OCR
Oxford Cambridge and RSA

GCSE

Mathematics A

General Certificate of Secondary Education **J562**

OCR Report to Centres November 2014

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This report on the examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the specification content, of the operation of the scheme of assessment and of the application of assessment criteria.

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

OCR will not enter into any discussion or correspondence in connection with this report.

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OCR REPORT TO CENTRES

A501/01 Mathematics Unit A (Foundation Tier)

General Comments

The entry for this session was rather small with fewer than 200 scripts submitted for marking.

With marks ranging from 21 to 56, there was a somewhat shorter tail at the bottom end of the scale than previously noted on this paper, suggesting overall that candidates were better prepared this time around and/or that weaker candidates were simply not entered. The mean mark is the highest it has ever been on this component, being 3 marks (out of 60) higher than the previous best. This suggests that the paper was accessible to all candidates.

Good work was seen with co-ordinates, interpreting graphs and basic statistics. Conversely, there problems with conversion of units of distance, interpreting statistical values and the scale diagram.

As in the June exam, candidates were better able to attempt the overlap questions with the higher level paper, with quite a few good solutions seen.

Comments on Individual Questions

1 This question proved to be a nice easy starter. A large number of candidates scored full marks. Only part (b) caused any problems with some candidates truncating rather than rounding their final answer for the square root.

2 Part (a) was well done by many candidates, but part (b) proved somewhat trickier. A common error was to draw the angle at points other than at the given point A. Angles of 52°(from 180° – 128°) were also seen.

3 This question frequently earned full marks, although part (c) scored less well overall than the other two parts.

4 With the exception of part (a)(ii), this question was done well by nearly all candidates. In part (a)(ii) itself, nearly all candidates managed to score at least one mark for correctly stating either the hottest or lowest temperature.

5 In parts (a) to (d), most candidates scored full marks. In contrast, part (e) proved much more difficult. It was clear that very few candidates were aware of the “standard” conversion between miles and kilometres. Many incorrect answers involved the figures for km given in the question, such as 3400. Even when candidates were familiar with the “standard” conversion, it was often applied incorrectly by dividing by 5/8 rather than multiplying.

6 Most candidates scored at least one mark in part (a), and a good majority scored both marks. Common errors were to give the number of squares on the diagram (15), or the length of the actual bathroom in cm (300) rather than in metres.

Diagrams for part (b) were mostly correct, with a few candidates having one or more dimensions out by no more than one grid square.

7 The calculations in part (a) were usually correct, but the comments in part (b) were not. Many candidates did not appreciate the need to compare ranges in order to establish whether there was consistency in the times, and there were many comments mentioning means and medians instead.

8 This question was very well done by almost all candidates.

9 This was the first of the questions that were common with the higher level paper, and proved to be a good discriminator. A common mistake was to find the number of strokes per metre rather than the number of metres per stroke.

10 Foundation candidates have always struggled with questions on Pythagoras's theorem and this question proved to be no exception to that. Many wrong responses considered the area or perimeter of the pitch or of half of it.

11 The majority of candidates successfully found the correct number of dots for Pattern 10 in part (a). However, finding an expression for the number of dots in the general pattern in part (b) was much more troublesome. By far the most common error was an answer of $n + 4$, giving the rule for determining the next term rather than the general term.

12 There were many good answers in part (a) with most candidates earning at least one mark of the three available. Common errors were made in collecting the number terms with –13 often seen instead of +3.

Solving equations with the variable on both sides has always proved difficult for foundation level candidates. Trial and improvement was often used, almost invariably unsuccessfully. Only the best candidates scored full marks here.

13 Completely correct solutions were very rare. Most candidates scored just the one mark for the circle centred at *C*. Decent attempts at the perpendicular bisector were few and far between.

A501/02 Mathematics Unit A (Higher Tier)

General Comments

There were not many candidates at Higher for this 'retake' session. Some of those were clearly aiming at A/A* rather than a grade C, and so some good work was seen at the more difficult questions as well as the basic topics. There were, however, a few candidates who had very little idea about most of the content of the paper and who had been inappropriately entered for this tier.

