured the question to say 'which magazines do you buy?' or 'how much do you pay for a magazine?' Around 55% of the candidates were able to score 3 or 4 marks in parts (a) and (b) with just over 6% scoring no marks at all.

In part (c) the calculation '40 × 100 ÷ 560' was required with a rounding to the nearest whole number. The correct values were much in evidence but the order of the operation was not always convincing with '560 ÷ 40 = 14' appearing. Other solutions used the total of the 'number of females' rather than the grand total in their calculations. Some mis-reads took place with the grand total of '1120' representing '2 × 560' being used thus allowing only for the award of a method mark where it was correctly used. Most candidates could identify that there were 40 students in year 12 but failed to score any marks as they could not then carry on to divide by 560 and multiply by 100. Those that did get to 7.14 sometimes either left the answer as this or rounded to 8, losing the final accuracy mark. Over 64% of the candidates failed to score on this question.

2.2.4. Question A4

The calculation of the fifth four-point moving average using the information given in the table of values produced a significant number of correct responses. However, many used the previously calculated averages and treated them as a sequence of numbers. As there wasn't a common difference between the values this gave rise to some unrealistic results. There was a follow through from part (a) to part (b) in which the value for the fifth moving average was to be plotted on the graph; this allowed many to gain the mark for the plotting.

In part (c) the trend line was to be drawn in on the graph. With four moving average points already plotted it gave a hint as to where it should be located, especially as the points lay in almost a straight line. The success at indicating the trend line, however, seemed to be decided by where they had positioned the fifth point as there was a strong desire to 'join up' all the points, straight line or otherwise.

2.2.5. Question B1

77% of the candidates were able to interpret the stem and leaf diagram providing the correct range of 27. A common incorrect response to (a) was 9 – 0 = 9. Other candidates demonstrated that they knew they had to work out the range but wrote
'98 − 79 = 19' or '92 − 71 = 21'.

2.2.6. Question B2

Most candidates knew to draw the heights and join them with straight lines. However many did not draw them at the mid-interval values, thereby losing a mark. Those who did not know what a frequency polygon was drew a bar chart instead which scored no marks. Others plotted the points but did not join them. Where these points were also a translation of the correct points, it was not possible to score any marks. Over 44% of candidates failed to score on this question with over 35% scoring both marks.

2.2.7. Question B3

Nearly all candidates (over 90%) recognised that the further you went from the city centre, the cheaper the cost of the water or the closer you were to the city centre the dearer the water became, enabling them to score the available mark. A few candidates only mentioned the extremes such as 'if you are far from the city centre the water does not cost a lot' which did not demonstrate the continuity of the relationship. Candidates should be made aware that just using the word 'negative' to describe the relationship is not sufficient. However 'negative correlation' would have scored the mark.
Most candidates were able to draw a satisfactory line of best fit but there were still a few zigzag lines that joined all the points seen. Some candidates did not use their line of best fit to estimate the cost of a bottle 4.5 km from the city centre with a wide variety of incorrect responses seen. Others gave their answer in pence without crossing out the £ sign which cost them the mark for this part of the question. It was pleasing to note that over ¾ of the candidates scored the two marks for parts (b) and (c).

2.2.8. Question B4

This was very well done by most with nearly ¾ of the candidates getting this correct.

2.2.9. Question B5

It was clear that many candidates were unfamiliar with histograms of unequal width with answers of 40 in part (a) followed by bars of heights 3 cm and 2.4 cm (15 small blocks and 12 small blocks) being extremely common in (b). As the frequency density of the $15 < A \leq 25$ interval was 2.4, the vertical axis had to be numbered correctly if only this bar had the correct height to score any marks. 46% of the candidates were able to provide the correct answer of 16 in part (a) with a similar percentage scoring a mark in (b). 27% scored both marks in (b).

