Examiner's Report

Q1.

Most students found this question straightforward and scored full marks.
Occasionally students did not plot the extra point in response to part (a) but it was plotted accurately by the vast majority of students.
The relationship was clearly described in part (b) though a small minority of students stated that "as the weather gets hotter more hot drinks are sold". Lines of best fit were generally well drawn. Only a small number of students attempted to draw a curve of best fit where a straight line was required.
The estimates given in part (d) were well judged and most students who drew poor lines of best fit were able to show their method and scored the mark available here.

Q2.

Many students could successfully describe the relationship between the hand length and the foot length, either by commenting on the greater the length of the foot, the greater the hand length or vice versa. Many scored the mark for stating 'positive correlation', sometimes together with a correct statement. However, there were many students who just wrote that the relationship was positive rather than writing 'positive correlation' thereby scoring no marks in (a). Part (b) was very well answered. Most students correctly estimated Toby's foot length between 24 and 25 inclusive, often without drawing a line of best fit.

Q3.

This question was also well answered. The majority of candidates were able to produce an ordered stem and leaf diagram, occasionally there was an error or omission but the understanding was clear. Providing a key was less consistent. Candidates should be encouraged to always provide a key as this is an independent mark which can be awarded even if the diagram has multiple mistakes.

Q4.

This was generally well done with the majority of students getting full marks. The main error was the absence of a key (or an inappropriate key), whilst some failed to provide a stem and leaf diagram that was ordered.

Q5.

Part (a) of this question was poorly attempted. About one third of candidates gained all four marks. Many candidates attempts were blighted by the inability to find the midpoint of each of the intervals in the table. It was common to see these recorded as 5, 13, 18 and 28. Some candidates used the lengths of the intervals, 10, 5, 5 and 15 to represent the weights of the suitcases. Other lower attaining candidates merely carried out the calculation "50 ÷ 4" or summed their midpoints and divided by 4. About one in every ten candidates gave a correct answer in part (b). Few candidates identified the need to use multiplication and there were many instances of fractions appearing on the answer line, most commonly $\frac{6}{50}$ or equivalent, without any working shown.

Q6.

Part (a) was well answered by most but a few wrote $5 < a \le 10$ and $10 < a \le 15$ seeing these as the two middle intervals in the table. It was surprising to find how many students did not know how to calculate the mean from a grouped frequency table. It was not uncommon to see $437.5 \div 4$ rather than by $437.5 \div 35$ or $(5 + 10 + 15 + 20) \div 4$ or even the sum of the mid interval values divided by 4.

Q7.

The mode was not understood by many, with an almost random array of answers from any of those shown either as a frequency or as the number of badges. In contrast in part (b) there were many attempts to calculate fx from the table. Unfortunately many solutions were spoilt when the divisor used was either 6 or 15, rather than the correct 25. It was disappointing to find Higher level candidates who thought that 0×2 was 2.

In part (c) there were very few correct answers. Although some realised they had to find the total number of older girls by calculating 15×4.4, even these failed to realise what to do with the result of this calculation.

Q8.

For part (a), some fully correct answers were seen whilst some students just plotted the frequency without considering frequency density. A few scale issues were seen with students starting at 0.2 instead of 0 or using 0.3 for every 2 cm. A few missed the width of the last interval and plotted 70 to 80 instead of 70 to 85

In part (b), there were fully correct answers or answers arriving at 19.1. The ability to split the rectangles was seen but not the ability to arrive at a total. Those trying to count squares generally made little headway in this part of this question. Some students did arrive at 19.1 but failed to round to a whole number of eggs. A common error was to average 20 and 17 and give 18.5 as the final answer.

Q9.

This question was not done well with most candidates gaining either 3 marks or 0 marks. Few candidates realised that they needed to use the 100° given in the pie chart to calculate the amount raised in Year 7. Most candidates only used the numbers in the table. A common incorrect answer here was (£)193.75. Although not penalised, candidates should be advised to take greater care with the use of money notation. Answers such as £137.5, 137.50 and 137.5, were very common.

Q10.

