



Pearson

Mark Scheme (Results)

January 2017

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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Question	Working	Answer	Mark	Notes
1 (a)		$5a + 9d + 8$	2	M1 for at least two terms correct A1
(bi)		p^6	2	B1 cao
(ii)		y^8		B1 cao
(c)		$12n^2 + 20$	2	B2 for $12n^2 + 20$ (B1 for $12n^2$ or 20 as part of a two term expression)
(d)		$10t - 15t^2 + 5t^3$	2	B2 for $10t - 15t^2 + 5t^3$ (B1 for 2 out of 3 correct terms)
2 (a)		$3p + 5t$	2	B2 for $3p + 5t$ (B1 for $3p$ or $5t$)
(b)		$\frac{k}{3}$	1	B1 $\frac{k}{3}$ oe
3 (a)		$-11, -5, -2, 4, 7$	2	B2 all correct (B1 for 3 or 4 correct)
(b)		Line drawn	2	M1 ft plotting all their points A1 correct line between $x = -3$ and $x = 3$

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Question	Working	Answer	Mark	Notes
4 (a)		30	2	M1 for correct substitution A1 cao
(b)		$a = \frac{2v}{bh}$	2	M1 for a correct first step A1 oe
5 (a)		$4b(a - 2)$	2	M1 for a correct partial factorisation A1 oe
(b)		$3x(x + 5)$	2	M1 for a correct partial factorisation A1 oe
6 (a)		Sketch	3	B1 for general shape, parabola in correct orientation, all 4 quadrants B1 for symmetry about y-axis (must be parabola) B1 for y intercept at (0, -16)
(b)		y becomes very large	1	B1 correct statement eg y becomes very large



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Question	Working	Answer	Mark	Notes
7 (a)		21	1	B1 cao
(b)		6	2	M1 for adding 12 to both sides or dividing throughout by 7 A1 cao
(c)		1.5	3	M1 for multiplying out the bracket or dividing throughout by 5 M1 for correct method to isolate terms in t on one side and constants on the other side. A1 1.5 or $\frac{3}{2}$ or $1\frac{1}{2}$
(d)		0.5	3	M1 for multiplying by 4 or $\frac{2y}{4} + \frac{3}{4} = 2y$ M1 for correct method to isolate terms in y on one side and constants on the other side. A1 0.5 or $\frac{1}{2}$
8 (a)	$14a + 35 + 2a - 6$	$16a + 29$	2	M1 for correct expansion of either bracket A1 for $16a + 29$
(b)		68	2	M1 substituting $g = 5$ A1 cao

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Question	Working	Answer	Mark	Notes
9 (a)		Correct diagram	2	B2 for correct diagram (must have open circles) (B1 for line from -3 to 2 but not with two open circles or a line ending at either critical value with an open circle at that value)
(b)		7, 8, 9, 10, 11	2	B2 for all 5 correct values, in any order (B1 for values with one error or omission or for 6, 7, 8, 9, 10, 11, 12)
(c)		$-4 \leq x \leq 0$	2	B2 for $-4 \leq x \leq 0$ (B1 for $x \geq -4$ or $x \leq 0$) NB Accept the use of any letter other than x and ignore attempts to list integer values
(d)		$p \geq 9$	3	M1 for multiplying both sides by 5 or $\frac{2p}{5} + \frac{7}{5} \geq 5$ M1 for a complete method to isolate terms in p on one side and constants on the other side. A1 cao

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Question	Working	Answer	Mark	Notes
10 (a)(i)		$x = -2$	2	B1
(ii)		$y = 3$		B1
(b)		$y = 4x - 2$	3	M1 for method to find the gradient eg sight of right angled triangle with “height” divided by “base” M1 for use of y intercept, eg $(y =) mx - 2$ A1 for $y = 4x - 2$ oe
11 (a)(i)		$-2, 1$	4	M1 for $3 \times 1 - 5 (= -2)$ as first term or $3 \times 2 - 5 (= 1)$ as second term A1 cao
(ii)		21		M1 for $3n - 5 = 58$ or $(58 + 5) \div 3$ A1 cao
(b)		$4n + 14$	2	M1 for $4n (+ c)$ A1 for $4n + 14$ oe
12 (a)		$-2, -4, 2, 8$	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, provided B1 awarded in (a))
(c)		-2.5 to -2.6 and 1.5 to 1.6	2	M1 marks on x -axis or one correct answer A1 ft provided B1 in (b).

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Question	Working	Answer	Mark	Notes
13 (a)		60	1	B1
(b)(i)		2	3	M1 for method to find the gradient eg sight of right angled triangle with “height” divided by “base” A1 for 2
(ii)		Statement		B1 for interpretation of gradient eg number of dollars per £
14 (a)		13	2	M1 for substituting $x = 4$ and $y = \frac{1}{2}$ A1 cao
(b)		$w = \frac{u+7}{4}$		M1 for a first step to rearrange A1 oe
15 (a)	16 and 9	7	2	M1 for identifying both speeds from the graph A1 cao
(b)		40	1	B1 cao
16 (a)		Correct line	1	B1 for line from (0900, 0) to (1130, 14)
(b)		5.6	2	M1 for using distance \div time, eg $14 \div 2.5$ A1 5.6 oe

Question 12



