



Pearson
Edexcel

Examiners' Report
Principal Examiner Feedback

Summer 2024

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 1F

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Summer 2024

Publications Code 1MA1_1F_2406_ER

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GCSE (9 – 1) Mathematics – 1MA1

Principal Examiner Feedback – Foundation Paper 1

Introduction

This paper provided students with the opportunity to demonstrate their ability across the grades. Plenty of success was seen in the early part of the paper and most questions were attempted by the majority of candidates.

Challenges arose when questions contained a context, particularly where candidates needed to extract the key pieces of information followed by determining and applying the correct mathematical processes. Candidates also found questions with multiple stages in their working challenging. Despite this, good amounts of working out were often seen which certainly helped students, especially those which had arithmetic errors as part of their solution.

For those questions requiring a written conclusion, most responses did have some sort of decision showing that students are well-accustomed to this sort of demand in a question.

Areas of the specification that need to be improved upon are highlighted in the list at the end of this report.

Report on individual questions

Question 1

Candidates were generally able to write 18475 to the nearest thousand correctly. Common errors were giving the answer 19000, rounding to the nearest 10000 (answer 20000) or loss of the place value with an answer of 1800. Some candidates incorrectly gave an answer of 8000 as rounded to the nearest 1000.

Question 2

The vast majority of candidates were able to write 0.3 as a percentage. Where incorrect answers were seen the most common was 3%, although a few gave an answer of $\frac{3}{10}$.

Question 3

Candidates found this question more challenging than many of the other early ones on the paper. Common incorrect answers included the other classifications of angle type – acute and obtuse.

Question 4

This question was answered well by candidates, with most being able to place the decimal values given in ascending order. Some candidates placed 0s in the hundredths column of the 0.2 and 0.1 to assist them in ordering the values, this was generally a successful strategy. Where incorrect answers were seen these were sometimes the result of ignoring the decimal point and the relative place value of the values leading to an answer of 0.1, 0.2, 0.03, 0.16, 0.21 or similar. Another common incorrect ordering was 0.03, 0.1, 0.2, 0.16, 0.21 which may have been the result of partial understanding of place value.

Question 5

Candidates were generally able to find the square root of 64 as was required in this question. Common incorrect answers were 32 (from $64 \div 2$) or 4 (the cube root).

Question 6

A well answered question with many candidates able to correctly find that £1.50 was the cost of a single can of soup. It was also common to see slips in arithmetic in what was otherwise a correct process, candidates who showed their working clearly benefitted here as marks could still be awarded even when errors in evaluation were seen. An answer of £2.40 was relatively common, this came from candidates neglecting to take off the change from the £10 that they started with, but otherwise working correctly.

Where candidates did not have a full correct process, they were often able to gain credit for subtracting the change ($10 - 1.80$) or for a process to find the total cost of the 4 cakes (4×1.30). It was common to see just one cake being subtracted from the £10 rather than four. Where candidates reached the cost of the two cakes, it was common for candidates to miss the last step of the process leaving an answer of £3.

Question 7

In this question candidates were provided with some data and asked to draw a suitable diagram or chart for the information. A variety of different diagrams and charts were presented by candidates, the most common being a bar chart, compound bar chart or dual/comparative bar chart. Frequency polygons and pictograms were also alternative choices. A majority of candidates gave a key or suitable labels for Lena and Pavel, however candidates should be reminded that they should not use colour for differentiating between two lines or bars as scripts are marked in grey scale.

Where candidates opted to draw bar chart(s) these generally included the key or labels for Lena and Pavel, suitable labels for days and often correctly showed data for at least one person or for two days. Common errors included scales that were not linear, scales that did not label grid lines and instead labelled the grid squares, or a lack of scale but the majority of

candidates were not awarded the final mark due to failing to label the vertical axis. A number of candidates also did not start their linear scale from 0 which prevented the award of the C mark. A small proportion of candidates opted to add the data for Lena and Pavel and draw a chart for the total number of hours worked on each of the four days, as this lost some of the initial detail in the given information, only partial marks were available for the labels for days or linear scale and where the total hours per day were all correctly represented on the graph. Some superimposed one bar onto another, possibly in an attempt to draw a composite bar chart, so it was impossible to see unambiguously correct bars.

