Pearson

Examiners' Report
Principal Examiner Feedback

Summer 2018

Pearson Edexcel Level 2 Award
In Algebra (AAL20)

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Edexcel Award in Algebra (AAL20)
Principal Examiner Feedback – Level 2

Introduction

This level 2 examination paper provided all students with the chance to show the relevant skills required by the specification.

Whilst most students were well prepared, others displayed errors in commonly set questions, for example drawing a straight line. Centres are advised to ensure all students are fully prepared for this level 2 Algebra award examination, they should be able to manipulate algebraic expressions without arithmetic errors eg $2 \times 4 = 8$ and not 6 and draw graphs.

Good students were able to display a range of skills and techniques whilst weaker performances were often characterised by errors in the basic skills required.

Reports on Individual Questions

Question 1

Part (a) many students gave the correct answer, unfortunately the most common incorrect answers were $6p^2$, $6p^3$ and $8p^2$, these demonstrate both conceptual and arithmetic errors.

Part (b) was well answered, most students gave the answer of t or t^1. The most common incorrect answer was t^7.

Part (c) was very well answered and only a few incorrect answers of w^5 were seen.

Part (d) most students scored on this question, with the modal score being 2 for a fully correct expansion that had not been simplified. Students should be reminded to always simplify fully for this specification. In this question "simplify" is clearly stated but was too often ignored. Where students attempted to simplify, errors were made in adding $3u^2$ to u^2 often giving $3u^4$ and when adding $6u$ and $-4u$ giving $10u$ or just 2.

Question 2

Parts (a) and (b) were very well answered. There was no pattern to errors seen other than the odd arithmetic error.

Part (c) was generally well done with most students gaining for the expansion and then isolating x. However as the answer is negative some students could not deal with the negativity and gave an answer of 10.

Question 3

Reading from the graph was well answered and full marks were usually awarded in both parts (a) and (b).

In part 3c(i) a good number of correct answers were seen although some calculations were not fully worked out. In other cases the full method used was unclear, triangles were seen drawn against the line but were not labelled with the height and base. Therefore a method mark could not be awarded if the measurements used for height and base was incorrect **and not marked** on the triangle. A common error was to count squares for the height of the rectangle as opposed to reading the scale.

Interpreting the gradient in (ii) was answered with varied success. Many students simply referred to gradient as being the steepness of the line rather than interpreting in terms of the given variables, hence scoring no mark. The key was identifying that the gradient represents the cost per kilometre and not the cost of a journey.

Question 4

A well answered question.

In part (a) most answers were correct. In part (b) the usually misconception of $n+4$ was seen but not that often. Generally part (c) was well answered but again inaccurate calculations led to loss of marks. Students should show the calculation as well as the answer so that if inaccurate mid-calculations are made at least method marks can still be gained.

Question 5

Part (a) was confidently answered.

In part (b) answers were very variable. It was common for students to deal with the indices correctly for one term when expanding the bracket but not both terms, often $t^2 \times t^3$ was given as t^6. The other main error seen was to give a final answer of t^{11} or t^{12}, an attempt at inaccurate simplification of the expression.

The accuracy mark is lost if the final answer is incorrect.

Question 6

This was a simple 1 mark question and was usually correct. Sometimes students tried to give two options but the question clearly asks for one answer.

Question 7

In line with previous series dealing with the negative answers of y caused problems in this question, resulting in the loss of marks. Where the table was correct, the points were usually plotted correctly with just a few not joined to give the final accurate answer.

Some students, with an incorrect table, realised the need for a straight line answer and so tried to draw a line ignoring their original answers in part (a). If students realise they have made an error because of the shape of the graph they should be encouraged to go back and re-look at filling in the table of points.

Question 8

Most students were confident with the concept of factorising an expression. Part (a) was very well answered.

Part (b) was also well answered. Students who did not identify the highest common factor of the 2 terms were often successful in a giving a correct partial factorisation for 1 mark.

For part (c) many fully correct factorisations were seen. Other students only gave a partial factorisation. Students should be encouraged to look at their final bracketed expression and re-check for further factors. The common partial fraction given was $5wx(w^2x-2w)$ with a factor of w remaining inside the brackets.

Question 9

Overall this question was well answered. In part (a) many correct lists were seen, a few students incorrectly included 5 in their list.

Part (b) was well answered with most students realising the need to make x greater than 0 but some still seem to feel the need to 'close' the inequality off. Centres are advised to discuss with students the meaning of the arrowhead at the end of a line in this style of diagram.

Part (c) was answered well with the vast majority of students able to represent this inequality pictorially. Where a correct solution was not seen 1 mark was frequently awarded for having a line from -10 to 4 with incorrect end point notation.

