RECOGNISING ACHIEVEMENT

GCSE

Mathematics A

General Certificate of Secondary Education **J562**

Examiners' Reports

January 2011

J562/R/11J

Oxford Cambridge and RSA Examinations

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Reports should be read in conjunction with the published question papers and mark schemes for the Examination.

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Mathematics A (J562)

EXAMINERS' REPORTS

Chief Examiner's Report

General Comments

Though Foundation Tier candidates appeared to be well prepared and familiar with the topics covered in the exam papers, a number of Higher Tier candidates struggled, particularly with the 'higher demand' topics. Centres should consider their entry pattern carefully.

Some pleasing work of a high standard was seen in all Units and at both Tiers of entry. Work on Shape and Space and Data Handling is very sound and work on Number and Algebra is encouraging.

Candidates should read each question fully and carefully. This includes checking the scales on the axes of a graph, the units being used and required for the answer and the mark allocation. The number of marks often indicates the number of steps required in the calculation. Special attention needs to be focussed on the 'key words' in a question. For example, a question requiring 'Estimate the answer to …' indicates that rounded values should be used in any calculation.

In general, the presentation of work at all levels is pleasing. Candidates need to be reminded always to show working, even when it is a calculation they can do in their head, so that method marks can be awarded if the answer is wrong. Work should be checked thoroughly with particular attention given to the accurate transfer of the answer to the answer line. Answers should never be overwritten; always cross out and re-write answers. The structure of answers to QWC questions (Quality of Written Communication questions are denoted by a star after the question number) needs some attention; candidates seem less clear as to how to present their solution to an unstructured question. It is important in these types of questions to think about how to organise an answer before committing a solution to paper.

The lack of equipment was a problem in many cases. Failure to have access to a protractor, compasses, ruler or calculator cost some candidates dearly. Without a calculator, many candidates sensibly resorted to an alternative method to solve a calculation – for example, repeated addition instead of multiplication – this, however, inevitably led to arithmetic errors. Trial and Improvement is still a popular method for solving a range of problems, particularly in Algebra. Though this can be an acceptable alternative approach, the standard methods should be encouraged. The use of a comma for a decimal point was seen frequently this session. This should be discouraged.

Centres requiring further information about this syllabus, details of support materials and details of training sessions in the coming year should contact a Mathematics Qualifications Manager at OCR.

A501/01 Mathematics Unit A (Foundation Tier)

General Comments

The general impression is that candidates found this a rather difficult paper. There were few candidates scoring well on the overlap questions with the higher level paper, suggesting that candidates were being entered at the correct level.

It was clear that some candidates did not have the necessary mathematical instruments or calculators and this made much of the paper inaccessible to them.

Candidates should show all the relevant working.

Comments on Individual Questions

1 This question was mostly answered correctly with many candidates getting off to a good start. The exception was in part (c) where it was difficult to tell if they meant ¼ or ½ of their shape.

2 There were mixed responses in all parts. Some had answers that satisfied the question but were not in the given list. Parts (a) and (d) were answered best and part (e) worst. 48 was a common wrong answer in part (b) showing confusion between "factor" and "multiple".

3 In part (a), the omission of units cost many candidates a mark despite the clear instruction in the question. Some candidates appeared not to have the necessary geometrical instruments.
Less than half of all candidates gave the correct response of "reflex" for part (c). A common error was "acute".

4 In part (a)(i), common errors were giving directions as "left" or "right" rather than compass directions. In part (a)(ii) it was often the case that at least one of the three directions was wrong.
In part (b) there were a lot of frequency polygons given when bar charts or stick diagrams were much more appropriate for a frequency diagram.

5 Most candidates answered this within the range required or gained one mark for multiplying by 3. Weaker candidates tended to measure the height and not use the given fact of the girl's height. An unusual error was to calculate 3 × 1.6 as 3.18 despite candidates' being allowed to use a calculator.

6 Few were able to gain more than 1 or 2 marks on part (a), usually for finding the total cost of the squash and three bottles of water. The last stage of part (a) was rarely done correctly.
Part (b) was poorly done by candidates. Limited working was shown and it was difficult to award marks, particularly the first two method marks. Very few candidates gained all 4 marks. Some were awarded the final mark as a follow through. At times, candidates seemed to write random pieces of information in the space provided and it was difficult to follow their thought processes in a logical way.
By comparison, part (c) was well answered with many candidates gaining marks. Repeated addition (or subtraction) was seen more often than the expected (and more efficient) division method.