Frequency polygons were the next most common chart type after bar charts. Candidates generally had a key for Lena and Pavel, labels for days or a linear scale and showed at least 1 person or 2 days correctly on these.

A minority of candidates drew scatter graphs which were somewhat suitable given the bivariate nature of the data, but not entirely so given the small number of data points. These candidates were able to gain credit for their scale, labels for Lena and Pavel, and for plotting of the data for at least one person or 2 days correctly.

Some candidates attempted to draw pie charts, but found this challenging given the values involved and the non-calculator nature of the paper, often losing accuracy in their calculations and subsequent measurement of angles. This led to marks generally only being awarded for the labels for Lena and Pavel and/or those for the days.

Some candidates opted to draw a tally chart which was a step back from the data as presented in the question and so did not get credit. Other diagrams that were not suitable included redrawing the table as provided in the question or with the total hours worked per day, and Venn diagrams where several aspects of the initial information were lost.

Question 8

In part (i), the majority of candidates were able to work accurately with the sum of angles around a point to find the missing angle of 50° . Where incorrect answers were seen this was only rarely due to errors in arithmetic. A minority of candidates had an incorrect method, either working with an incorrect angle fact, for example working with 380 or 180 rather than 360, or combining the angles in an incorrect calculation, for example $220 - 90$. A minority of candidates measured the angle as printed on the question paper rather than attempting a calculation.

In part (ii) candidates were asked to give a reason for their answer. This was less well answered than part (i). Although there were a significant number of candidates who were able to indicate that the angles at a point add to 360° or that a full turn adds to 360° , there were many candidates who referenced angles in a circle or omitted the word “point” in their description, which was not an acceptable reason. Other candidates gave an angle fact not related to their working, for example angles on a straight line add to 180° or restated their calculation steps from (i). Candidates need to be aware of the difference between a mathematical reason and an explanation of their working.

Question 9

In part (a) the majority of candidates were able to correctly calculate the output of the number machine for an input of 16. Incorrect answers, where seen, tended to be the result of an arithmetic error, for example $26 - 10$ incorrectly evaluated as 6, or from working with only part of the number machine leading to answers of 26 or 3.

Part (b) of the question was also well answered. Where candidates did not correctly find the input which would give an output of 28, they were often able to gain partial credit for a start to a method to use inverse operations, often by working out $28 + 10$. The most common incorrect answers were 46 or 9 which came from the result of using an input of 28 rather than using this as the output or from subtracting 10 from 28 and then dividing by 2.

Where candidates knew to add 10 and then divide by 2, dividing 38 by 2 proved problematic. There were many instances of students performing the inverse operations correctly, getting the answer 19 then writing a different number on the answer line. Other candidates obtained an incorrect answer of 36 by calculating $(28 - 10) \times 2$, therefore only partially using inverse operations. Many candidates found it useful using the number machine to write their workings, helping them to answer the questions step by step.

In the final part of this question students were asked to show that there is a number for which the output of the number machine was the same as the input. Many candidates were able to correctly identify 10 as this number and the majority showed that this was the case either by indicating that $10 \times 2 = 20$ and $20 - 10 = 10$ or by showing the number machine with an input of 10 and an output of 10. Where candidates did not show that an input of 10 gave an output of 10, they were often able to gain partial credit for identifying that 10 was the value which met the requirements of the question without showing that this input gave a matching output or for a correctly evaluated trial. Partial credit was also available for candidates who had made a correct trial of a number different to 10. The most common incorrect answers seen were where candidates changed the number machine used in order to make their input and output match, often by changing the amount subtracted.