Solving the inequality in part (d) was done correctly by the majority of students and when not fully correct 1 mark was often awarded for arriving at 3 as the critical value or subtracting 6 from both sides.

Question 10

Part (a) was well answered by most students. In Part (b) a variety of answers were seen. Many students realised that $n-2$ was required in their answer but were not sure what to do once they had this expression. Many felt the need to write an equation and $e = 5(n - 2)$ was a popular incorrect answer. Both $(n-2)+e$ and $(n-2)+5e$ were other common incorrect answers. Students should be aware of the difference between an expression and an equation. If they are unsure as to the validity of their algebraic answer they could try to use numbers and substitution to check their expressions.

Question 11

The majority of students seemed familiar with the general shape of the parabola and many knew that the given equation would have the y-axis as the line of symmetry, although drawings could be more accurate. It is important that students mark on the value of the y intercept as this was missing in many cases, others did write -8 above the origin. There were a significant minority who drew straight lines and centres are advised to ensure coverage of this topic within the specification as curve sketching is one of the skills students seem to continue to find difficult.

Question 12

For part (a)(i) errors in BIDMAS/BODMAS caused a major issue. 49 was the most popular incorrect answer with far too many answers of $5(10 - 1) = 50 - 1$ seen. Often working was not shown in this question so an answer of 45 gained full marks but an answer of 49 scored zero.

Part (a)(ii) involved substituting a negative number and so gave some students issues with accurate arithmetic.

Students found part (a)(iii) more difficult. Some multiplied out the brackets first and then rearranged. This was quite a successful approach. Others tried to divide by 5 first but found it difficult to write one part of the equation as a fraction and the second part as an integer.

Part (b)(i) was very well done and many scored both marks. Part (ii) was not so well answered with 9×2 used instead of 9^2 or $9^2 = 18$ was given as part of the working.

Question 13

Both parts of this question were well answered.

In part (a) many were able to say Fintan because he travelled further in the first 50 seconds or that the gradient for his graph is greater over this period. Some students tried to work out the gradient, which was more than was required. Students should be reminded that if they do quote figures in answers these must be correct to get full marks. A significant minority did not read the question properly and discussed what happened over the first 50 metres or even 50 yards.

Part (b) was very well answered, with most answers correct or scoring at least 1 mark.

The gradient in part (c) was often attempted but sometimes the working was inverted. Also answers were not processed to a decimal or a fraction in its simplest form. This is a requirement of final answers.

Part (d) was difficult for all but the most able of students. A diagonal line was often drawn on the grid, often without any scale or labelled axes. Some students did draw a horizontal line but then did not label the intercept on the y-axis, both these aspects were required for full marks.

Question 14

The ability to identify the intercept as 8 was achieved by the majority of students. The gradient was not so successful with 1 being the most common incorrect answer given. Even if both figures were correct some students could not use these to give a correct equation. Some tried to use L and y in the equation, others just failed to use y at all.

Question 15

Part (a) was found to be very difficult by some students. Many realised they needed to multiply both sides by 6 but could not deal with $6 \times \frac{1}{12}$. Many students tried to use 72 as this value instead of a half. Others gained the first mark for expansion and rearrangement to get $2x + 1 = \frac{1}{2}$ but then gave $2x = 1.5$ as the next line of working, leading to the incorrect answer of 0.75.

In part (b) a common error seen was to only multiply out one of the two brackets correctly and then rearrange, this often resulted in the incorrect answer of $\frac{1}{2}$ instead of $-\frac{1}{2}$.

As with previous questions that involved negative numbers as the answer, errors were apparent.

Question 16

The first two parts of this question were answered with reasonable accuracy by many students. Some made errors in finding the values of y but most were able to plot their points accurately. Students are reminded that this is a curve and so points should not be joined by straight lines and a turning point is a curve.

Part (c) was found to be more challenging. Some blank entries were seen. Of those that realised drawing a line of $y = 9$ was one way to clearly find the answers, not all were able to correctly read the scale. Some students indicated 10 and then found the midpoint of 8 and 10 on the y-axis to indicate 9 but many just drew a line at $y = 10$, hence misinterpreting or forgetting the scale. Some students just gave answers and their quadratic could be used to check accuracy but it is best to show working on the graph drawn.

Summary

Based on their performance on this paper, students are offered the following advice:

- Ensure you can carry out basic arithemetic accurately, particularly when dealing with negative numbers.
- Practice the rules of indices.
- Be able to know which type of graph is required from looking at the given equation.
- Remember to use the scale correctly on given graphs.

Grade Boundaries

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