2.2.10. Question B6

Over half the candidates were able to access the first mark by showing that not stopping at one of the lights was 3/5 or 1/6. A further 12% then went on to gain the second mark by showing 3/5 × 1/2 or 2/5 × 1/6. However poor arithmetic let many candidates down with 2/5 × 1/6 = 3/30 commonly seen. Even those candidates who did get to 3/10 + 2/30 then went on to write 5/40. Some overlooked the different probabilities at the second set of lights and assumed 5/6 and 1/6 on both branches. This led to answers of (2/5 × 1/6) + (3/5 × 5/6) = 17/30. A significant minority obtained a correct tree and then tried to add probabilities. Yet others seemed to think that a common denominator was needed when multiplying fractions often introducing arithmetic errors as a result.

3. PRINCIPAL EXAMINER'S REPORT – PAPER 10 (FOUNDATION)

3.1. GENERAL COMMENTS

3.1.1. In general this paper was accessible to the vast majority of candidates and was a little less demanding than the first two series of papers.

3.1.2. Candidates were well prepared for the examination and coverage of the syllabus was good.

3.1.3. Candidates again need to be reminded to write in blue or black pen.

3.2. INDIVIDUAL QUESTIONS

3.2.1. Question A1

(a) Most candidates correctly gave 5036 as their answer gaining the mark for this question. An incorrect answer of 500036 was sometimes seen.
(b) 500, 400 and 3400 were the most common errors, but the greater majority scored full marks.

3.2.2. Question A2

(a) All but a few candidates recognised the pattern in the sequence are were able to correctly quote the correct two terms. The incorrect answers, 19, 21 or 20, 23 were sometimes seen but each of these was able to score one mark.
(b) Most candidates gained the mark in this part of the question, correctly explaining the need to add 3 in order to compute subsequent terms of the sequence.

3.2.3. Question A3

Many failed to score the mark for writing the decimal numbers in the correct ascending order; often because they were unable to correctly place 0.73 as the greatest number. 0.307 was often placed higher than 0.37

3.2.4. Question A4

The most popular method in finding 35% of £400 was to use a "build up" or partitioning method. Although this method was often successful, it often failed as candidates rarely fully explain their methods.
25% = £100
10% = £40
5% = £20 followed by an answer of £160 was not uncommon.
Some candidates misinterpreted the word "of" and tried to find 35% taken "off" £400, giving an answer of £260 This gained one mark only. Weaker candidates offered £365 (400 – 35) as their answer.

3.2.5. Question A5

(a) Few candidates gained full marks in completing the table of values; usually making errors when substituting -2 and/or 0 into the equation.
(b) Many candidates gained one mark for correctly plotting at least 4 of their values from the table, but few gained full marks. A significant number of candidates, having plotted 5 correct points, failed to join them up to give the required graph.
Some candidates were aware of the significance of the coefficient of 'x' and the number on the end but often had them the wrong way around. Graph crossing at (-1,0). A few had a line drawn with a gradient of 3 but as before going through (-1,0)

3.2.6. Question A6

Most candidates gained one mark by correctly finding the number of boxes that could be fitted in one the dimensions of the carton. These correct values, 5, 5 and 6, were often followed by an answer of 16 (5 + 5 + 6) or 30 (5 × 6)
Those candidates who chose to find the respective volumes of a box and a carton were often then able to correctly compute the maximum number of boxes, since they had access to their calculators. It must be said however that despite this many arithmetic errors were seen.
A common mistake by weaker candidates was to divide the sum of the dimensions of the carton by the sum of the dimensions of the box to give 110/20 = 5.5

3.2.7. Question A7

This question was generally well done. 25 (75/3) was a common incorrect answer and many candidates mixed units by multiplying 75 km/h by 180 minutes.

3.2.8. Question A8

(a) This was correctly answered by many candidates, g^3 being the most common error.
(b) Again the majority of candidates gained the mark here. 5 × hk was a common error.

3.2.9. Question A9

Many candidates clearly did not understand the concept of meter readings and utility bill calculations. Multiplying the sum of the two meter readings by 52 was a common error. This was often left as an answer of £607672 and sometimes £6076.72, gaining one and two marks respectively. Candidates readily accepting a gas bill of such magnitude. Weaker candidates chose to divide the sum, or sometimes the difference, of the readings by 52 Even when the difference (1412) was multiplied by 52 an answer of £73424 often seen.