Question 10

This question differentiated well between candidates. A significant proportion were able to correctly write the ratio of the number of cows to the number of sheep in its simplest form as was required. There were also many candidates who were able to write down a correct initial ratio of 24:36 but did not successfully write this in its simplest form often due to incomplete simplification leading to answers of 12:18, 8:12, 4:6 or commonly 6:9. Some candidates struggled to simplify their initial correct ratio either due to errors in the process of simplifying (not dividing by the same amount on each side) or errors in arithmetic when attempting to simplify. It was uncommon to see answers of 3:2 or 1.5:1. Where incorrect answers were seen these often demonstrated a lack of understanding of the requirement for a ratio with fractions being the most common error, but attempts at the total numbers of animals was also seen.

Question 11

In part (a) candidates were asked to calculate $-12 \div -4$. The majority of candidates were able to find the correct answer of 3, but there were also a significant proportion of candidates who incorrectly gave the answer -3 . Other incorrect answers included 4 from an arithmetic error, 48 and -48 from working with multiplication rather than division.

In part (b) candidates were asked to find the value of 2^5 . The majority were able to give the correct answer of 32, often having shown their working. Common incorrect answers came from working with an incorrect number of 2's when multiplying leading to answers of 16 or 64, or from incorrectly interpreting 2^5 as 2×5 and giving an answer of 10.

Part (c) required candidates to add a single pair of brackets to the calculation to make the given answer correct. The majority of candidates gave the anticipated answer of $30 \div (3 + 2) - 4 = 2$, but a small number gave an alternative correct answer of $30 \div 3 + 2(-4) = 2$. Where incorrect answers were seen these generally involved placing a single pair of brackets in an incorrect place in the equation, although some candidates did use more than one set of brackets.

Question 12

A minority of candidates were able to correctly work with the perimeter of the triangle, find a quarter of this and complete the process to find the missing side length of the rectangle. Some candidates had a correct complete process, but mistakenly gave the perimeter or the rectangle (20cm) as their answer. There were also a number of candidates who correctly reached the perimeter of the rectangle but did not know how to find the missing length in the rectangle often dividing by 4 (working with area) rather than subtracting the two 4cm sides and dividing by 2. Some found the perimeter of the triangle but could not progress further. Others subtracted 4cm and did not consider the other 4cm on the rectangle or divided 20cm by 4cm and gave an answer of 5cm. They then divided 16cm by 2 to get an answer of 8cm. Common incorrect approaches worked with area or tried to use the quarter as a scale factor dividing a single side length of the triangle by 4.

Question 13

In (a) slightly less than half of candidates were able to find the required probability. Where correct answers were seen these were most commonly given as 100%. Common incorrect answers were likelihood statements such as 'very likely' or 'certain' or attempts to calculate a probability using the values of the £10 and £20 notes such as $\frac{10}{30}$ or $\frac{10}{40}$.

In part (b) candidates needed to work out the value of the 1p and 2p coins in the bag, use this to identify the number of 1p and 2p coins and give the probability of taking a 1p coin from the bag. Only a minority of candidates were able to reach the correct probability. Many more were able to gain 1 mark which was often due to finding the number of 1p coins and 2p coins. Some candidates were able to identify that there were 20p worth of 1p coins and 20p worth of 2p coins, but did not go on to find the number of 1p and 2p coins. Common incorrect

answers included $\frac{1}{2}$ which appeared to be from an incorrect assumption that there were equal numbers of 1p coins and 2p coins in the bag rather than the values being equal or $\frac{10}{40}$ or $\frac{20}{40}$. If given as a percentage candidates should note they need to include the % sign. Some candidates incorrectly gave the probability answer in a ratio form.

Question 14

This was a standard question on multiplication of a 3 digit number by a 2 digit number. The majority of candidates were able to work accurately with their chosen method to obtain the correct answer. The most common approaches to multiplication were the column method and Napier's bones. Where an accurate final answer was not obtained then this was often due to slips in arithmetic, but there were also a significant proportion of candidates who made errors in place value when attempting the multiplication.