Comments on Individual Questions

For each question, please delete 'Question No. x' and format the numbering as in A501/01

Candidates found the first part of this ratio question harder than the second. Some did not know what to do with the 1:*n* notation requested in part (a), with answers such as 1:1.4*n* or 1 : 7*n* being seen as well as the correct 1 : 1.4. Candidates coped well with the different units in part (b), with nearly all of them converting correctly to minutes, though there were a few errors in simplification. Some erroneously included 'minutes' in their final ratio.

Question No. 2
Most candidates calculated correctly in part (a), although a few omitted one step such as finding the square root or did not round their answer as requested. As usual, inserting the brackets in part (b) was not done very well – some did so correctly, but others inserted wrong brackets or omitted the question.

Question No. 3
Quite a few correct answers were seen, but some used a wrong method, calculating a distance for one stroke as 40 ÷ 50 instead of 50 ÷ 40, or wrongly working with 8 and 50.

Question No. 4
There were quite a few fully correct answers to this sequence question. In part (a), some had 40 instead of 48. In part (b), instead of 4*n* + 8 or the equivalent, some gave 8*n* + 4, or *n* + 4.

Question No. 5
Most candidates constructed the circle accurately, but not all realised that the perpendicular bisector of AB was required, and fewer constructed it accurately. Very few realised that a part of the bisector was the required locus, with some shading between the bisector and circle, some just marking the intersection of circle and bisector nearest to AB. Some candidates did not have/use compasses.

Question No. 6
Some candidates did not know where to start and simply did a few trials, usually unsuccessfully. Many correctly factorised 150 and some realised an extra 5 factor was needed for the other number, often then correctly obtaining the required 125.

Question No. 7
Most candidates successfully solved the linear equation in part (a), although a couple did not know where to begin and a few made an error, gaining partial credit. There were more errors in factorising in part (b), with some realising that 7*y* was the common factor, but not completing correctly and some factorising partially.

Question No. 8
In the first part, there were quite a few fully correct answers, but some failed to identify that they needed to work with a right-angled triangle and used calculations such as $48^2 - 35^2$ if they got as far as Pythagoras' theorem. The trigonometry in part (a)(ii) and part (b) was done better, although by this stage of the paper a few of the weakest candidates seemed not to have met the topic.

Question No. 9
There were some good box plots drawn, and others with one or two errors, although a few candidates had no idea what to do. As usual for comparing distributions, although some follow-through from an error in the first part was allowed, comments in the next part were often confused; some compared the range or interquartile range but reached the wrong conclusion, some referred to the median, and so on. There was more success in the last part, where many used a correct method for changing a time to seconds, although some errors in subtraction were seen, particularly those who used the strategy of finding the difference between the times in their given format.

Question No. 10
Quite a few candidates knew how to find the midpoint and did so correctly. In the second part many calculated correctly but as expected the usual error was to calculate $(-3)^2$ as -9. In part (b)(ii), rearranging the formula was done competently by the good candidates aiming at A, but few of the weaker candidates were able to make an attempt which gained marks. Some calculated one or both of the required terms in the identity correctly in part (c), but some did not know what to do. In part (d), the topic of functions was found difficult as usual; although some were able to interpret enough to gain the mark in part (i), few got as far as $5 - 2(t + 4)$ in the last part, and even fewer then simplified correctly to $-3 - 2t$.

Question No. 11
In part (a) some candidates realised they needed only part of the 90-120 bar and calculated that frequency correctly as 14, but a few of them did not then add on the last bar to reach the correct 26. More good attempts were seen in part (b), with some gaining full marks, although of course the candidates who were unfamiliar with histograms made poor interpretations which gained little or no credit.