3.2.10. Question A10

This question was not answered well; a great number of candidates demonstrating no knowledge of the expansion of two brackets. x + 5 and x + 2 was often simplified to 5x and 2x resulting in an answer of

$7x$. Of those candidates who did use correct methods of expansion x^2 + $7x$ + 7 was a common error.

3.2.11. Question B1

The vast majority of candidates gained full marks on all parts to his question.

3.2.12. Question B2

(a) It was disappointing to see so many candidates failing to recognise the quadrilateral as a parallelogram (or trapezium). Common errors were rhombus, equilateral and square. In part (b) acute and obtuse angles were often confused. A notable minority labelled one of the parallel symbols as their choice of obtuse angle. Part (c) was well answered.

3.2.13. Question B3

An answer of 30 cm was a common error for the perimeter in part (a). It was not clear if this was a result of confusing perimeter with area or the result of counting the actual squares surrounding the perimeter of the shaded region. Other errors generally related to careless counting. Candidates were generally more successful in answering part (b).

3.2.14. Question B4

Part (a) was answered well but a significant number of candidates made mistakes in part (b), labelling the point (0, -2), often placing it at (-2, 0) or (0, 2).

3.2.15. Question B5

Many candidates drew number lines to assist in answering both parts of this question. This usually produced the correct answer to part (a) but often led to incorrect answers of 11 or 13 in part (b). An incorrect answer of 2^o and $\pm 14^o$ were common in part (a)

3.2.16. Question B6

This question was often answered correctly, however many candidates gave an answer of 113^o , thinking that x^o was either alternate or corresponding to the given angle. Other errors usually resulted from poor arithmetic; 180 – 113 = 77 or 87 were not uncommon. Some, using angles at a point, correctly calculated 360 – 226, then failed to divide their answer by 2.

3.2.17. Question B7

This showed an improvement and it was pleasing to see an answer of $20x$ or equivalent regularly. Answers of $20 \times x$ or similar gained full credit, but $x=20x$ did not.

3.2.18. Question B8

Not very well answered with incorrect answers of 0.1624, 1.624, 162.4 and 1624 being seen as often as the correct answer. Some candidates

ignored the given information and attempted long multiplication methods. These usually failed.

3.2.19. Question B9

The most common error in part (a) was to give an answer of 10. In part (b) 7 ×7 was often seen. This gained no credit. In part (c) the understanding of the order of operations was poor resulting the incorrect answer of 28 being the most common offered.

3.2.20. Question B10

Many candidates gained the first method mark, usually for rounding 29.8 to 30 and 4.1 to 4 although 0.2 was often seen. The vast majority of candidates were not able to go any further; the understanding in how to divide by a decimal was very weak. Many simply divided the product of 30 and 4 by 20 (or 2) to get 6 (or 60)

Some candidates tried to calculate the exact answer to the problem. These attempts nearly always failed.

3.2.21. Question B11

Most gained at least one mark here and often two. The factor tree method was the most popular approach; this usually resulted in an answer of 3 or 5. There was, again, the misconception from several candidates that HCF actually meant finding the LCM.

4. PRINCIPAL EXAMINER'S REPORT – PAPER 11 (HIGHER)

4.1. GENERAL COMMENTS

4.1.1. In general this paper was accessible to the vast majority of candidates and was a little less demanding than the first two series of papers.

4.1.2. Candidates were well prepared for the examination and coverage of the syllabus was good.

4.1.3. Candidates again need to be reminded to write in blue or black pen.

4.2. INDIVIDUAL QUESTIONS

4.2.1. Question A1

Many candidates clearly did not understand the concept of meter readings and utility bill calculations. Multiplying the sum of the two meter readings by 52, and occasionally a misread of by 25, was a common error. This was often left as an answer of £607672 and sometimes £6076.72, gaining one and two marks respectively. Candidates readily accepting a gas bill of such magnitude.
Weaker candidates chose to divide the sum, or sometimes the difference, of the readings by 52 Even when the difference (1412) **was** multiplied by 52 an answer of £73424 was often seen.