Students almost always scored both the marks available in part (a) of this question, though there were some students who merely gave the sum of the three probabilities (0.8) as their answer.

Part (b) was not completed quite as well as part (a). Common incorrect working seen included 0.20×50 and 0.25×50. It would appear that some students had used their answer to part (a) not realizing that yellow was the colour focussed on here.

Q11.

This was a well answered question. Nearly all students recognised that deduction from 100 was needed, and most also associated this with the need to divide by 3 to find the value of *x*. However, a very common error was 0.15÷3=0.5

In part (b) there were many correct answers. A few wrote their answer incorrectly as a probability, and a few chose to use a colour other than red.

Q12.

This question is becoming more familiar to candidates and many were able to draw a two way table. They usually highlighted the required answer and so gained full marks. In this question it was fairly easy to get to the correct answer quickly without the need of a full table, a good proportion of candidates took the quicker option and again gained full marks.

Q13.

98% of candidates were able to identify at least one of the aspects that were wrong in part (a), although the literacy of the answers was quite poor. Some lost marks due to the difficulty in expressing themselves clearly, and generalised statements such as 'biased' and 'leading question' were too vague to be awarded a mark. Those that spotted 'there was no other box' or 'what if someone doesn't use the internet' were allowed the mark for realising that the responses were not exhaustive. There were a pleasing number of candidates that managed to mention all three of the aspects.

In part (b), many candidates managed to correct the original question by providing a time frame to gain the mark for the 1st aspect. As commercial questionnaires do not contain inequalities, those that chose to use inequalities in the response boxes lost the mark for the 2nd aspect. Tally charts also did not gain a mark for the 2nd aspect, although few of these were seen. There were still a number of overlapping response boxes but as long as these were exhaustive they gained a mark.

Q14.

Part (a) was answered well, with many candidates pointing out the overlapping intervals under the response boxes. One or two pointed out that asking a person's age could be argued to be intrusive. This was given a mark. The other mark was harder to earn and many candidates did not see the issue of question 2 being a leading question.

Part (b) asked candidates to produce a question about fruit consumption of their own to ask . Many did a good job on this with a time frame in the question and no overlapping intervals with the response boxes. Some candidates asked how often fruit was consumed and this was felt not to be worth a mark.

Part (c) was a standard stratified sample question and many candidates did the correct calculation and rounded of their answer to get 7.

Q15.

Only a small proportion of candidates constructed and used a two-way table to solve the problem posed by this question. These candidates were nearly always successful. Again, some candidates could solve the problem quickly and easily. However, most candidates' solutions seemed to consist of calculations scattered around the working space. A generous mark scheme allowed examiners to award credit to candidates who made limited progress towards a correct solution. A small proportion of candidates simply added up 28, 36, 20 and 15 and subtracted their answer from 120. Over a half of all candidates scored full marks whilst most other candidates scored at least one mark for their responses.

Q16.

There was a lot of information to be processed in this question. Those candidates who used a suitable two- way table were much more successful than those who tried to reason it out. The most common successful approach was to set up a two way table with rows labelled 'Swim' and 'Not Swim' and with columns labelled 'Year 4' Year 5' and 'Year 6'. Candidates could then work through the given information and put it in the correct cells in the table to produce a table like one in the diagram.

	Y4	Y5	Y6	Tot
S		21	18	
NS	11			37
Tot			30	96

The table was a huge aid in organising the data, so that the remaining cells could be filled in easily and the correct values picked out. Even so, some candidates managed to put at least one given value (usually the 18) in the wrong cell. A few candidates who did adopt this approach then put the wrong number down on the answer line so losing a mark.

Q17.

Candidates who had a good understanding of stratified sampling found this question straightforward. However, it was not a straight forward application of the process and many different incorrect methods and answers were seen. A significant proportion of candidates worked out the number of people from Irton that would be in a sample of total size 50 if the sample was stratified by village population. Some candidates did not give an integer answer. Thirty seven per cent of candidates gained full marks.

Q18.

A small proportion of students answered this question apparently without hesitation and a few of these students gave a concise clear assumption. However, for most students the working space contained many calculations few of which were relevant to a correct solution.