A502/01 Mathematics Unit B (Foundation Tier)

General Comments

The paper appeared accessible to the vast majority of candidates almost all of whom completed the paper.
Even some weaker candidates picked up marks towards the end of the paper.
Arithmetic skills appeared to be quite good and the performance on QWC questions was satisfactory. Those candidates who understood what was required of them used information from their graph to support their responses.
Most candidates could name a hexagon and understood reflection symmetry.
Very few candidates knew the word “translation”.
Many candidates lost marks through not reading questions carefully.

Comments on Individual Questions

1 Almost all candidates could order whole numbers and most knew percentage, fraction and decimal equivalents. Some ignored the % sign on the answer space in part b(ii) and answered 9, which was condoned. A small number could not find 20% of 30 and some found 6 then added, or subtracted, this from 30. If working was seen, this was condoned.

2 Most candidates could name a hexagon and, in many cases, the spelling was correct. The diameter and line of symmetry was well done although many did not know the name “chord”. Answers such as part, a sixth and circumference were seen.
In part (b) many scored some marks. Some candidates showed how the triangles fitted and some drew squares with the correct lengths written on at least one of their sides. Some lost a mark for drawing the largest square and writing component lengths but not the final length of one side.

3 The numeracy of most candidates in this question was satisfactory. However, weaker candidates revealed an inability to multiply by 100 or to add amounts in pounds to amounts in pounds and pence. Most could multiply 1.20 by 100 although a surprising number did not get the right answer. Many, but not all, could subtract 45 from their first answer. Often a method mark was scored for the attempt, if working was shown. A significant number could not adjust the calculation $36 \div 1.2$ to obtain a correct answer without a calculator.

4 The majority rounded £12.48 to £12 correctly although £13 was a common wrong answer. Most rounded the figures in the table and carried over their £12 to obtain the correct total. A very few could not add their rounded figures correctly.

5 Many gave correct answers to parts (a) to (c)(iii), designed to lead candidates to consider the graph as linear and not a step function. Most correctly plotted their points and drew a satisfactory ruled line. In part (iv) many reverted to using the graph as a step function and gave answers in whole hour charges only. These were condoned. Most gained 1 or 2 marks for realising that Alba was generally cheaper to employ, although there was a small “window” between 11:45pm and 1:00am when this was not so. Some ignored the instruction to use figures from the graph and others only used these, giving lists of pairs of costs without comment. A blend of the two, using key points on the graph, was required.

6 This common question was well answered. A few candidates lost marks for estimating the test score as a decimal. Most knew positive correlation although some candidates wrote terms such as “random” or “spread”.

7 In part (a) many knew division was the correct process. In part (b) many gave the reversed form and wrote b = 5 – g to score no marks. Part (c) was not well done and many gave examples such as 7 or wrote x = 6. A small number could pick the expression (a + b) from the list in the final part.

8 This second common question was well answered. Most plotted the points correctly, although the joining of them left a lot to be desired. In part (b) many lost marks for not reading carefully enough that the oven was turned off when the temperature first reached 83^{o} and gave a time after 1200. Some, in part(ii), gave a time in hours and minutes and not minutes, which was emboldened in the question.

9 Stronger candidates could change $\frac{2}{5}$ to a decimal but the expected errors, 0.25 and 2.5, were seen from many candidates. This type of thinking carried over to part(b) where $\frac{7}{9}$ and $\frac{1}{79}$ were common wrong answers. Most could answer (c) correctly.

10 This was the last common question and many scored some marks. However, in the first part many candidates, even the strongest, did not know the word “translation” and the mark was seldom awarded. Many described horizontal and vertical movements but few used a vector. Some gave a combination of transformations, that gained no marks, and some thought that the vertical movement was 5 and not 4. Some described the displacement from R to T.
In the second part many used the y-axis and a few used y = 1 as the mirror line and lost a mark. Some drew reflections in lines that were neither horizontal nor vertical and may have been rotations. Little use was made of a ruler but, with accurate corners, this was condoned.
In the final part many correct answers were seen although some candidates lost a mark for using the wrong centre.