Question 15

In part (a) candidates were required to find the median from the stem and leaf diagram. The majority of candidates were able to do this accurately. A common incorrect answer was 67 which was the mode. Some candidates incorrectly wrote their answer as 6|4 leaving it written in the stem and leaf structure or 4 having not appreciated the meaning of the key.

In part (b) candidates were required to find the range. This was also well answered with many candidates able to correctly identify the highest and lowest values from the diagram and work out the range. Some candidates were able to correctly identify the highest and lowest values, but did not perform the required subtraction accurately or left their answer as 45 to 81. Where candidates had identified 45 and 81 some incorrectly gave an answer of 44 from incorrect evaluation of $45 - 81$. A minority of candidates found the answer 32 having incorrectly selected 49 rather than 45 as the lowest value or gave an answer of 8 having incorrectly interpreted the values in the diagram as single digit.

It was sometimes the case that the answers for (a) and (b) were reversed with candidates calculating the range in (a) and stating the median in (b). This scored no marks.

In part (c) candidates needed to compare the median for the adults (found in (a)) with the median for the children. This was well answered with around half of candidates able to make an appropriate comparison of the value that they found in (a), be that correct or incorrect, with the given median for children. Common correct responses identified that the adults were faster, the children were slower or that the children took more time. Even where candidates had an incorrect answer in (a) they were often able to give a correct comparative interpretation. Some candidates attempted to include figures in their comparisons, but these needed to be correct if present, so errors in arithmetic were then an issue sometimes. A common response which did not gain credit was to give the difference between the two median values or to simply restate the median values for adults and children without any comparison. A small number of candidates erroneously stated that a high median meant the

children were faster. Often responses did not clearly indicate whether it was adults or children being commented on with ambiguous references to 'they' being seen.

Question 16

This question on best value based on comparison of the three pack sizes of batteries was well answered by the majority of students with many able to give the correct conclusion of '8 pack' together with correct supporting values. The most common approach seen was to find the cost of one battery from each of the pack sizes, but other approaches were also commonly seen with finding the cost of 12 or 24 batteries using each pack size being other popular approaches. There were also a significant number of pairwise comparisons seen which in many cases allowed candidates to conclude the best value pack, although some pairwise comparisons did not give the information needed to reach the required decision.

Where candidates did not have a fully correct response this was sometimes due to errors in arithmetic or calculation process (such as attempts to divide by 3 by halving and halving again) meaning that the correct values to compare the packs were not obtained. Some candidates wrote their divisions the wrong way around and, for example, would calculate 12 divided by 6 instead of 6 divided by 12 for the value of one battery from the 12-pack.

In a minority of cases, students who found the cost of one battery for each pack could not be awarded all three marks due to inconsistency of units (i.e. 0.45p, 40p and 50p). In other cases candidates only had sufficient working to be able to compare two of the packs. A common mistake was to double the cost of the 8 pack, thinking this was comparable to the 12 pack. There were also a minority of candidates who stated the pack that they considered to be the best value without supporting working, sometimes offering a worded description of why they believed that this was the best value option. Others simply multiplied each cost by the number of batteries in the pack to come to their conclusion or merely added or subtracted the costs of the different packs.

Question 17

Many candidates were able to correctly solve the equation given, most commonly expanding the brackets as the first step in their method of solving. It was also common to see well set out working. Where candidates were not able to solve the equation completely, they were often able to gain 1 mark for correctly expanding the brackets or for correctly isolating terms in x following on from their incorrect expansion. A common incorrect first step was to try to subtract 5 from both sides without expanding the brackets first. Others expanded the brackets correctly, but went on to add 10 to the left hand side and subtract 10 from the right hand side and giving an answer of $x = 1$. Those who were awarded the first two of three marks had failed to divide 28 by 8 correctly and reached answers like 3.4.

