Mark Scheme (Results)

January 2018

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   ft – follow through
isw – ignore subsequent working   SC: special case
oe – or equivalent (and appropriate)   dep – dependent
indep - independent

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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)		$9b + d$	2	M1 for collecting like terms, one out of 2 terms correct A1 cao
(b)(i)		$125x^6$	2	B2 for $125x^6$ (B1 for $125x^n$, $n \neq 0, 6$ or cx^6, $c \neq 125$)
(ii)		y^9	1	B1 cao
(iii)		u^4	1	B1 cao
(c)		$12a + 4c$	1	B1
2 (a)		$3n$	1	B1 $3n$ oe
(b)		$5t + 6j = 108$	3	B3 for $5t + 6j = 108$ oe (B2 for $5t + 6j$ or $at + 6j = 108$ or $5t + bj = 108$ oe B1 for linear expression in t and $j = 108$)
3		Sketch	3	B1 for general shape, parabola, correct orientation B1 for symmetry about y axis (must be parabola) B1 for y intercept labelled at $(0, 5)$

Question	Working	Answer	Mark	Notes
4	x: −2, −1, 0, 1 y: 9, 7, 5, 3 2, 3, 4, 5 1, -1, -3, -5 OR Using $y = mx + c$ gradient $= -2$ y intercept $= 5$	Straight line from (–2, 9) to (5, –5)	3	**(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x M1 (dep) ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted) A1 for correct line between $x = -2$ and $x = 5$ **(No table of values)** M2 for at least 2 correct points and no incorrect points plotted OR line segment of $y = 5 – 2x$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points with no more than 2 incorrect points) A1 for correct line between $x = -2$ and $x = 5$ **(Use of $y = mx + c$)** M2 line segment of $y = 5 – 2x$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of −2 OR line drawn with y intercept of 5 and a negative gradient) A1 for correct line between $x = -2$ and $x = 5$

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		$x(7y + w)$	1	B1 for $x(7y + w)$
	(b)		$3a(b + 4c)$	2	M1 for a correct partial factorisation A1 oe
	(c)		$4x(x - 2)$	2	M1 for a correct partial factorisation which includes product of two factors in x A1 oe
6	(a)		21, 39	3	M1 for $2 \times 12 - 3$ or $2 \times$ second term $- 3$ A1 for 21 as first answer A1 for 39 as second answer
	(b)		$-3n+10$	2	M1 for $-3n + c$ (c may be 0) A1 for $-3n + 10$
	(c)(i)		35	4	M1 for $2 \times 15 + 5$ A1 cao
	(ii)		Yes with reason		M1 $87 = 2n + 5$ or listing at least 3 consecutive terms of the sequence A1 yes and 41st term oe

Question	Working	Answer	Mark	Notes
7 (a)(i)		4	2	M1 for correct substitution A1 cao
(ii)		1	2	M1 for correct substitution A1 cao
(iii)		−6	2	M1 for a substitution, eg $24 = 2 \times 3 - 3p$ or rearranging to $t - 2u = -3p$ or $2u - t = 3p$ A1 cao
(b)		$u = \dfrac{t + 3p}{2}$	2	M1 for a correct first step A1 oe
8 (a)		3	2	M1 for a correct first step , eg $3f = 11 - 2$ A1 cao
(b)		5	3	M1 for a correct first step eg $3n = 8 + n + 2$ M1 for correct method to isolate terms in n on one side and constants on the other side, eg $3n - n = 8 + 2$ A1 cao
(c)		$\dfrac{17}{4}$	3	M1 for a correct first step eg $4d + 3 = 5 \times 4$ M1 for correct method to isolate terms in d on one side and constants on the other side, eg $4d = 17$ A1 oe