A502/02 Mathematics Unit B (Higher Tier)

General Comments

The paper was generally accessible with most candidates scoring between 20 and 55 marks. There were not many higher scores seen probably with it being a resit session. There were a few candidates who scored fewer than 15 marks and who would have benefited from entering the Foundation Tier rather than the Higher Tier paper.

Generally candidates were showing the working used in order to obtain their answers and so were able to obtain part marks for questions even when their answer was incorrect. The questions relating to the quality of the candidates written communication (Q8a and 10b) showed the full range of quality and many candidates could have improved their solutions by showing working clearly and labelling the values they found. Most candidates used rulers where necessary.

Comments on Individual Questions

For each question, please delete 'Question No. x' and format the numbering as in A501/01

Question No. 1
Nearly all candidates scored highly on this question with the only error seen being non-integer answers in part (b)

Question No. 2
All parts of this question were generally answered fully correctly by the majority of candidates. Only a few candidates thought the oven stayed on until 12:30.

Question No. 3
In Q3(a) Only the strongest candidates could state 'translation' and give the correct vector. Many simply said 'move' or gave no description of the transformation and use of correct vector notation was rare.
In Q3(b) most could cope with the reflection but a few reflected in y = 1 or the *y* axis.
Q3(c) was the best answers part here with nearly all able to enlarge but only the strongest able to use the centre correctly.

Question No. 4
Many correct answers were seen to this subtraction and generally those who made a slip had shown sufficient working to get a method mark.

Question No. 5
A large number of candidates left part (a) blank suggesting some unfamiliarity with the topic. Some solutions as an equation were seen and not all could correctly recover the inequality at the end.
In part (b) the examiners were looking for a clearly 'filled in' circle for both marks here. A number of candidates appeared to be 'hedging their bets' with thick edged circles. In ambiguous situations like this examiners will consider the solution as the lowest scoring option.

Question No. 6
In part (a) most candidates could complete the proof successfully and draw the appropriate conclusion.
Part (b) was more challenging and some weaker candidates did not have a strategy for finding the angle sum of a hexagon. Nevertheless many correct solutions were seen.

Question No. 7
In part (a) many correct graphs were seen but weaker candidates struggled with drawing the axes correctly. Some simply labelled the edges of the grid.
Part (b) was answered well with most candidates aware of the significance of *m* in $y = mx + c$.
Part (c) was less well done with only a minority understanding the connection between perpendicular gradients and fewer still able to then write an *equation*.

Question No. 8
Part (a) assessed the candidates' quality of written communication (QWC) and there were many well-presented solutions. Weaker candidates struggled converting between proper and improper fractions and some could not carry out the calculation, usually a division, correctly.
Part (b) was assessing knowledge of reciprocals and many candidates left both parts blank. Only the strongest candidates earned both marks here.

Question No. 9
Only the best candidates were able to maintain the accuracy in their algebra long enough to get to the end of these simultaneous equations. Many candidates showed multiple attempts at solving or resorted to trial and error.

Question No. 10
There were many correct answers to part (a). The most common error in part (iii) was 4.
Part (b) again assessed the candidates' quality of written communication (QWC) so examiners were looking for the correct use of mathematical terminology that is $0.1\dot{6}$ rather than $0.166\dot{6}$ say. The weaker candidates failed to show their division clearly and the weakest scattered various recurring decimals around their working. There were, however, plenty of clear solutions.

Question No. 11
Only the weakest candidates failed to get the size of angle *p*. Errors in stating the reasons included giving the ambiguous 'angles on a diameter' and not stating the total for the angles in a triangle.

Question No. 12
Function notation did not appear to be familiar to most candidates with most responses blank.

Question No. 13
Most candidates managed to earn some marks by demonstrating some knowledge of surds and many made it through to the correct answer. It was pleasing to note that only a few candidates tried to change the surds into decimals.

A503/01 Mathematics Unit C (Foundation Tier)

General Comments

The majority of candidates were well prepared for the exam and most made a good attempt at the work at this level. The number of candidates scoring low marks was very small. Work was generally well presented and logically set out and candidates recognised that where a question was worth more than one mark then showing working was important to access method marks. Some need to be careful where a structured answer is required to set their work out in a logical manner as a few scripts show working scattered around the page.