Q19.

A well answered question, the only error in processing the three key numbers incorrectly.

Q20.

This question was quite well answered but there were many students who changed $\frac{1}{3}$ to 30% and worked out 30% of 120 instead of $\frac{1}{3}$ of 120. These students were only able to gain at most one mark for their answers. A significant number of students successfully worked out 20% of 120, subtracted their answer from 120 but then worked out $\frac{1}{3}$ of 96 instead of $\frac{1}{3}$ of 120. This usually led to an incorrect final answer of 64 and the award of one mark. Relatively few students used the method of working in fractions, converting 20% to $\frac{1}{5}$ then adding this to $\frac{1}{3}$ before calculating $\frac{8}{15}$ or $\frac{7}{15}$ of 120. Similarly, only a small number of students worked entirely in percentages or in decimals.

Q21.

Candidates attempted this question in a variety of ways, although most found the cost per gram or the number of grams per 1p (or £1). A significant number of candidates misinterpreted their own calculations, giving 'medium' or 'large' as the best value when the evidence clearly indicated 'small'. Those who calculated the number of grams per 1p, for example, often concluded incorrectly that the medium bottle was best because they thought that the smallest number represented the best value. The other common error was for candidates to use 88, 1.95 and 3.99 as the monetary units in their calculations (i.e. one in pence and two in pounds) which meant that they only had comparative figures for two bottles. Numerous other approaches were seen. Often candidates spotted they could use 1710 g as a comparable amount for the small and medium bottles, but then did not know how to make a comparison with the large bottle containing 1500 g. However, many were successful in their alternative approaches – fully correct solutions were seen for comparing 1500 g, 570 g, 342 g, 1710 g, 3000 g and 200 g.

Q22.

Candidates' solutions to this question were generally very good indeed. A variety of approaches were employed usually leading to three results which could be compared. The wrong size of tube was often selected however dependent upon the method chosen. Many candidates had not established whether they were finding ml/p or p/ml and so often made the wrong conclusion. For example, with answers of 39.10..ml/£ (70ml), 36.36..ml/£ (100ml) and 37.59..ml/£ (150ml), the 100ml tube was selected with 36.36...being the lowest value.

Q23.

This question was well attempted by most students. It was rare to see incorrect responses but the most common incorrect response was an answer of 20 tickets from 240 ÷ 1.2 = 200, 200 ÷ 10 = 20. Nearly all students realised that 28.8 meant that you could only buy 28 tickets and an answer of 29 was very rare.

Q24.

Many students did not read or fully comprehend the information given in this question. Some read 150 grams as the weight of a half of the hosepipe, many multiplied 20 by a half instead of dividing. A significant number forgot to add on the weight of the reel and left an answer of 6000g or 6kg. Some students did make mistakes in the addition of the 1.4, suggesting perhaps that a number did not have a calculator. Some students wrote their final answer as 7400kg and failed to gain full marks.

Q25.

A good proportion of students found this "best buy" question straightforward and scored full marks. The approach taken was usually either to calculate the number of matches bought for each penny or the cost per match. Some students then misinterpreted their answers and, for example, having worked out the number of matches for each penny, stated that the small box was best value. A significant number of students did not use common units and used 23, 72 and 4.16 as the three costs rather than 23, 72 and 416 or 0.23, 0.72 and 4.16

Q26.

The most efficient method of working out the final amount is to apply the compound interest formula. Candidates who did this were generally awarded full marks. There was an unfortunate error of thinking that the multiplier was 1.35 rather than1.035 that was not infrequent.

Some candidates who calculated interest year by year and added it on did get full marks but they were likely to pick up rounding errors on the way.

Many candidates do not understand the concept of compound interest and simply did 3 times £42.

Q27.

Many students correctly calculated 4.5% and then either added up lots of £13.50 or divided £50 by 13.50 to gain full marks but the large proportion did not read that the question stated 'simple interest' and, having used using compound interest instead, only gained one method mark. It was rare to see computational errors on this question.

Q28.