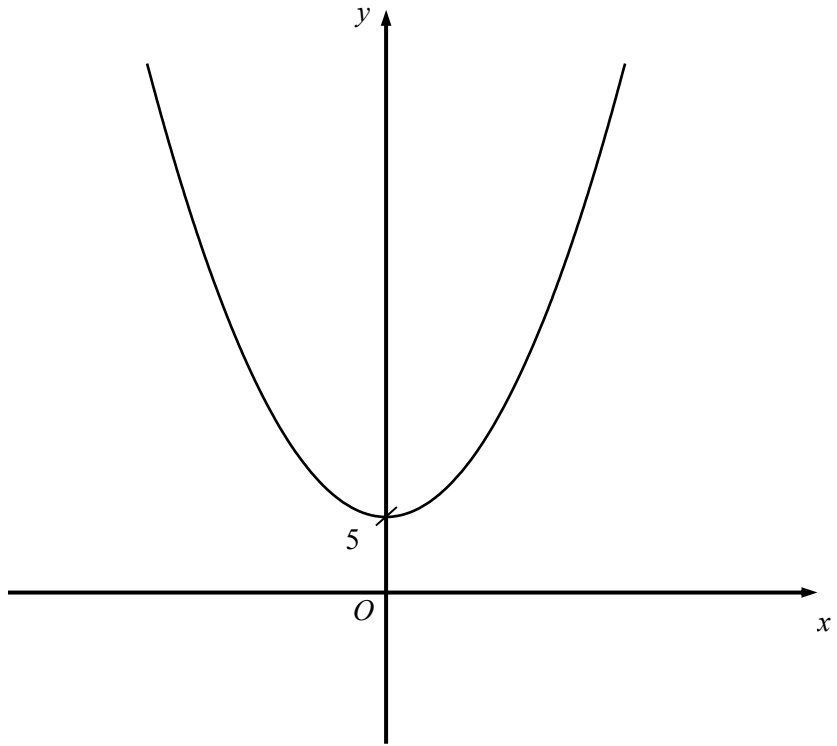| Question	Working	Answer	Mark	Notes
9 (a)		$x > 3$	1	B1 $x > 3$
(b)		$y < -2$	3	M1 for a correct first step eg $-3y > 6$ or $8 + 3y < 2$ M1 for a full method or $y = -2$ as the critical value A1 $y < -2$
10 (a)		$-4 \leqslant x < -1$	2	B2 for $-4 \leqslant x < -1$ (B1 for $-4 \leqslant x$ or $x < -1$) **NB** Accept the use of any letter other than x and ignore attempts to list integer values

(b)		Correct diagram	2	B2 fully correct answer
				(B1 for 2 out of 3 aspects
				  • circle drawn at -2
				  • full circle
				  • indication of continuous line to the right)