Most candidates attempted all of the questions and there were a number scoring high marks on the exam but difficulties on some parts of questions and with some topics limited the number of very high scores this time. There was sufficient time for all candidates to complete the paper. The weaker areas included the topics of unit conversions, perimeter, solving problems involving measures in a context, calculating a time interval, solving multi-step problems involving money and costs, using trial and improvement to solve equations.

The stronger areas simple probability, use of a calculator, operations with directed numbers, describing and interpreting a real life graph, simplifying expressions and solving simple equations, problem solving simple problems in a money context and representing and interpreting data on a two-way table. A calculator is allowed for this unit and the use of calculators was more evident in this session with only a very few attempting non- calculator methods for calculations. There were a few that lost marks in interpreting answers to money problems from a calculator display.

Comments on Individual Questions

For each question, please delete 'Question No. x' and format the numbering as in A501/01

Question No.1
This proved to an accessible starting question for most, but scoring full marks on the question proved difficult as there were a number of misconceptions shown. In part (a)(i), a common error was in giving an answer of 0.8 and not realising that the zero is essential for recording money answers. Other errors included giving an answer of 80p. Part (a)(ii) was well answered with no notable issues. In part (a)(iii), a common error was to find the square root of the sum of 4.41 and 7.
In part (b), the common error was to give an answer of 3 with candidates not realising that when rounding to one decimal place, recording the zero in the first decimal place is essential.

Question No.2
Most answered this question very well but for some, reading the demand of the question let them down, as a number showed the arrow for the green balloon at 2 divisions along the probability line rather than zero. Candidates must have read this as the blue arrow instead.

Question No.3
Part (a) tested simple conversion facts and a number of Candidates were successful here. The common errors were 135 g or 1.035 g in part (a)(i) and 4 cm in part (a)(ii) and these were quite frequent.
Part (b) proved more difficult and many candidates were unable to deal with the conversion between litres and millilitres successfully. A common incorrect answer was 4 spoons rather than 40 spoons.

Question No.4
Parts (a), (b) and (c) were very well done. The only occasional errors were in choosing -9 and -5 for part (b) and 5 rather than -5 for part (c). Part (d) proved more difficult and a number either omitted this part or used the same card twice and just used the positive integers available only.

Question No.5
Part (a)(i) was well answered with most giving the area as 6 but fewer also giving the correct units of cm^2 . Errors were usually in giving answers of 7 or 8 by miscounting the complete squares. Part (a)(ii) was less well answered and a common error was to give an answer of 10 cm from counting the diagonal line of the shape as 2 cm. Few appeared to realise that the diagonal length should be measured.
Part (b) was very well answered.
In part (c), almost all Candidates selected the final statement as correct but fewer selected the fourth statement concerning area being four times bigger as correct. A large number thought that the area of shape B was twice the area of shape A.

Question No.6
This was very well answered in parts (a) and (b) with few incorrect answers.
In part (c), most recognised that the sheer vertical drop on the graph at 1110 meant a sudden stop and gave appropriate answers such as 'Mark crashed' or 'he fell off' etc. A few did not recognise the sudden stop and said that 'he slowed down' which was not sufficient.

Question No.7
Part (a) was answered very well by many who recognised the most appropriate unit to use in each case. The most common errors were to put kilograms for the weight of an apple and a non-metric unit of miles for the distance between Leeds and Liverpool.
In part (b), there were only a few completely correct answers but many scored method marks for showing the calculation broken down into parts. The most common error was to assume that there were 12 gaps or 10 gaps of 20 cm between the steps of the ladder. Almost everyone correctly considered the 1 cm width of the steps and the two 15 cm gaps at the top and bottom of the ladder.