This was an accessible question for most candidates. It allowed candidates a positive start to the paper. A variety of approaches were used with many pupils choosing to build up the ingredients by doubling, halving and then adding their results together.
Those candidates who failed to score full marks either made an arithmetical error and scored B2, or lost track of their multiples and calculated quantities for an alternative number of scones.

Q29.

This appeared to be a very good first question as nearly all candidates achieved the correct answer and it was pleasing to see that most displayed a good method. The majority divided 7.80 by 6 to find the cost of one cup and multiplied the result by 10. There was also some successful use of partitioning, e.g. dividing by 3 to get the price of 2 cups and then adding twice this value to £7.80. Some candidates failed to calculate 7.80 ÷ 6 correctly, choosing to do this without a calculator, and some worked out 1.30 × 10 as 10.30. Incorrect answers were often the result of candidates working out the cost of a wrong number of cups.

Q30.

Parts (a) and (b) were well answered by most students.
In part (a) the most common method was to say 10 biscuits needed 60g so 20 biscuits needed 120g of sugar. Many different methods were used in part (b) with many incomplete methods such as giving an answer of 2.5 from 1000÷400 . Recognising there were 1000g in a kg did not prove to be a problem for the students.

Q31.

Part (a) was answered accurately even though rounding was poor. As long as the correct decimal was shown, full marks were gained. A significant minority showed no interim calculation and only wrote 0.88 on the answer line, so they failed to score any marks.

Part (b) rarely attracted any marks, since candidates multiplied by 100^2 or just 1000, or performed a division.

Q32.

In part (a) many candidates did not know the meaning of the word 'reciprocal'. A variety of incorrect answers were seen with the most common being 25.

Part (b) was poorly answered. The most common incorrect answers were −9 and 0.03. Some candidates with the right idea failed to evaluate 3^{-2} and gave the answer as $\frac{1}{3^2}$

In part (c) Many candidates were able to gain one mark for evaluating $9\times10^4 \times 3 \times 10^3$ as 270 000 000 or as 27×10^7. The difficulty for many was changing their answer to standard form. Many thought 27×10^7 was in standard form and failed to do the final step. Candidates who first converted the numbers in the question to ordinary numbers often ended up with too many or too few zeros. Some evaluated 9×3 incorrectly.

Q33.

Less than half the candidates were able to score full marks on this question. A common error here was to round 0.51 to 1 rather than 0.5. Some candidates rounded 89.3 to 89. This was condoned on this paper but candidates should be advised to find estimates for calculations by rounding each number in the calculation to 1 significant figure. A surprising number of candidates attempted to do this question by long hand calculations.

Q34.

A significant majority of students scored 1 mark, usually for showing that angle *CBD* =55, this was often correctly placed on the diagram. They then progressed to finding angle *CDB* = 95 but from here were not always able to make the final step to obtain the answer of x = 95. Often reasons were not even attempted by candidates, where they were they were often lacking in the required vocabulary, just stating "parallel lines" is not sufficient or some students believed that angles *EDB* and *CBD* were alternate angles because of the "Z" shape that was created; the same with angles *CDB* and *ABD*. Very few candidates knew the angle facts for corresponding or co-interior angles. On the whole the structure of the working was poor and candidates should be encouraged to annotate the diagram with all the angles they find and give the reasons they use; inevitably there were those who just listed all the reasons they knew in the hope that something would score a mark. This is not an acceptable approach, only valid reasons should be given.

Q35.

Where candidates calculated the correct exterior angle, the correct answer usually followed although 360 ÷ 40 = 8 was quite common. Some candidates added that the shape was a nonagon. Many candidates chose the less efficient and more error prone strategy of listing multiples of 140 to compare with a list of the multiples of 180. Some did not appreciate that only part of a regular polygon was shown and instead drew horizontal and/or vertical lines to close the shape and form a trapezium or hexagon.

Q36.