Question 18

A slight minority of candidates were able to correctly give the value of 10^0 . The most common incorrect response was 0 which came from incorrectly interpreting this as 10×0 . An answer of 10 was frequently seen.

Question 19

This question on describing a transformation was not well answered. Only a minority of candidates were able to give either a fully correct or partially correct answer. Where candidates correctly identified that the transformation was a translation they were often not able to give the correct translation vector. Where a vector was attempted common errors were incorrect signs on one or both of the values, reversing the values, giving a fraction rather than a vector or giving a coordinate. Some candidates seemed to recognise that the shape had been translated but were not able to use the correct mathematical term to describe the type of transformation. Common incorrect examples included 'translocation', 'transition', 'shift', 'moved' or description of a movement in words. The most common incorrect transformation given was a reflection. It was uncommon to see more than one transformation given.

Question 20

A minority of candidates were able to find the n th term for the arithmetic sequence given in the question. More candidates were able to give an answer in the form $4n + k$ having identified the common difference for the sequence, but finding the incorrect constant term or no constant term (i.e. $4n$). Common incorrect answers included identifying the next term in the sequence (17), stating the term-to-term rule for the sequence, $+4$, $n + 4$ where the need for an algebraic expression was recognised but the common difference was incorrectly used, or switching the coefficient of n with the constant term $-3n + 4$

Question 21

In part (a) of the question candidates were asked to work out $3\frac{4}{5} - 1\frac{2}{3}$. Many candidates started by writing the mixed numbers as improper fractions which wasn't needed for this question, but could form part of a correct method. Many candidates attempted to write each fraction over a common denominator with 15 being the most frequently used common denominator. Candidates who identified the need to write over a common denominator were often able to do so correctly and went on to reach the correct answer with many leaving this as $\frac{32}{15}$ (which was acceptable) and others converting back to a mixed number. There were some candidates who had reached $\frac{32}{15}$ but made errors when attempting to convert back to a mixed number, as the mixed number was not required in this case the incorrect attempt at conversion was ignored. Common incorrect approaches involved subtracting numerators and

denominators without writing over a common denominator, sometimes working with the original mixed numbers and sometimes after having converted to improper fractions. In part (b) candidates were presented with working for a product of fractions and asked to identify the mistake. Around half of candidates were able to correctly identify the issue with conversion from the improper fraction to the mixed number with many indicating that the answer should have been $1\frac{11}{24}$ rather than $1\frac{9}{24}$. The most common incorrect answers were indicating that they should have used a common denominator and that the initial conversion from the mixed number to the improper fraction was incorrect.

Question 22

This two-part question was attempted by the vast majority of candidates. It was well answered by slightly less than half of the candidates with many of these being able to give a fully correct answer to both parts.

In part (a) candidates who were successful generally calculated the area of the floor by splitting it into two rectangles (5m by 10m and 3m by 6m or 8m by 6m and 4m and 5m). Some were able to go on to find the area that the paint would cover (75m^2) or find the volume of paint required to cover the floor together with the volume of paint available and give a correct conclusion for full marks. Some candidates did not show full working to support their conclusion, for example, finding the area as 68 and the amount of paint as 7.5 litres but then not finding the comparable figures (6.8 or 75). A few candidates did not answer the question as yes/no, instead saying that Petra was correct.

Where only partially correct answers were seen these often involved finding the total area of the floor without making further meaningful progress, finding the area of one shape, finding the area covered by the 3 tins available or finding the number of litres required for their area. Common incorrect approaches included working with the perimeter or multiplying together three or more of the side lengths. When considering the floor area that could be covered it was common to see candidates incorrectly working with 100 after misinterpreting the 10m^2 coverage. Some candidates did not show their calculations and made arithmetic errors and therefore could not score the corresponding process marks: obtaining 70.5 instead of 75 was a common example of this.