(c)(i)		3	1	B1 cao
(ii)		11	1	B1 cao

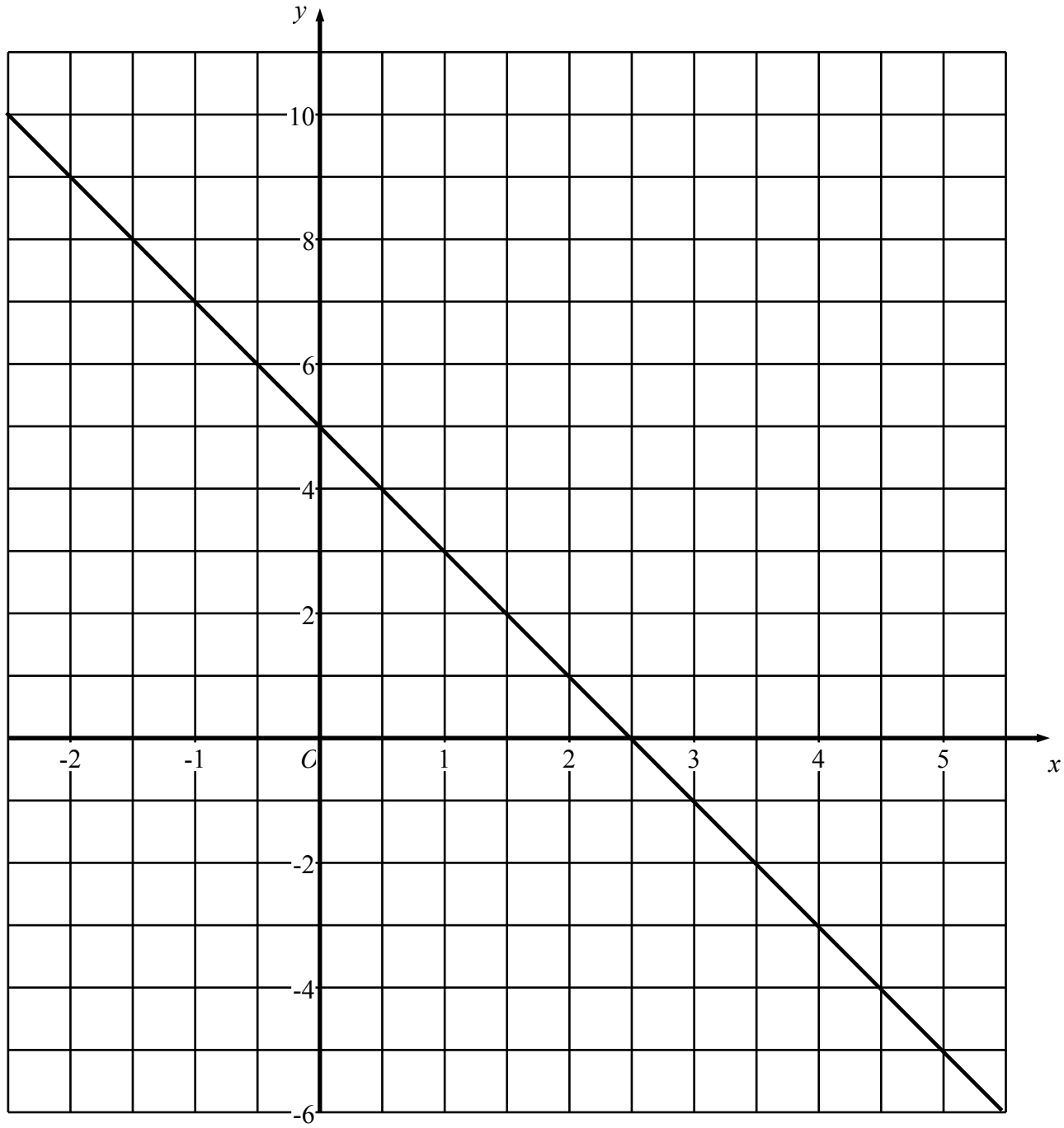| PAPER: AAL20_01					
Question	**Working**	**Answer**	**Mark**	**Notes**	
11 (a)		$y = 1$	1	B1	
(b)(i)		0.5	4	M1 for method to find the gradient eg sight of right-angled triangle with "height" divided by "base" A1 oe	
(ii)		$y = 0.5x + 2$		M1 for using gradient from (b)(i) in $y = mx + c$ or $y = 0.5x + c$, where $c \neq 2$ or $y = mx + 2$ oe where $m \neq 0, 0.5$ or $0.5x + 2$ A1 ft	
12 (a)(i)		20	3	M1 for method to find the gradient eg sight of right-angled triangle with "height" divided by "base" or reading off at 1100 A1 oe	
(ii)		Speed		B1 oe	
(b)		120	2	M1 for correct method, eg 90 + 30, 2.5 – 0.5 oe or 150 minutes oe A1	
(c)		Graph completed	3	B1 for line from (1230, 40) to (1415, 40) B2 for a line from (1415, 40) to (1645, 0) (B1 for a line of the correct gradient)	
(d)		1045 and 1548	2	B1 10 42 – 10 48 B1 15 45 – 15 51 or ft from line with negative gradient	