The greater number of students gained at least one mark in this question for identifying a correct angle, usually angle *FED* = 56° or angle *AEB* = 70°. Many progressed to correctly find the angle *x*. Full marks were not as common as many students still fail to give acceptable forms for their reasoning. Confusion between alternate and corresponding angles and/or a failure to write "**vertically** opposite angles are equal", were the major causes for the loss of the loss of communication marks. Centres need to make it clear to students that 'alternative' angles does not gain credit when used instead of alternate angles.

Q37.

Most students approached this question by adding 9 minutes many times to 6.45 and then adding 12 minutes to 6.45. There were some arithmetic errors found when using this approach. Those that were able to do this accurately tended to get the correct answer of 7.21 am. Some students approached this by trying to find the LCM of 9 and 12 but many of these who found the LCM was 36 then failed to add this on to 6.45 am.

Q38.

This question on Lowest Common Multiples was generally well answered though many students did let themselves down due to making slips in simple calculations. Almost all students chose to list the multiples rather than work with factors.

Q39.

Part (a) was done quite well. Many students were able to write 180 as a product of prime factors- the use of factor trees being by far the most popular approach. Here, as elsewhere, basic arithmetic was an issue for some students, eg 180 written as 2 × 60 or as 8 × 20. A common incorrect answer was to write the prime factors as a list of prime factors rather than as a product of prime factors.

Part (b) was not done so well, though many students were able to get 1 mark for writing two numbers with one of the two required properties, ie as having an HCF of 6 or as having a LCM a multiple of 15. Popular incorrect answers, scoring 1 mark, were 30, 60 and 3, 5.

Q40.

Some candidates attempted this question with a diagram, either a sketch or scaled. In very few cases did this approach help them, since there was clearly little understanding of bearings as drawn clockwise from a north line. It was also common to see reflex angles drawn as obtuse, and vice versa. The most common incorrect answer was 310°, from 360° – 50°. Other common errors involved confusion of the relative location of the ship and the lighthouse.

Overall, this was a poorly answered question showing bearings as a general weakness.

Q41.

There were very few correct answers in part (a). Many students gave answers of 330° or 30° without working. Working accompanying 30° came from 360°- 330°. Very few students drew a diagram; those who did often left out one of the north lines.

In part (b) many students tried to break down the distance and speed obtaining 1 hour for 120 miles and trying to find the time needed for the remaining 80 miles. Unfortunately this method was often unsuccessful due to arithmetic errors. One mark was awarded for 200 ÷ 120 but this often resulted in an incorrect decimal (eg 1.8) which was converted incorrectly. However some marks were available when time conversions were done correctly. Some students tried to use the speed, distance and time formula but used 10 as the time. This often resulted in (10 × 120) ÷ 200. Another common error was to calculate 200 × 120. A small number of students spoiled an otherwise correct response by failing to give an actual time of arrival, giving instead the duration.

Q42.

Students who brought a pair of compasses and used it within this question were usually at least partially successful. A surprising number drew intersecting arcs but did not join them with a straight line, possibly because they had half remembered the method or more prosaically did not have a ruler. Some students used arcs which were centred on each end of the line and they found that the intersections took place an uncomfortable long way up the page. Many used just one set of arcs, possibly thinking of the equilateral triangle construction and many drew arcs which just touched at the midpoint of the given line.

Q43.

About two thirds of all students entered for this paper were able to score some credit for their responses to this question. About a third of students provided a fully correct response and a further third of students scored part marks for at least one correct boundary. A common error was to replace what should have been an arc with a vertical line.

Q44.

For this QWC question a full method and justification was required. Apart from some who used the area formula, most candidates knew what to do and marks were often lost due to a lack of communication rather than a lack of understanding. The main issues were not showing full working for finding the circumference of the circle and not fully justifying why 4 rolls of plastic strip were required. It was quite common for candidates to jump from a circumference of 7.5 to an answer of 4 rolls.

Q45.

A good number of candidates were able to collect two marks here. Where candidates obtained one mark this was often due to giving translation as the transformation, but then describing the movement rather than giving the vector, giving an incorrect vector or writing the vector incorrectly as a coordinate. Common errors with the vector were incorrect signs on the two elements and transposition of the two numbers. It was pleasing to see that a relatively small number of candidates described a completely incorrect transformation, however there were a significant number who gave more than one transformation, despite the instruction in the question, and therefore lost marks.