7 Part (a) was often answered correctly, but part (b) proved more difficult. Some candidates were able to earn the method marks for reaching 45 or for multiplying by 4 but these were rarely seen together. As a consequence, there were few fully correct solutions.

8 Most candidates scored the mark for part (a). The same could not be said for part (b), where there were few fully correct answers. Many candidates did manage to score the part mark, but rounding correctly proved too much for most.

9 The very common error in part (a)(i) was an answer of 3*a*. Part (a)(ii) usually earned at least one mark, even by candidates that did not do well overall.
Fully correct answers to part (b) were rare, with many candidates only earning one mark for −25 or 100 seen. Much of the working seen showed that candidates did not know the correct order of operations.
The majority of attempts to solve the equation in part (c) involved trial and improvement rather than solution by algebra. This goes against the trend in recent years of a general improvement in algebraic skills, particularly in solving equations.

10 The idea of ratios seemed to confuse many candidates in both parts. In part (a), the common mistake was to divide 45 by 8 rather than by 5.
In part (b), the ratio of 12:32 should have been the obvious starting point, but that was not often seen. Many of those candidates who did start correctly then went wrong in the cancelling. Part marks were rarely awarded because of lack of working shown.

11 The most common answer to this question was 48 but this was rarely awarded any marks because the method used was to add together the numbers of matches and divide by five. Occasionally one of the two method marks was given but rarely were full marks awarded.

12 Knowledge of Pythagoras' Theorem was very poor. Even partly correct answers were hardly ever seen. Many just added or subtracted some of the numbers given. The few that did attempt to use Pythagoras tended to either use the wrong numbers (e.g. 2.8 and 2.1) or added their squares instead of subtracting.

A501/02 Mathematics Unit A (Higher Tier)

General Comments

There was a wide range of responses from candidates on this exam and marks ranged from 0 to 58. There were a significant number of candidates scoring below 20 and they would have benefited from the much more positive experience of a Foundation Tier of entry for Unit A. Candidates had sufficient time to complete the paper and generally answered well the questions on solving equations, using a calculator efficiently, prime factors and application of Pythagoras' Theorem.
The more difficult areas were ratio, substitution and evaluation of a negative value in a formula, rearranging formulae involving indices and roots, cumulative frequency, calculating a time interval and using function notation and identities.
It was pleasing to see that more able candidates were showing clear methodology and on the questions that involved problem solving and functionality there were some very good attempts to relate findings to the original problem and to use the mathematics to draw sensible conclusions. This is an area that will need further development however and for some, omitting working on questions 5 and 8b in particular, may have cost marks.

Comments on Individual Questions

1 The question on ratio was done well by those who read the question carefully. A significant number in part (a) assumed the £45 was the total to be divided in the ratio 3 : 5 and divided £45 by 8. They did not link the £45 to the normal price which was the '5' part only of the ratio.
Candidates were often successful in part (b), a few were unable to simplify £12 : £32 to integers and some reversed the ratio and gave an answer of 8 : 3.

2 Most were successful in picking up some marks in this question.
Part (a) gave mixed responses; some were able to simplify the coefficients to 12 or the index part of the problem to a^3. Many were unable to put the two parts together and gave answers such as $7a^3$. Some candidates seemed to think that "factorising" to an expression like $a(3a \times 4)$ was a simplification.
In part (b), most candidates having shown the substitution for b of –2.5 were unable to process $(-2.5)^2$ correctly or attempted the evaluation using the incorrect order of operations. Answers of –25, 100 or –100 were very common.
The equation in part (c) was well answered and most showed clear algebraic working expanding the bracket before collecting terms and dividing to obtain 3.8. A few made errors in the bracket expansion such as $10x – 35 = 15$ but were able to then show the correct steps to solve from this error for which credit was given. Some used trial and error and were successful in obtaining the answer 3.8 but in cases where they did not get to the correct answer, no marks are awarded for this as a method.
Most attempting part (d) were able to only partially factorise the expression by taking out a factor of 2, x or $2x$. More able candidates recognised that the highest common factor of $4x$ should be used and earned both marks.
Common among the incorrect solutions offered was the product of the two terms, rather than the sum, or a combination such as $20x^3 y$.
A few were unable to make an attempt at this part.