In part (b) candidates were told that the paint actually covered a greater area per litre than had been suggested and were asked if this affected their answer to (a). Where candidates had concluded that there was sufficient paint in (a) they were often able to correctly identify that there would be no effect as less paint would be required. Some candidates gave a correct reason – “she would still have enough” but paired incorrectly with the answer yes. Where candidates had incorrect answers to (a) they were often still able to identify the effect that the change would have made for their figures. Common errors included giving the incorrect decision on the effect for the figures that they had found in (a) and including incorrect figures in the statement which then prevented the award of the C mark.

Question 23

The first part of this question was not well answered. Only a minority of candidates could write down the numbers that were in set P' of the Venn diagram. The most common incorrect answer was to give the elements of set P suggesting that candidates were not familiar with the notation for 'not'.

In part (b) of this question candidates were asked to find the probability that a number chosen at random from the universal set ξ was in the set $P \cup Q$. There were only a minority of candidates who could give a fully correct answer. A greater proportion of candidates were able to gain partial marks for answer of the form $\frac{a}{9}$ with $1 \leq a \leq 8$ having correctly identified that there were 9 values in the universal set. $\frac{1}{9}$ was a common response with candidates seemingly confusing union and intersection of sets. A smaller number of candidates were able to identify the values in the set $P \cup Q$ but did not know what to do in order to find the required probability, often adding the values in the set $P \cup Q$ and the values in the universal set and using these as the numerator and denominator of the probability that they gave as the answer. Common incorrect answers included 0 , $\frac{1}{4}$ and $\frac{2}{4}$ together with likelihood words and giving the answer as a ratio.

Question 24

This question differentiated well between candidates. The estimation of the cost of fuel had two aspects that students needed to achieve – estimation and the calculation of cost. Where candidates were able to get full credit for this question they worked with a value correctly rounded to 1 significant figure and used a correct process to find an estimate of the total cost of fuel. The most common complete processes were $500 \div 10 \times 0.8 = 40$ and $510 \div 10 \times 0.8 = 40.8$, although some struggled to accurately evaluate their calculation due to arithmetic errors often in calculations working with decimals (0.8 or 0.81). A significant minority of candidates chose to round 0.81 euros to 1 euro which allowed for 2 marks to be awarded if used in a complete correct process. Some candidates worked with a value rounded to 1 significant figure in an incomplete or incorrect calculation and gained 1 mark. A common error was to attempt to work accurately with the values in the question before rounding the answer, where a correct process was used this could gain 1 mark.

In part (b) candidates were asked whether their answer was an overestimate or an underestimate. Less than half of the candidates were able to give a decision that was consistent with their calculation in part (a) together with a reason that related to rounding up or rounding down. Some incorrectly referred to their rounding of the final answer.

Where candidates rounded 513 and 0.81 down they were expected to indicate underestimate in (b) together with reference to rounding down. Where candidates rounded 0.81 to 1 and worked with 513 then overestimate and an indication of rounding up was required. Where a candidate chose to round 513 to 500 and 0.81 to 1 then credit was awarded in (b) for either indicating that the answer was an overestimate as they had rounded 0.81 up more than 513 had been rounded down (in relative terms) or that they could not tell if it was an overestimate

or an underestimate as one value had been rounded up and the other rounded down. Many that rounded km down and euros to 1, only referenced rounding euros up in their explanation.

Question 25

In part (a) of this question candidates were asked to find the equation of the line shown. This was answered poorly by the majority of candidates and a significant minority did not attempt the question. Where candidates did attempt to answer the question it was unusual to see a fully correct equation for the line L. Many candidates drew a triangle under the line as a first step to calculating the gradient but then didn't know how to progress from there. A greater number of responses correctly identified the y-intercept as 3 or used the correct structure for the equation of a line, $y = mx + c$ which were awarded 1 mark. Common incorrect answers included giving coordinates, often (2, 6) which was the closest point on the line to the letter L or (-2, 3) which was obtained from the intercepts with the axes. Where equations of lines were attempted they often made use of the values -2, 3, 2 or 6 combined with the variables x and y , for example $y = 6x$ or $3y = -2x$.