Q46.

It was a surprise to see this plan question cause so many problems. More than 80% of students scored zero, and most of these attempted a 3D drawing rather than a 2D plan.

Q47.

Many candidates drew a net rather than a plan in part (a) and gained no marks. The fact that nets were so common suggests that candidates were not as familiar with the topic of plans and elevation as they should have been. When a rectangular plan was drawn, it was not uncommon for at least one dimension to be wrong.

Candidates were more successful in part (b) with many able to draw a correct sketch of the prism. Some candidates attempted to display more faces than could be seen from any one angle, thus distorting the sketch. Triangular prisms and pentagonal prisms were quite common among the responses awarded no marks.

Q48.

From this point in the paper there were an increasing number of non-attempts. In this question it was only a minority who made an attempt, and usually no marks were gained because of an inability to square both sides to remove the square root sign as the first step in processing.

Q49.

Students usually either scored full marks for a fully correct answer or no marks because they were not able to identify and carry out a correct first operation. It is disappointing to report that the latter was more common.

Q50.

Approximately two thirds of candidates gave the correct answer to part (a) of this question. Where a candidate's response was not correct, this was usually due to the presence of "-3" or "$-3x$". In part (b) almost 70% of candidates were able to identify at least one factor of $2x^2 - 4x$. However many attempts showed only partial factorisation or a lack of care and less than a half of candidates scored full marks.

Candidates are reminded that their answers may be checked by multiplying out the brackets. Fully correct answers to part (c) of this question were quite rare. 14% of candidates scored 2 marks here with a further 4% of candidates scoring 1 mark for a correct expansion of $-3(x + 2)$ followed by an incorrect final answer. It is disappointing to report that many candidates did not appreciate the need to expand the brackets first. Many answers of "$8x + 16$" were seen.

Many candidates expanded the expression in the same way as they would for a quadratic expression, writing down 4 terms from an expansion of $(11 - 3)(x + 2)$ before collecting like terms. Those who did attempt to expand $-3(x + 2)$ first, often gave "$-3x + 6$" as their expansion. Expansion of the quadratic expression in part (d) was done more successfully, though there were many errors in signs and in evaluating 6 multiplied by 7. Some candidates tried to combine terms in "x" with terms in "x^2". About two fifths of candidates scored 2 marks for this part of the question and a further one quarter of candidates scored 1 mark for a partially correct expansion.

Q51.

Multiplying the first term in the bracket only and leaving the second unchanged, ie $3x + 2$, was the most common incorrect answer and $3x + 5$ was often seen. A few did not score the final accuracy mark by continuing to 'simplify' their final answer, writing $3x + 6 = 9x$. Very few answers reflected no understanding of the algebra involved.

In part (b) most students found some common factors and divided well. Candidates need to ensure that they find the highest common factor, particularly for the number part of each term. They need to look at the terms left in the bracket to see if anything is still a factor. Candidates should be encouraged to check their answer by expanding as answers such as $6xy(2x^2 – 3xy)$ were occasionally seen.

In part (c) This question was well answered with a majority of candidates familiar with the need to find four terms and many also correctly dealing with the signs and simplification of the answer. 43% of candidates could expand and simplify correctly with a further 24% able to provide 4 correct terms (ignoring the signs) or 3 correct terms with the correct signs. The most common errors were incorrect signs, incorrect product of $2x$ and x, an incorrect simplification of $–3x + 8x$ or a constant term of +1

In part (d) it was pleasing to see that nearly 60% of the candidates obtained the correct answer with a further 12% scoring one mark for obtaining 2 correct parts of the expression $10x^7y^5$. The most common error was to add the coefficients with $7\ x^7y^5$ frequently seen. Others left multiplication signs in their answer or occasionally an addition sign.

Q52.