Question No.8
Part (a) was answered very well and many scored full marks. Part (a)(iii) caused the most difficulty with some giving their answer as 6*p*.
Part (b) was answered less well with the order of the multiplication by 2 and the power of 3 often done in reverse. A common error was to give 216 from $(2 \times 3)^3$.

Question No.9
This question was answered well generally. In part (a), testing the vocabulary of probability, almost all scored at least two marks with the majority scoring 3 of 4 marks. The most common error was to give the probability of a blackcurrant ice lolly as likely rather than evens.
Part (b) was also very well done and candidates interpreted the information given correctly to give one of the correct options available. A few gave 4 as the number of strawberry ice lollies left which was not possible as there were only 3 to begin with.

Question No.10
Almost all were able to interpret part (a) and read the bus timetable correctly to give an answer of 1507.
Most were also successful in both parts of (b) and gave correct answers.
Part (c) proved the most difficult. A number worked out the time interval correctly and then added the 15 minutes that it took Helen to walk from her house to the bus stop and then gave the correct answer including the correct units. Others worked out the time interval but did not add on the 15 minutes to the interval. A large number could not work out the time interval between 06:50 and 08:05 however, and answers such as 2 hours 45 minutes demonstrated a lack of understanding of time for some.

Question No.11
This question on simple fractions and costs in the context of hotel bookings was extremely well answered and the vast majority were able to score full marks. The only errors seen were either in being careless with the transfer of figures from one part of the working to another or in interpreting the fractions. Weaker candidates for example sometimes worked out the costs for 360 single bedrooms and 360 double bedrooms.

Question No.12
Most were able to complete the fractions calculations correctly. A few thought that a fraction answer was required for the second calculation even though only one box was provided.
Answers such as $\frac{2}{1}$ instead of 2 were accepted however.

Question No.13
Part (a), involving solving simple equations, was very well answered. A few made errors and gave answers of 7 for part (a)(i) and 3 for part (a)(iii) by not using the inverse operation.
There were mixed answers to part (b) despite the structure provided in the question. More able candidates had few difficulties and gave correct answers to both problems in part (b). Others did not understand the single bracket involved the product of two terms and gave for the first problem for example and answer of $2(x + 3) = 2x + 3$.

Question No.14
This question was answered well by many. In part (a), candidates knew what was required and could perform the appropriate calculations. Most opted to find the equivalent price of a number of tins which was usually 1 tin or 6 tins. Problems occurred in presenting answers for some where often the incorrect units (or no units) were given eg 0.45 or 0.45p. A number of candidates just found the cost of 4 single cans and 6 single cans and chose the option (6 cans) which gave the biggest difference.
In part (b), candidates usually gave a sensible reason for not choosing the best buy, focussing on him not having enough money or not wanting so many tins. The explanation was often not expressed well.

Question No.15
Part (a) proved very difficult for candidates. Presentation in QWC questions continues to be a concern. This is one place in the paper where setting out of an answer is important. Only a few arrived at the correct answer.
The main issue was associating the cost of the concrete with the volume of the cuboid base. Many added the dimensions or multiplied dimensions by £158. Those that attempted to find the volume often made an error in converting the dimension 18 cm to 0.18 m but then carried out the rest of the calculation correctly and gained partial marks.
Those that found the correct volume invariably went on to calculate the cost correctly and gained full marks.
In part (b)(i), many candidates were still not secure at using a calculator to find a percentage of an amount and adopted unnecessary written methods that often resulted in an incorrect answer. Most were able to gain the mark in (b)(ii) by adding their value from part (i) to £4500.
Part (c) was well answered by many candidates. Those who failed with this ignored the instruction to use 365 and used 360 (30 × 12) or 336 (4 × 7 ×12) days for 1 year.

Question No.16
Candidates had little trouble in completing this 2-way table in part (a). Very rarely did anyone make an arithmetic slip.
In part (b), the correct two values were usually taken from the table and written in an appropriate probability form. It is pleasing to see candidates only using a fraction, decimal or percentage to express a probability. Though not penalised, some went on to cancel their fraction incorrectly.

