

Mark Scheme (Results)

Summer 2015

Pearson Edexcel Level 2 Award
in Algebra (AAL20)

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NOTES ON MARKING PRINCIPLES

1 Types of mark

M marks: method marks

A marks: accuracy marks

B marks: unconditional accuracy marks (independent of M marks)

2 Abbreviations

cao – correct answer only

isw – ignore subsequent working

oe – or equivalent (and appropriate)

indep - independent

ft – follow through

SC: special case

dep – dependent

3 No working

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

4 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the “correct” answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

5 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

6 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

7 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

8 Use of ranges for answers

If an answer is within a range this is inclusive, unless otherwise stated.

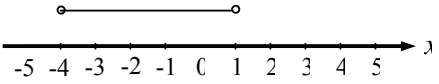
PAPER: AAL20_01					
Question		Working	Answer	Mark	Notes
1	(a)		$3m + m^2$	1	B1 for $3m + m^2$ oe
	(b)		$30c^3$	2	B2 for $30c^3$ (B1 for 30 or c^3 as part of one term or $30 \times c^3$)
	(c)		n^7	1	B1 cao
	(d)		t^2	1	B1 cao
	(e)	$\frac{16w^2}{2w}$	$8w$	2	M1 for a correct partial simplification A1 $8w$
2	(a)		$4x + 7$	2	M1 for $4x$ or 7 A1 $4x + 7$
	(b)		$6 - 6y$	1	B1 for $6 - 6y$
	(c)		$4xy + 2x$	2	M1 for $3x \times y + 3x \times 2$ or $x \times y - x \times 4$ A1 for $4xy + 2x$ oe
3	(a)		160	1	B1
	(b)		34 - 36	1	B1 for 34 - 36
4			Equation Expression Formula Formula	3	B3 for all correct (B2 for 3 correct B1 for 2 correct)

PAPER: AAL20_01					
Question		Working	Answer	Mark	Notes
5	(a)		9.6 – 9.8	1	B1 for 9.6 – 9.8
	(b)		12	2	M1 for method to find the gradient eg sight of right-angled triangle with “height” divided by “base” A1 for 12 (accept value in the range 11.5 to 12.5)
	(c)		Speed	1	B1 for speed (of the sprinter in m/s)
6	(a)	$2d = 7$	$\frac{7}{2}$	2	M1 for subtraction of 1 from both sides or division of all terms by 2 A1 for $\frac{7}{2}$ oe
	(b)	$m + 4 = 3$	-1	2	M1 for multiplication of both sides by 3 or $\frac{m}{3} = 1 - \frac{4}{3}$ A1 cao
	(c)	$5n - 20 = 2n + 7$ $3n = 27$	9	3	M1 for correct expansion of bracket or division of both sides by 5 M1 for correct method to isolate terms in n on one side and constants on the other side. A1 cao

Question	Working	Answer	Mark	Notes														
7	<table border="1" data-bbox="388 337 762 412"> <tr> <td>x</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>y</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> <td>-1</td> </tr> </table> <p data-bbox="388 553 436 581">OR</p> <p data-bbox="388 623 596 651">Using $y = mx + c$</p> <p data-bbox="388 693 562 753">gradient = -1 y intercept = 3</p>	x	-1	0	1	2	3	4	y	4	3	2	1	0	-1	Straight line from (-1 4) to (4, -1)	3	<p data-bbox="1146 326 1360 354">(Table of values)</p> <p data-bbox="1146 362 1906 418">M1 for a correct method to find at least 2 points by substituting values of x</p> <p data-bbox="1146 427 1860 492">M1 (dep) ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted)</p> <p data-bbox="1146 500 1671 527">A1 for correct line between $x = -1$ and $x = 4$</p> <p data-bbox="1146 570 1394 597">(No table of values)</p> <p data-bbox="1146 605 1892 662">M2 for at least 2 correct points and no incorrect points plotted</p> <p data-bbox="1146 670 1850 698">OR line segment of $y = 3 - x$ drawn (ignore any additional incorrect segments)</p> <p data-bbox="1146 706 1892 771">(M1 for at least 3 correct points with no more than 2 incorrect points)</p> <p data-bbox="1146 779 1671 807">A1 for correct line between $x = -1$ and $x = 4$</p> <p data-bbox="1146 849 1381 876">(Use of $y = mx + c$)</p> <p data-bbox="1146 885 1850 941">M2 line segment of $y = 3 - x$ drawn (ignore any additional incorrect segments)</p> <p data-bbox="1146 950 1881 1015">(M1 for line drawn with gradient of -1 OR line drawn with y intercept of 3 and a negative gradient)</p> <p data-bbox="1146 1023 1671 1050">A1 for correct line between $x = -1$ and $x = 4$</p>
x	-1	0	1	2	3	4												
y	4	3	2	1	0	-1												