3 This was very well answered with only occasional errors of not rounding the answer to 2 decimal places, by either truncating rather than rounding, or failing to round at all. Some gave the answer 5.73 by not evaluating the numerator before the division by 1.55.

4 Part (a) was very well answered. Using a factor tree appeared the most common method. The more able used index form to record their product but some did not record their answer as a product having obtained the correct prime factors. Some made errors in division in finding the factors e.g. 10 = 5 × 5.
Part (b) proved more difficult and a significant number of candidates confused the two terms HCF and LCM with a number getting the correct two values, but reversing them. A few gave the HCF and LCM both as products of prime factors, rather than integer values. Candidates should be aware that a single value is required.
The more successful candidates on this part appeared to use a Venn diagram approach.

5 Although many were successful in showing the sum of the products of the matches and frequencies and then dividing by 50, a significant number either were unable to interpret the information shown in the frequency table to find the total number of matches or appeared to confuse the term mean with median.
The most common errors were to divide 240 by 5 giving 48 or to find the mean of the 5 lengths given or to try to use mid-interval values for the matches such as 23, 23.5, 24 and then attempt a sum of products method or simply to find the median.
Candidates giving an answer of 48 having shown a fully correct method or a more accurate value of 47.6 were awarded full marks. Those showing no method arriving at an answer of 48 did not score so it is vital that candidates show their working carefully.

6 In part (a), most recognised that Pythagoras' Theorem was the most efficient method to use although fewer managed to apply it successfully to the problem. Some added the squares of 2.8 and 2.5 rather than subtracting to find the shorter length AE. Others did not take the square root and gave answers such as 1.59. Some used Pythagoras' Theorem correctly and obtained 1.26 for AE but then did not find the height AB by adding 2.1 to this length. Those that attempted to use trigonometry to find an angle first were far less successful.
In part (b), many recognised the use of trigonometry to find the angle and there were a number of excellent answers showing full working and drawing a conclusion to answer the question on 'run off'. Some prematurely approximated the decimal value from the fraction resulting in an inaccurate final answer, and some used an incorrect trig ratio for the required angle. A number attempted a scale drawing and measured the angle with a protractor. Candidates should be advised that if questions ask for a calculation, then scale drawing attempts will not score.

7 There were some excellent solutions to this locus question with accurate use of equipment and clear construction arcs for the perpendicular bisector. A number of candidates were very well prepared for the constructions and gave perfect answers. Some did not show their construction arcs for the perpendicular bisector and others drew the arcs but did not draw the bisector line. The bearing, when attempted, was often accurate although some were clearly not measuring 128° in a clockwise direction from the North line with acute and reflex angles sometimes seen. A number did not show any lines at all and tried to fix the intersection of the path of the boat and plane with a cross or other mark. It should be noted that on construction questions candidates need to show all of their construction lines and arcs to gain method marks. The use of scale in calculating the distance was generally well done by candidates and some marks were available for interpreting the scale of the measurement from L to the intersection. In some cases candidates often did not make clear the point at which the boat was below the plane and thus did not earn the final marks.

8 Part (a) was generally well done although there were a few errors such as adding *c* to *p* instead of subtracting and in the second step dividing one of the *p* or *c* terms by 2 instead of both of them. Candidates should be advised to use a 'fraction line' for the division rather than a '÷' symbol on questions involving algebraic terms to avoid ambiguity.
Part (b) was much more challenging. The main errors were to take a square root at the second step before moving the 36 having made a correct first step, attempt to combine the indices to get a power of 5 or to subtract 36 rather than divide, confuse the inverse operations for the indices and square instead of cubing at the first stage and then cube root instead of square root at the final stage.
Candidates need to be aware that the mark allocation for this question indicates the number of steps required and that each step should be shown clearly and not combined, as marks are available for each next correct step shown even when the previous one may have been incorrect.