Part (c) was slightly less successful than part (b), but the correct probability was again often found.

Question No.17
In part (a), a correct fraction, and correct cancelling, was seen regularly. Some misread the question and found the fraction of the bag of sugar remaining. A small number had trouble with cancelling the fraction.
In part (b), very few knew the conversion factor between pounds and kilograms. Of those that did, some multiplied by it rather than dividing.

Question No.18
Not many candidates scored full marks on this question, often failing to account for painting both sides of the fence. Surprisingly the stumbling block for some was finding the area of the rectangle. Here, they opted to add the dimensions rather than multiply. Most knew that they had to divide their total area by 10 and round up to find the number of tins of paint required.

Question No.19
It was evident that candidates knew the required method of trial and improvement and many presented their findings well. Some made errors in substitution into the given equation. Very few gained the final mark for justifying their answer to one decimal place which required, for example, an intermediate value between such as 3.35 to be calculated. Candidates generally used their calculators appropriately and accurately.

Question No.20
In part (a), most completed the table correctly. A small number added the two given decimals incorrectly as 0.22. This should be checked with a calculator.
In part (b), there were many correct answers. A small number multiplied the two probabilities rather than adding them.
Part (c) caused problems. Candidates find expressing their ideas in words quite difficult. Some overlooked the requirement to comment on the number of counters and referred to the chance of picking the different colours. Stronger candidates answered clearly and concisely.

A503/02 Mathematics Unit C (Higher Tier)

General Comments

Candidates performed to a high standard on this paper with the majority scoring well. The paper gave everyone the opportunity to show what they knew and could do and the candidates responded positively to this.
Presentation continues to be good, though, where a structured answer is required, candidates should take more care to show clearly their method, with notes added to explain their approach. Calculators were used appropriately, accurately and efficiently. Candidates had sufficient time to complete the paper with very few questions not being attempted at all.

Comments on Individual Questions

For each question, please delete 'Question No. x' and format the numbering as in A501/01

Question No.1
Candidates had no trouble completing the 2-way table in part (a). Very rarely did anyone make an arithmetic slip.
In part (b), the correct two values were usually taken from the table and written in an appropriate probability form. It is pleasing to see candidates only using a fraction, decimal or percentage to express a probability. Though not penalised, some went on to cancel their fraction incorrectly.
Though part (c) was slightly less successful than part (b), the correct probability was again often found.

Question No.2
The drawings required in part (a) were done neatly and accurately. Few misinterpreted the shape.
Part (b) posed no problems to candidates.

Question No.3
The area was usually found correctly. The majority of candidates added the areas of a rectangle and triangle, though some used the formula for the area of a trapezium.

Question No.4
A correct fraction, and correct cancelling, was seen regularly in part (a). Some misread the question and found the fraction of the bag of sugar remaining. A small number had trouble with cancelling the fraction.
In part (b), very few knew the conversion factor. Of those that did, some multiplied by it rather than dividing.

Question No.5
Part (a) was answered well with just a few candidates not fully cancelling.
There were many correct answers to part (b). Candidates expanded the brackets and collected like terms correctly.

Question No.6
A common misconception was to think this question concerned direct proportion when in fact it was about inverse proportion. Often, an incorrect first step of $20 \div 18$ was seen instead of 20×18.

Question No.7
Most candidates correctly completed the probability table in part (a). A small number added the two given decimals incorrectly as 0.22. This should not happen with a calculator to hand. Again, in part (b), there were many correct answers. A small number multiplied the two probabilities rather than adding them.
Part (c) was well answered. However, some overlooked the requirement to comment on the number of counters and referred to the probability of picking the different colours. Better candidates answered clearly and concisely.

Question No.8
Some candidates failed to score full marks on this question, failing to account for painting both sides of the fence. Most knew that they had to divide their total area by 10 and round up to find the number of tins of paint required.

Question No.9
It was evident that candidates knew the required method and many presented their findings well. Some failed to gain the final mark for justifying their 1 dp answer. There were others that found the solution to more than one decimal place. Though often correct, this did not answer the question and also failed to gain the final mark. Candidates used their calculators appropriately and accurately.