Part (a) was done well. Most candidates were able to extract at least one of the factors of the given expression, but a surprising number of candidates omitted to include the right hand bracket of the linear factor. In part (b), most candidates were able to expand the brackets to obtain 4 correct terms which most were then able to simplify correctly. Expansion of the constant term was an obstacle for some candidates. Common errors here were +2, −45 and −12. A popular incorrect answer involving the simplification of the term in x was $x^2 - 2x - 35$.

In part (c), the majority of candidates were able score at least 1 mark for simplifying the algebraic fraction. A popular form for the answer was $2m^{-2}t^4$, ie not expressed as a fraction.

In part (d), the majority of candidates were able to use the difference of two squares to factorise the quadratic expression. Common incorrect answers here were $y(y - 16)$, $(y - 4)^2$, $(y - 8)(y - 8)$ and $(y - 8)(y + 2)$. In part (e), most candidates were able to use the laws of indices to simplify the given expression. A common incorrect answer here was h^{-1}.

Q53.

This was usually well answered, though many lost a mark by failing to use a trial between 4.41 and 4.5 (to a 2nd decimal place) or in failing to give their answer to 1 decimal place as required.

Q54.

Many students scored well in this question, particularly in part (b). There were some clear and concise derivations of the equation in part (a) but this was not generally the case and for many students, this part of the question exposed a weakness in algebra.
In part (b) nearly all students substituted suitable values into the equation and in a logical order to find an approximate solution to the equation. The most common loss of marks was either because a student did not give their final answer correct to 1 decimal place or because they wrongly rounded their answer to 3.4 instead of 3.5

Q55.

Most candidates were able to find the correct solution of $x = 3.3$. The most common error was to evaluate at $x = 3.2$ and at $x = 3.3$ and then state the answer as 3.3. Good candidates also tested at $x = 3.25$ and then made the correct decision between 3.2 and 3.3. Virtually all candidates were able to evaluate correctly the left hand side of the cubic equation for at least two or three values of x.

Q56.

Many correct straight line graphs were seen, usually by candidates working out the coordinates of 5 points (3 for the more able) and often by applying $y = mx + c$. Although candidates using the latter method often misread the scale and just counted one square across and two squares up to get their gradient of 2. Candidates lost marks if they did not fully draw their line from $(-2,-7)$ to $(2, 1)$. Weaker candidates, drawing tables of values, often made arithmetic errors in their calculations, particularly with the negative x values. For example: $6.5 - 2.8 = 3.7$ or calculating $\frac{1}{5}$ or $\frac{1}{3}$ of 60.

Q57.

Many students taking this paper found part (a) of this question to be straightforward. Common errors included a confusion between the signs $\leq$ and $<$. Some students scored 1 mark because they omitted one of the values required or they included one extra value.

In part (b) of the question a large proportion of students were able to identify $x = 3$ as the critical value but far fewer were able to give the correct inequality, $x > 3$, as their final answer. It was interesting to see that many students gave their (correct) final answer in the form $3 < x$ rather than $x > 3$.

Q58.

This question also offered full marks to most. In part (a), some candidates failed to include the 0, or added -4 or 2 to their list of numbers. In part (b), weaker candidates often interchanged the signs. Some candidates offered a list of integers perhaps not recognising the change in requirement from part (a) to part (b). Not all candidates included a variable with their inequalities.

Q59.

There were many successful answers in part (a). But in part (b) students frequently chose the wrong inequality sign, or used an equals sign instead. Those who could see the relationship between the numbers in part (c) just wrote down the correct answer; others merely wrote out the sequence for one of the series, or included all possible numbers from either series.

Q60.

The standard Pythagoras question in part (a) was well answered by most candidates. Errors were sometimes made in the calculations and some candidates who tried to apply Pythagoras could not do so correctly.

Part (b) was answered less well. Most of the candidates who correctly identified cos $x = \frac{7}{18}$ went on to give the correct answer but some lost the final accuracy mark by rounding prematurely. Some candidates worked out the correct answer by finding the length of *LM* using Pythagoras and then using either the sine rule or cosine rule to find the angle marked x, but many who started this method were unsuccessful. A small number used sine instead of cosine to obtain an incorrect answer of 22.9°.