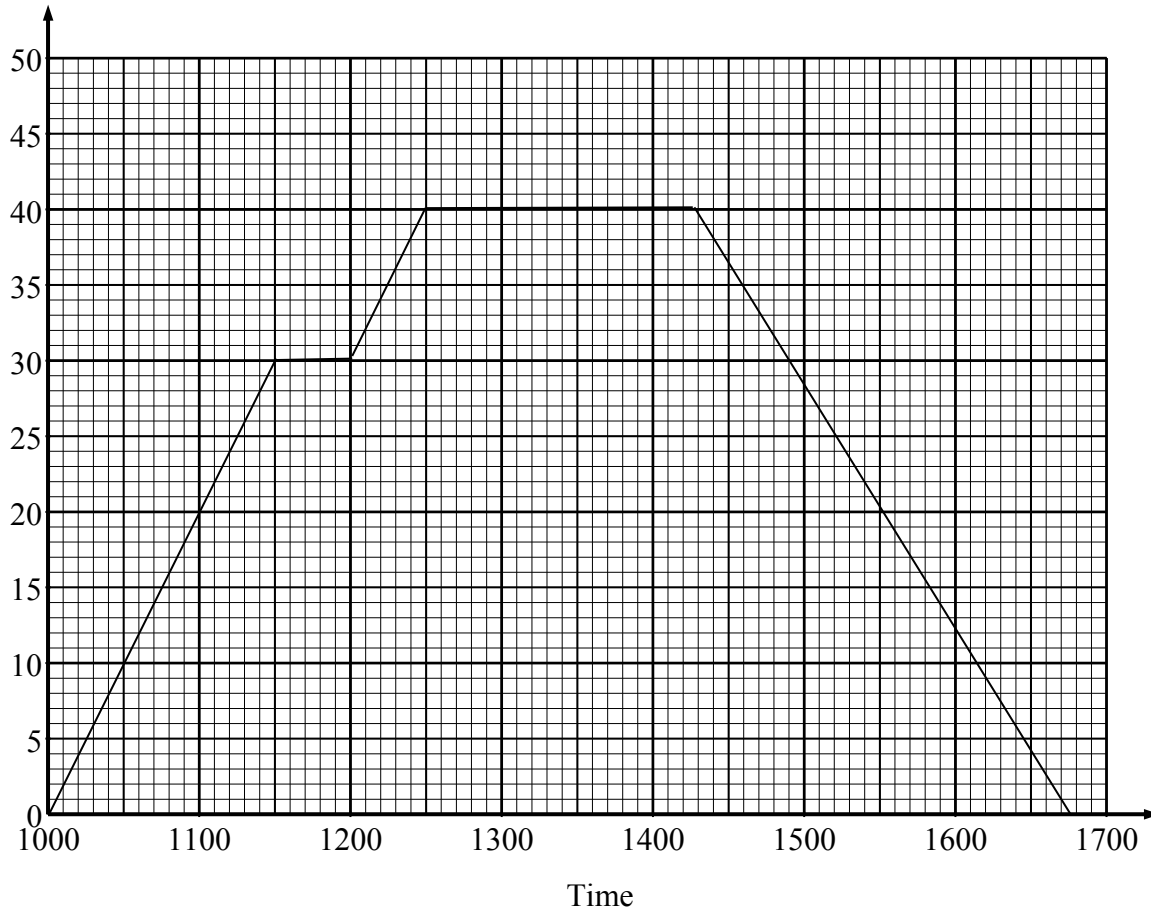| Question	Working	Answer	Mark	Notes
13 (a)		Table completed (7), 2, −1, (−2), (−1), 2, 7	2	B2 all 4 values correct (B1 for 2 or 3 correct)
(b)		Curve drawn	2	B2 for correct curve (B1 for plotting all their values correctly, provided B1 award in (a))
(c)		−0.3 to −0.5 and 2.3 to 2.5	2	M1 (dep B1 in (b)) marks on x axis or one correct answer A1 for both correct answers
14		C A B D	2	B2 for all correct (B1 for 2 or 3 correct)

Q3

Q4

Q12

Q13