Question No.10
Those who had encountered 3D coordinates before performed well on this question. It appeared that others had little or no knowledge of the subject; these struggled to score at all.

Question No.11
Candidates answered part (a) successfully, recalling the formula required and using it correctly.

Very few coped with the data in part (b). 'Correct to the nearest 2 mph' was treated as ± 2 mph instead of ± 1 mph. Consequently, few even considered the bounds for the speed camera. Some, however, did correctly find these to be 69.5 and 70.5.

Question No.12
It was well known in part (a) that the larger the number of trials, the greater the reliability of the estimate of the probability.

Though some candidates did see that the two sets of results could be combined to find the more reliable estimate of the probability, many just used the figures for Pat's spins.

Question No.13
Many arrived at the correct answer for the value of the car. Few used the compound formula for the repeated percentage change and opted for a year by year approach. It was common to see the amount the car decreased by as the answer rather than the value of the car after the decrease.

Question No.14
In part (a), most candidates correctly used either the ratio of corresponding sides in the two shapes or the ratio of adjacent sides in each individual shape as a first step. Less aware candidates falsely used the increase in length of the corresponding sides.

Surprisingly, some candidates are still unaware that the sizes of the angles in the shape do not change after an enlargement. Consequently, there were still some incorrect answers in part (b).

Question No.15
Multiplying out the brackets and collecting terms is a well-known technique, performed accurately by many candidates. Few used a grid method. There were some who added, instead of multiplying, when combining terms in the expansion.

Only better candidates knew what was required in part (b). Of these a small number gave -1 and 2½ as their answers, forgetting to reverse signs.

There was more success in part (c). Even then some struggled to find two numbers which multiplied to give -24 and added to give -2.

Question No.16
All candidates had little trouble completing the table of values. Substituting values into a formula and evaluating with a calculator proved to be successful.

Though plotting the points and joining them with a smooth curve was done accurately and well, some forgot the inverted U shape required and had the curve's peak at (2,14). Very few joined the points with straight lines.

Incorrect drawing of the curve led to many giving the maximum height of the ball as 14 metres in part (c).

Many sensibly extended their graph in part (d) to find the time from where the curve meets the horizontal axis.

Question No.17
Part (a) was invariably answered correctly.

Though all knew which was the bigger value, explaining how they knew this proved more of an issue. All had a valiant try and most succeeded in making their point. The most commonly used explanation involved the number of zeros after the decimal point.

Question No.18
There were many excellent attempts at this question. Most candidates found the surface area as a decimal and then divided by pi to create an answer which was a multiple of pi. Only the better candidates worked throughout the calculation with pi unevaluated, leading to a correct final form.

Question No.19
Candidates still have problems marshalling their thoughts and presenting their argument in a clear and concise way. Some preliminary planning should take place and then, with this crossed out, a final form can be committed as the answer.
There were some pleasing answers to this question, clearly set out and annotated. Spotting that the perimeters needed to be equal was an important first step, one that many did not see. Without this, their attempts floundered.

Question No.20
A large number of candidates recognised a question on conditional probability and presented a clear, succinct solution. Some forgot to reduce the total being chosen from after the first choice. A small number added probabilities instead of multiplying.

Question No.21
A ‘show that’ question requires the value given in the question to be found and not used as part of the solution.
Many failed to gain full marks here when they used the 1.5 cm and showed that the length of the stick was 10 cm correct to 1 decimal place. Others had partially correct work, recognising the need for Pythagoras’ Theorem to be used but, after finding the length of the diagonal of the base of the cuboid, had little idea of how to continue.

Question No.22
There were some good attempts at part (a). Values were substituted correctly and the ensuing equations solved to find the values of a and b. Some were unaware of the algebraic approach and tried a trial and improvement method of solution. This was sometimes successful.

After a correct answer in part (a), part (b) was invariably correct.

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