4.2.2. Question A2

Both parts of this question were usually well done but the answers of , $3x + 2$, $9x$ and $5x$ were not uncommon in part (a) while $25t$ and $5(t + 20)$ were common errors in part (b).

4.2.3. Question A3

(a) Most candidates gained full marks for correctly completing the table of values; any errors usually related to substituting -2 and sometimes 0 into the equation.
(b) Although the correct straight line was seen most often, other candidates usually gained one mark for correctly plotting at least 4 of their values from the table. A significant number of candidates, having plotted 5 correct points, failed to join them up to give the required graph. This is happening more frequently

4.2.4. Question A4

$2n - 1$, $2n + 3$, $2n$ and $3n + 2$ were the most common incorrect answers given by candidates who showed partial understanding of what was required. Weaker candidates often wrote $n + 2$ as their general expression.

4.2.5. Question A5

Although in part (a) the correct answer of 1440 was usually seen, a significant number of candidates failed to score by working out $60^2 \times 24$ instead of 60×24. Sometimes an answer of 1140 was seen after a correct method.

There were a number of attempts to find the surface area of the prism. This was usually achieved by assuming that 10 cm was the length of each edge of the cross section; $10 \times 6 \times 20 = 1440$ then followed, gaining no marks.

In part (b), dividing "1440" by 648 was seen as often as the correct method. Weaker candidates commonly found the product of volume and mass.

4.2.6. Question A6

Many candidates showed a lack of understanding of the concept of standard form. Attempts to convert the given numbers into ordinary numbers was poor, quite often the decimal point remaining in the number, for example 9.0000000 When the conversions were successful, answers were often left as 300000

A major problem is ignorance of the facility of a standard form button (exp on most calculators) leading to all the unnecessary conversions of the initial 2 numbers.

4.2.7. Question A7

Although a correct answer of 52^o was often seen, the preceding argument was not always convincing. Many candidates were unsure of the angle denoted by *BAT*, weaker ones giving three angles for their answer, *B* and *A* and *T*.

The majority of candidates used the triangle *OBA*, recognising it as an isosceles triangle, and usually finding the correct base angles of 38^o, although arithmetic errors were common.

Some candidates assumed that *TB* was also a tangent and proceeded using equal tangent theory. Some credit was given here.

4.2.8. Question A8

This question was very poorly answered indeed, many candidates having no idea how to add two algebraic fractions.

For some of the more able candidates, marks were often lost through poor algebraic manipulation, but most often it was in giving an answer as $\frac{5}{(x+5)(x-3)}$ This answer did gain one mark for a correct common denominator. Many candidates made errors in the expansion of the denominator, but this was not penalised if it was clear what they were trying to expand. Some tried to "cross multiply" with the additional complication of adding the denominators.

The accuracy mark was often lost for cancelling what would have been the correct addition.

4.2.9. Question B1

This question was mostly answered correctly, however many candidates gave an answer of 113^o , thinking that x^o was either alternate or corresponding to the given angle. Other errors usually resulted from poor arithmetic; 180 – 113 = 77 or 87 were not uncommon.

4.2.10. Question B2

The correct answer of 12.5 was the most common answer seen. Incorrect answers of 12.4, 12.6, 12.95 and 13.5 were the usual errors made.

4.2.11. Question B3

Although the correct answer of $18x + 19$ was the modal response, it was disappointing to see many candidates struggle with this question. The expansion of each of the brackets was often poor with answers of $6x + 5$ and $12x + 1$ common. In adding together $6x$ and $12x$, many gave $18x^2$ as their answer. A significant number of candidates followed their attempts at expanding each of the brackets by then finding the product of their expansions.

Weaker candidates expanded the brackets as $3 \times 7x$ and $4 \times 4x$ to give an answer of $37x$ ($21x + 16x$)

4.2.12. Question B4

Part (a) of this question was not answered well, many giving the coordinates of *F* as their answer for *E*. The wrong answer (10, 0, 8) was also popular. In part (b), many candidates realised that the midpoint of *OE* could be found by simply halving their coordinates of *E*, gaining full marks. However the answers to parts (a) and (b) were often completely unrelated.