In part (b) candidates were asked to write down the equation of a straight line parallel to $y = 5x$. There were a minority of candidates who were able to give a correct equation. A significant proportion of candidates did not attempt the question. Where attempts were seen, common incorrect responses included $y = -5x$, $5y = x$, $y = x + 5$, $y = kx$ with $k \neq 5$, simply restating the original equation $y = 5x$, a coordinate or a numerical value.

Question 26

Only a minority of candidates were able to correctly calculate the percentage of Kasim's jars that were empty small jars. The majority of candidates who scored gained only 1 or 2 marks. A correct process to find $\frac{3}{8}$ of 400 was the most commonly awarded mark, with a significant proportion of candidates able to also start to deal with the ratios and identify that number of small jars : number of medium jars : number of large jars could be written as 3:4:8. Having reached this point candidates generally struggled to find the number of empty small jars (30) with a range of incorrect attempts being seen. A very common incorrect combined ratio was to write the correct ratios, in the correct position in columns for S:M (3:4) and M:L (1:2). This gave an incorrect ratio of 3:4:2. Others added together the middle parts reaching 3:5:2. Having started with a process to find the number of empty small jars, many candidates worked with the ratios as given in the question and found $\frac{3}{3+4+1+2}$ of 150 rather than $\frac{3}{3+4+8}$ in an attempt to find the number of empty small jars. Where candidates did find that there were 30 empty small jars, a majority went on to incorrectly calculate what proportion of the empty jars were small, calculating $\frac{30}{150} \times 100$, rather than what proportion were small empty jars, $\frac{30}{400} \times 100$. There were a variety of other incorrect approaches seen.

Question 27

In this question candidates needed to perform a reverse percentage change. Only a minority of candidates were able to give a fully correct answer. When candidates correctly identified that £280 was 70% of the original amount they were often able to go on to find the normal price of the TV. The most common error was to treat the reduced amount as 100%, finding 30% of this and adding this on giving an answer of 364. Other incorrect responses included reducing 280 by 30% (answer 196) or treating £280 as 30% of the normal price. It should be noted that a fair number of candidates did not consider their answers in the context of the question, obtaining a normal price for the TV that was less than the sale price or obtaining an answer that was in the thousands.

Question 28

Solving the inequality $x + 11 \leq 5 - \frac{1}{2}x$ proved very challenging for candidates with most unable to make progress towards a solution with a significant proportion of candidates not attempting the question at all. Where candidates did have a correct process many struggled to carry out $-\frac{6}{1.5}$ as their final step or, having evaluated this to -4 gave this value rather than an inequality as their final answer.

Many candidates chose to show their intended calculation step and then present the subsequent line of working, this was awarded credit where the elements of the inequality that should be acted upon by that step had changed (allowing for errors in arithmetic) and the other aspects of the inequality had not. A common incorrect approach was to incorrectly combine the terms in x with the constant terms or to attempt to multiply through by 2 and not apply this to all of the terms. Only a minority of candidates attempted trial and improvement which was generally not a successful approach.

Summary

Based on the performance on this paper, students/centres should work on:

- improving numeracy skills, including multiplication and division skills when working with integers, decimals, and fractions (including mixed numbers),
- the interpretation of problems involving ratio, particularly combined ratios,
- considering the context of the problem they are solving and would their answer be feasible,
- knowing, stating and applying angle facts,
- describing a single transformation,
- solving equations and inequalities,
- working with number machines and inverse number machines,
- processes for estimation (with emphasis of rounding a value to 1 significant figure) and identification of whether the chosen rounding leads to an overestimate or an underestimate of the answer,
- finding the equation of a given line,
- understanding of set notation,
- identification of different types of percentage question – including when reversed percentage change is required and how this should be performed,
- encouraging students to set out their working using logical steps,
- encouraging students to read the question carefully so that they understand what they are required to do and what format the answer should be stated in,
- interpretation of questions involving context and multiple step processes.