9 The first part was answered poorly and common errors were to give answers such as 70, 75 or 145. The notation for the interval on the table was not interpreted at all well. The points were usually plotted correctly on the graph although a few plotted the final two points at 43 and 44 horizontally instead of 45 and 50. Some candidates did not join the points with a curve or line and a few lines were of poor quality with excessive thickness, double lines or feathering and this was penalised.
Finding the median was answered well by some. Many however, mistakenly used 100 as the total cumulative frequency instead of 95 for both the median and interquartile range and gave answers such as 36.1 for the median from the 50th value and 4 for the interquartile range from the 75th value minus the 25th value. Other errors included 41 for the median, presumably from the middle value on the horizontal axis of the graph and an answer of 35 for the interquartile range. Some candidates appeared unfamiliar with the term interquartile range.
In the final part, candidates again struggled with common errors to give answers such as 75.7 seconds and sometimes 11.1 seconds. Many thought that the calculator display and a digital clock are the same and 100 seconds in 1 minute was very common as was the omission of seconds from the correct value.

10 A variety of approaches were seen to this problem. It was common to see attempts at scale drawings despite calculations being asked for to justify the answer. More able candidates showed good use of Pythagoras' Theorem in three dimensions, evaluating at the final stage to ensure an accurate final answer. Some recognised the need to use Pythagoras' Theorem and attempted two calculations in two dimensions. This often resulted in accuracy errors to the final answer as a rounded value from the first calculation was then used in the second one. Many were unable to visualise the longest diagonal of the box and attempted Pythagoras' Theorem in two dimensions only. A few attempted a volume calculation.

11 Overall this proved to be the hardest question for candidates on the paper with many appearing unfamiliar with function notation.
In the first part some were able to set up an equation $1 - 6x = 0$ but then often did not realise that this needed to be solved to find the value of x. In the second part, very few understood the notation $f(2x)$ and those that arrived at an answer of a = 1 often did so by chance. The b value of the expression was hardly ever correctly given.
Part (b) was better and more able candidates often expanded the brackets, simplified the left hand expression and were able to complete the identity correctly. Common errors included giving 2 and 5 as the values or 2 and 1.

12 There were many excellent answers showing clear working using the areas of the bars on the histogram to obtain the correct frequencies. Many went on to calculate 1/3 of the total (150) and then draw the correct conclusion from this; that the hospital missed its target. Some chose to count rectangular blocks from the chart and not frequencies and, provided they used a correct proportional comparison for all the bars, this was allowed as they were making an 'area' comparison. Some however, showed a lack of understanding of the properties of the histogram and mistakenly used the heights of each bar as the frequency and obtained incorrect values for the comparison. Some attempted to construct a frequency table and attempted an unnecessary estimated mean calculation from their table.

A502/01 Mathematics Unit B (Foundation Tier)

General Comments

Most candidates completed the paper and time did not appear to be an issue.

The harder topics such as inequalities, equations of lines and geometry presented many of the candidates with very real problems.

Quality of written communication, QWC, questions were not well answered, although some succinct and well constructed responses were presented. Candidates need to practise answering, and also assessing, such questions.

Many candidates did not appear to have all the drawing equipment they would need to answer the paper and, as a result, marks were lost unnecessarily. However, a few did have this equipment and used their protractors inappropriately in question 12, with "I measured it" a certain giveaway.

Comments on Individual Questions

1 Most candidates correctly read the scale in part a(ii) and gave 400 as their answer. In part (a)(ii), most candidates decided that Jug A held the most water but then struggled to decide how much more water. A significant number of candidates did not appear to know that 1 litre is equivalent to 1000 ml and so failed to score on this question. In part (b) many candidates correctly ordered the numbers, with only a few reversing the order. As there was only 1 mark for this question, they scored 0 marks.

2 Many candidates correctly interpreted the multiplier and gave 50% as their answer. However, a significant number of weaker candidates gave responses such as 5%. There were a variety of correct responses seen in part (a)(ii) such as "halve 12.6 and halve again", "multiply by 0.25" and "halve 6.3". Candidates who tried to find 10% but did not specify division by 10 failed to score. A significant number of candidates scored 1 mark for a partial correct cancellation in part (b).

3 Many candidates did not read the stem of the question where all was highlighted. A common wrong answer in part (a) was 79, some even indicating that they could not read the number behind this. Part (b) was not well answered. 20 was a common wrong answer. Many correct answers were seen to part (c). However, 50 and 50 failed to score a mark. Part (d) was the first QWC question on the paper. Some very good partial responses were seen where candidates indicated that there were no numbers below 10 and so Luke had to be wrong because there were 40 pairs, but then offered no further evidence. Many candidates picked up one mark for attempting to list some pairs but many spoiled this by including pairs such as 1 and 99. Very few attempted a systematic listing or analysis of the problem. Many candidates who scored 0 just said, "He is right/wrong" and moved on. The responses did not indicate that they were aware of, or prepared for, the requirements of QWC.