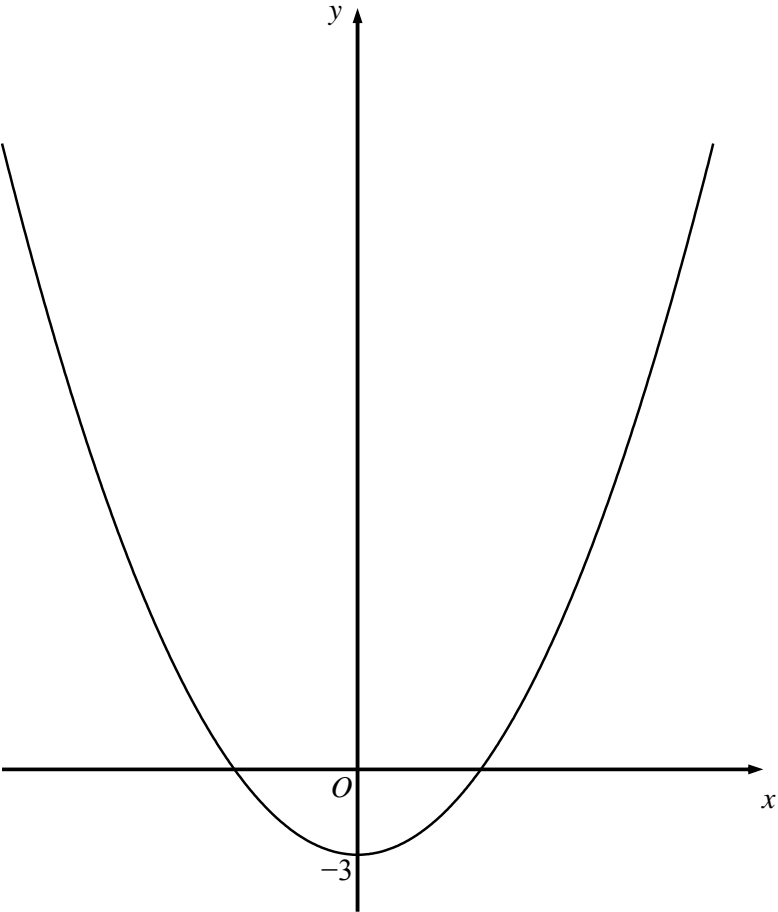
PAPER: AAL20_01					
Question		Working	Answer	Mark	Notes
8	(a)		$4(5 - e)$	2	M1 for correct partial factorisation A1 for $4(5 - e)$
	(b)		$ab(c + b)$	2	M1 for correct partial factorisation A1 for $ab(c + b)$
	(c)		$7d^3(2d + 3)$	2	M1 for correct partial factorisation of the form $7d(2d^3 + 3d^2)$ or $7d^2(2d^2 + 3d)$ or $d^3(14d + 21)$ A1 for $7d^3(2d + 3)$
9			$\frac{n}{3} + 5$	2	B2 for $\frac{n}{3} + 5$ (B1 for $\frac{n}{3}$ or $an + 5, a \neq \frac{1}{3}$)
10	(a)		15, 10	1	B1 cao
	(b)		$-5n + 45$	2	M1 for $-5n (+ c)$ A1 for $-5n + 45$ oe
	(c)		74	2	M1 for $3 \times 5^2 - 1$ or 75 seen A1 cao

PAPER: AAL20_01					
Question		Working	Answer	Mark	Notes
11	(i)	$\frac{5-1}{1--1}$	2	4	M1 for method to find the gradient eg sight of right angled triangle with "height" divided by "base" A1 cao
	(ii)		$y = 2x + 3$		M1 for use of $m = "2"$ oe or $y = "2"x + c$ or for $y = mx + 3$ or $"2"x + 3$ A1 ft
12	(a)(i)	$3 \times 8 - 5$	19	4	M1 for correct substitution of $x = 8$ and $y = 5$ A1 cao
	(ii)	$3 \times (-2) --1$	-5		M1 for correct substitution of $x = -2$ and $y = -1$ A1 cao
	(b)		$x = \frac{w+y}{3}$	2	M1 for a first correct step A1 for $x = \frac{w+y}{3}$ oe (SC B1 $\frac{w+y}{3}$ oe)
	(c)	$45 = \frac{1}{2}(2.5 + v)10$ $90 = (2.5 + v)10$ $9 = 2.5 + v$	6.5	3	M1 for correct substitution M1 for correct first stage in manipulation, eg $45 \times 2 \div 10 = 2.5 + v$ or $45 \times 2 - 25 = 10v$ A1 for 6.5 oe

PAPER: AAL20_01					
Question		Working	Answer	Mark	Notes
13	(a)		$(0, -3)$	1	B1 cao
	(b)		y gets very large	1	B1 for y gets very large oe
	(c)		Sketch drawn	2	B1 General shape(parabola) in all 4 quadrants with correct orientation B1 Symmetric about the y-axis and minimum point labelled at $(0, -3)$
14	(a)		$-1, 0, 1, 2, 3, 4$	2	B2 cao (B1 for at least 5 correct and not more than one incorrect)
	(b)		$-3 < y \leq 2$	2	B2 for $-3 < y \leq 2$ (B1 for $y > -3$ or $y \leq 2$ or $-3 \leq y < 2$) NB Accept the use of any letter other than y and ignore attempts to list integer values
	(c)	 <p>A number line from -5 to 5 with tick marks at every integer. A horizontal line segment is drawn from -4 to 1. Both ends of the segment are marked with small open circles.</p>	correct diagram	2	B2 for correct diagram (must have open circles) (B1 for line from -4 to 1 but not with two open circles)
	(d)		$p \leq -5$	1	B1
	(e)	$y < \frac{12}{-4}$		$y < -3$	2

PAPER: AAL20_01					
Question		Working	Answer	Mark	Notes
15	(a)		4, 1, 0, 9	2	B2 for all 4 values correct (B1 for 2 or 3 values correct)
	(b)		Correct curve	2	B2 for correct curve (B1 for plotting all their values correctly)
	(c)		-3.6, 1.6	2	M1 for line $y = 7$ drawn to intersect with the curve or for reading at least one value for x when $y = 7$ A1 for -3.6, 1.6 (accept values in the range -3.6 to -3.7 and 1.6 to 1.7) or ft from their parabola
16	(a)		2	1	B1 cao
	(b)		50	1	B1 cao
	(c)		completed graph	2	B2 for line of constant gradient from (80, 2) to (120, 0) (B1 for a straight line with negative gradient, from (80, 2) to x - axis or line with correct gradient)

Q12



Q15 (b)