4.2.13. Question B5

The majority of candidates earned at least one mark in this question for a correct method to find the area of one face. Many then gained a second mark for finding the total area of at least four faces. Poor arithmetic or incorrect areas, often prevented the award of the final mark. Many candidates gave $5 \times 12 = 60$ as the area of the cross section of the prism. Many said that the base (12 by 20) was the same as the sloping face and found 2 times 13×20

A significant number of candidates found the volume of the prism instead of the surface area. These could get one mark for a correct method leading to the area of the cross section of the prism. A few stated that the area of the triangle was 30 from 5+12+13.

4.2.14. Question B6

$x(x+ 2) – 15$ and $(x + 3)(x – 5)$ were the most common incorrect answers of those candidates who showed some understanding of factorisation. Very many candidates had no idea at all.

4.2.15. Question B7

12.5 was the most common error in part (a) although many candidates were successful. In part (b) however, few gave a correct answer of 1. The most common incorrect answers were 0 and 9.

4.2.16. Question B8

Factor tree methods were the most common employed in attempting to find the LCM. These had to both be correct to gain any credit. Many candidates simply gave a common factor and an answer of 7 was regularly seen, as was the HCF of 14. Candidates choosing to list multiples often made arithmetic addition errors in listing the multiples of 42.

4.2.17. Question B9

This expansion was not done well, particularly when finding the product of $3x$ and $5x$; $15x$ being the most common answer. An answer of $32x - 4$ was therefore not uncommon. Careless errors with signs prevented many candidates gaining full marks.

Weaker candidates, of which there was much evidence, gave $7x + 4$ or similar as their answer, as a result of trying to add the brackets.

4.2.18. Question B10

It was clear that very many candidates had not been fully prepared for questions like this on recurring decimals; many having no idea at all as to where to start a solution.

A number of candidates misread the recurring decimal notation and their solution began with $x = 2.145145145\ldots$. They were able to pick up a mark if they correctly found two decimal numbers which could be subtracted to give a terminating decimal.

$99x = 212.4$ was sometimes seen resulting in an answer mixing decimals and fractions. This could not be accepted as a final answer but all method marks were awarded.

The most common error of candidates making reasonable attempts was to find two decimal numbers which do not leave a terminating decimal when subtracted.

For example $x = 2.14545..$ and $1000x = 2145.45..$

4.2.19. Question B11

Very few candidates attempted to factorise both the numerator and the denominator Some, who did, then spoiled it by incorrect cancelling, but more often this did usually gave a fully correct solution.

More often, candidates made attempts at simply cancelling the given expressions, for example; $\frac{4a-20^4}{a^2-25^5}$ to give $\frac{4}{a-5}$ or similar, gaining no marks.

5. STATISTICS

5.1. MARK RANGES AND AWARD OF GRADES

Unit/Component	Maximum Mark (Raw)	Mean Mark	Standard Deviation	% Contribution to Award
5542F	30	20.6	5.3	100
5542H	30	17.5	6.4	100
5543F	50	25.9	8.6	100
5543H	50	25.2	10.9	100

5.2. GRADE BOUNDARIES

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

	A*	A	B	C	D	E	F	G
UMS (max: 41)				**36**	**30**	**24**	**18**	**12**
Paper 5542F				26	21	17	13	9
UMS (max: 60)	**54**	**48**	**42**	**36**	**30**	**27**		
Paper 5542H	28	22	16	11	7	5		

	A*	A	B	C	D	E	F	G
UMS (max: 83)				**72**	**60**	**48**	**36**	**24**
Paper 5543F				38	30	23	16	9
UMS (max: 120)	**108**	**96**	**84**	**72**	**60**	**54**		
Paper 5543H	44	35	26	18	12	9		

5.3. UMS BOUNDARIES

	Max	A*	A	B	C	D	E	F	G
UMS	600	540	480	420	360	300	240	180	120

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