4 Many candidates gained 2 or 3 marks in part (a) although far from **all** candidates correctly named the centre of the circle. In part (b) some good drawings were presented although many responses did not indicate that candidates had access to compasses or protractor. Very few calculations of 60º were seen. A significant number of drawings were freehand and many that failed to score had vertices that were nowhere near to the circumference of the given circle. Most responses were six sided.

5 Many candidates scored 1 mark for 2 correct responses.

6 70% was often given as the answer in part (a). In part (b), 0.6 was not often seen; 3.5 and 0.35 were common wrong answers. Many candidates correctly inserted the inequality, following on from their answer to part (b).

7 Significant numbers of candidates were not aware of the significance of the word "estimate" in part (a). Some did score full marks for showing 20 × 3 + 12(.07) and answering 72(.07) but many attempted a long multiplication with inevitable errors. A common wrong method was 19 × 3 and 6 × 2 and adding the result. Part (b) was the second QWC question and responses were better than in 3(d) although layout was not much improved. Many candidates realised that they had to complete 7.19 × 8.75 × 5 but then tried to do so using long multiplication. This led from their misunderstanding of the requirements of estimation. Part marks were often awarded. Few candidates annotated their solutions, even with money units, or the odd words such as "Daily earnings", "hours" etc. Working was often haphazard and the examiners had to search for meaningful calculations in the space. Candidates need to be aware of questions such as these and how to present sensible justifications for decisions with suitable units and annotations.

8 Some good answers were seen in part (a) but common errors such as "0 and 5" revealed a lack of understanding of the diagram. Not many candidates responded correctly or even gave a correct, partial rearrangement in part (b). Some candidates, who were successful, substituted an equality sign for the inequality and then solved the resulting equation. They, usually, then replaced the inequality in the answer. Some candidates scored a mark for scaling the number line, if they had achieved an algebraic inequality in the form $x \leq n$ in part (b)(i).

9 Many correct responses were seen for at least one correct scatter diagram. Most candidates scored the mark for the line of best fit, though some were hampered by not having a ruler. Many correctly gave an integer answer, read using their line of best fit, although there were a few fractional sparrows. Not many candidates correctly identified 8 sparrows for the answer to part (b)(iii).

10 Many candidates plotted at least four of the points correctly and drew a line through them. Some severely misplotted points gave rise to a 'dot-to-dot' solution. Weaker candidates drew five vertical lines, often in the right place, or created a bar chart. They did not usually score further marks in the question. Only a small number of candidates extended their lines to intersect the vertical axis and read the value. Very few candidates could identify the gradient from the equation given in part (c). Even fewer realised that 5kg was very much heavier than the given weights and that something disastrous might happen if it was added to the spring.

11 In general, candidates plotted the points with reasonable accuracy and joined them with straight-line segments. Accuracy amongst many candidates was not good. Most picked out week 8 and gave a sensible reason in part (b). Many, but not all, plotted a point on the vertical line above week 14. Some gave convincing answers following the pattern of the graph. Others reduced the number drastically and said, "It's the last week so not many bothered to come in" and scored both marks for justifying their break in the pattern.

12 Very few candidates made any sensible attempt at this whole question. The better candidates spotted alternate angles to find that w = 124°. Only a very small number of candidates were able to identify any correct angles in the diagram and most could not link the geometric facts needed to solve the problem in part (b).

A502/02 Mathematics Unit B (Higher Tier)

General Comments

There was a wide spread of ability demonstrated here. Many candidates gained high marks but there were some who appeared to have been inappropriately entered for this tier. This is the non-calculator unit and the main problem was arithmetic, particularly in questions 2(a), 2(b)(ii) and 7. Subtraction from multiples often led to candidates reversing the numbers rather than using a sound subtraction method. The positive aspects involved strong attempts at the algebra and vector questions. Indices still posed problems as many did not know how to evaluate the zero and negative indices. The manipulation of surds was not well answered and the question on similar triangles was also poorly answered.

Comments on Individual Questions

1 The most common incorrect answers in part (a)(i) were 128° obtained from 180 - 52° or 126 from (360 - 52 + 56)) ÷ 2. However, few were able to give the correct reason in part (a)(ii) and a common answer was (vertically) opposite angle. A few mentioned the angles of a quadrilateral or described the numerical steps in their calculation. In part (b) the main problem was finding angle DGF and a variety of solutions were presented, 124° or 52° being the most common. Many correctly applied a method using their angle DGF to find *y*.

2 In (a) the common answer was 8 from 24 ÷ 3. In (b)(i), most started with the correct fraction but many failed to correctly cancel down. Others started with $\frac{48}{80}$ and cancelled that down. In part (b)(ii), many produced the correct answer providing that they could work out 80 ÷ 5. In part (c) some candidates changed the denominator to 15 but this omitted the fraction with a denominator of 20. The successful attempts always used a denominator of 60. There were a few attempts with decimals that were usually partially successful.

3 Most did not start by rounding and attempted to do the two subtractions first. Some attempted to divide 74.6 by 1.96 whilst most at this point estimated the answer from 75 divided by 2. Some substituted incorrectly into the formula and the reciprocal was often seen.

4 There were many good attempts which often ended in $x = 6$. Some wrote down the integral values which satisfied the inequality. Division by 7 proved tricky for some candidates.

5 Plotting was not as accurate as expected at this level and then the line became a series of segments or a line of best fit. Some lines were not ruled. In part (b) the answers were usually correct, the exception being when 9 was given even though the line did not go through that point on the *L*-axis. In part (c), there were few correct answers; the most common answer was 1 or the equation of a line which was usually $L = W + 10$. Part (d) was sometimes a repeat of part (c) or a correct follow through from parts (b) and (c). Some equations had *x* and *y* instead of *W* and *L*. In part (e), there were a lot of either poor or 'no response' answers. Some thought that the use of kg rather than g was the reason she was wrong. A few correctly used the word 'extrapolation' in their explanations.

6 As with question 6, the plotting in part (a) was not as accurate as expected and credit was usually lost here. The lines of best fit were often good. In part (b), it was often that the candidate only considered the £400 and divided this by 10. Those who used their scatter diagram to estimate the rent did not always state this in their explanation. Many explanations were poorly organised with the calculations at the top and then the written description at the bottom of the answer space with little connection between the two.

7 Many candidates started this question well, with correct multiplication of both equations, but then they would fail to choose the appropriate operation and subtracted when they should have added. These reached 2y = 19 rather than $38y = 19$. The common resulting equations $38y = 19$, $38x = 190$ and $19x = 95$ required division by 19 or 38 and subsequently led to errors.

8 Many scored full marks on this question whilst others attempted to add or subtract rather than multiply. A common approach in part (a) was DE = 5 + (20 + 8) = 17 and in part (b), AC = 15 – (20 – 8) = 3.

9 In part (a), incorrect expansion of the brackets was a barrier and we saw 6 (or 5) from 3×2 and $-2\sqrt{5}$ or $-\sqrt{5}\sqrt{5}$ from $-\sqrt{5} \times \sqrt{5}$, just two terms. Those who obtained four terms had most problems with $-\sqrt{5} \times \sqrt{5}$. There were a lot of candidates who left the answer as $6 + \sqrt{5} – 5$. In part (b) the main problem was converting between units. Many simply overlooked the units and still could not multiply $\sqrt{7}$ by $\sqrt{7}$. Those who attempted to convert the units usually multiplied $6\sqrt{7}$ by 10 rather than divide it by 10. Few wrote down any units at all and even fewer wrote the correct units.

10 This question was answered well especially part (a). In part (b) many candidates left the answer as $\frac{1}{2}6b$. However they did gain credit in part (c) when they wrote the answer as $6a + \frac{1}{2}6b$. Finally in part (d) it was quite common for the candidates to write CN as $2a$ rather than $-2a$.

11 In part (a)(i), 0 and 8 were the common wrong answers and in part (a)(ii) there were many wrong answers, of which 4, 16, $\frac{1}{16}$, 64, and -64 were the most common. Most candidates found part (b) too difficult and many did not attempt it. Some candidates interpreted 100 (million) to the power $\frac{3}{2}$ as 100 (million) × $\frac{3}{2}$ or they attempted $\frac{1}{4}$ of 100 first.

The number of zeros in 100 million also caused problems, even for the very best candidates as they did not know how to find the square root of such a number.

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