Mark Scheme (Results)

Summer 2018

Pearson Edexcel Award
In Algebra (AAL20) Level 2

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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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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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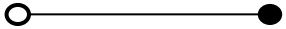
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		$8p^3$	1	B1 cao
	(b)		t	1	B1 (accept t^1)
	(c)		w^6	1	B1 cao
	(d)		$4u^2 + 2u$	3	M1 for expansion of either bracket eg $3u^2 + 6u$ or $u^2 - 4u$ or one term correct M1 for fully correct unsimplified expression A1for $4u^2 + 2u$
2	(a)		8	2	M1 for multiplying both sides by 2 or dividing by both sides by 3 A1 cao
	(b)		11	2	M1 for adding 9 to both sides or dividing by 2 throughout A1 cao
	(c)		-10	3	M1 for correct first step, eg $4x + 20 = 2x$ or $x + 5 = \frac{2x}{4}$ M1 for isolating terms in x eg $2x = -20$ or $\frac{2x}{4} = -5$ A1
3	(a)		10	1	B1 cao
	(b)		8	1	B1 cao
	(c)(i)		1.5	3	M1 for a complete method to find the gradient eg sight of right angled triangle with their height divided by their base A1 for 1.5 or $\frac{3}{2}$ or $1\frac{1}{2}$
	(ii)		Cost per km		B1 for cost per km oe

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)(i)		43	3	B1 cao
	(ii)		$4n + 11$		M1 for $4n$ (+ c) A1 for $4n + 11$ oe
	(b)		16, 8, 4	2	M1 for 16 **or** 32 ÷ 2 and "16" ÷ 2 A1 16, 8, 4 in the correct order
5	(a)		$5p - u$	2	B2 cao (B1 for one correct term)
	(b)		$2t^3 + t^5$	3	M1 for multiplying out the bracket with at least one correct term M1 for correct expansion of brackets A1 cao
6			$m = 5\sqrt{n+2}$ identified	1	B1 for $m = 5\sqrt{n+2}$ identified
7	(a)		5 (3) 1 –1 –3	2	B2 for 4 correct values (B1 for 2 or 3 correct values)
	(b)		Graph drawn	2	M1 (dep B1) plotting all their points A1 correct line

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		$2(2 + t^2)$	1	B1 cao
	(b)		$6u(2u - 3)$	2	B2 for $6u(2u - 3)$ (B1 for correct partial factorisation as product of 2 terms in u, $u(12u - 18)$, $2u(6u - 9)$, $3u(4u - 6)$
	(c)		$5w^2x(wx - 2)$	2	B2 for $5w^2x(wx - 2)$ (B1 Correct partial factorisation with at least 3 factors) Note: for all answers the correct expression may be seen in a different order of factors
9	(a)		$-2, -1, 0, 1, 2, 3, 4$	1	B1 cao
	(b)		$x > 0$	2	B2 for $x > 0$ (B1 for > 0 or $x \geq 0$) **NB** Accept the use of any letter other than x and ignore attempts to list integer values
	(c)		Diagram drawn 	2	B2 for correct diagram with end points at -10 and 4 (B1 for line from -10 to 4 but not with correct endpoint notation or one endpoint fully correct with no contradiction)
	(d)		$g > 3$	2	M1 for correct first step eg subtracting 6 from both sides or dividing all terms by 2 A1 $g > 3$ (SC B1 for critical value of 3)

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Question	**Working**	**Answer**	**Mark**	**Notes**
10 (a)		ne	1	B1 for ne oe
(b)		$5e(n-2)$	2	M1 using $(n-2)$ as part of a product **or** $-10e$ A1 oe
11		Sketch with label at $(0, -8)$	3	B1 General shape in all 4 quadrants B1 Symmetry about the y-axis B1 for intersection of y-axis at -8 shown
12 (a)(i)		45	5	M1 for substituting 10 into the formula A1 cao
(ii)		-25		B1 cao
(iii)		$c = \frac{m}{5} + 1$		M1 for correct first step, eg $\frac{m}{5} = c - 1$, $m = 5c - 5$ A1 oe
(b)(i)		4	4	M1 for $\sqrt{2 \times 8}$ A1 cao
(ii)		40.5		M1 for 81 $(= 2q)$ or n^2 $(= 2q)$ A1 oe

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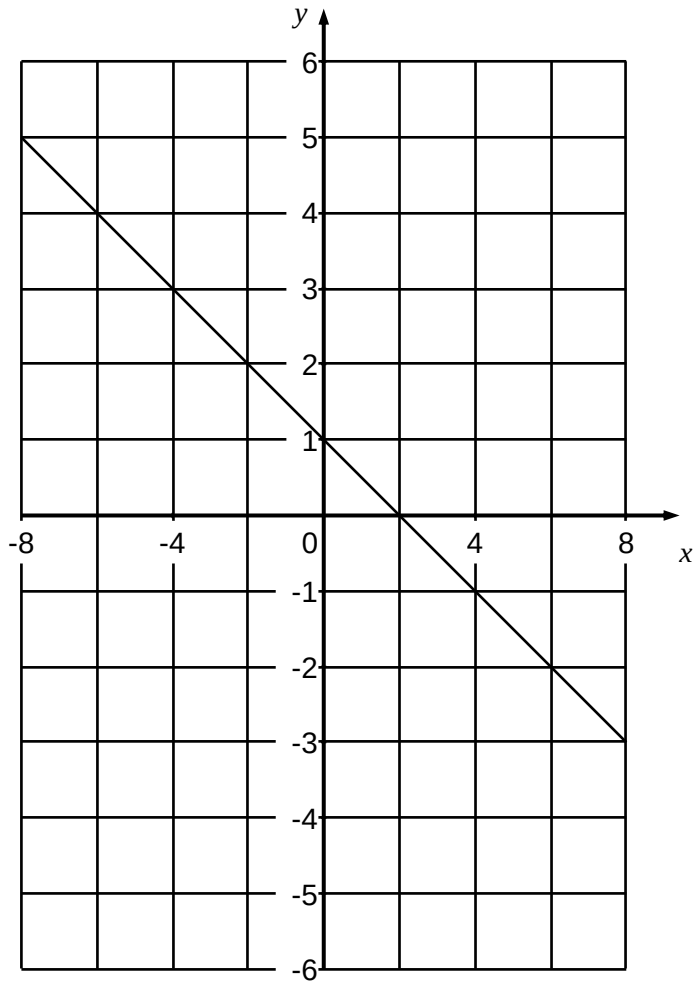
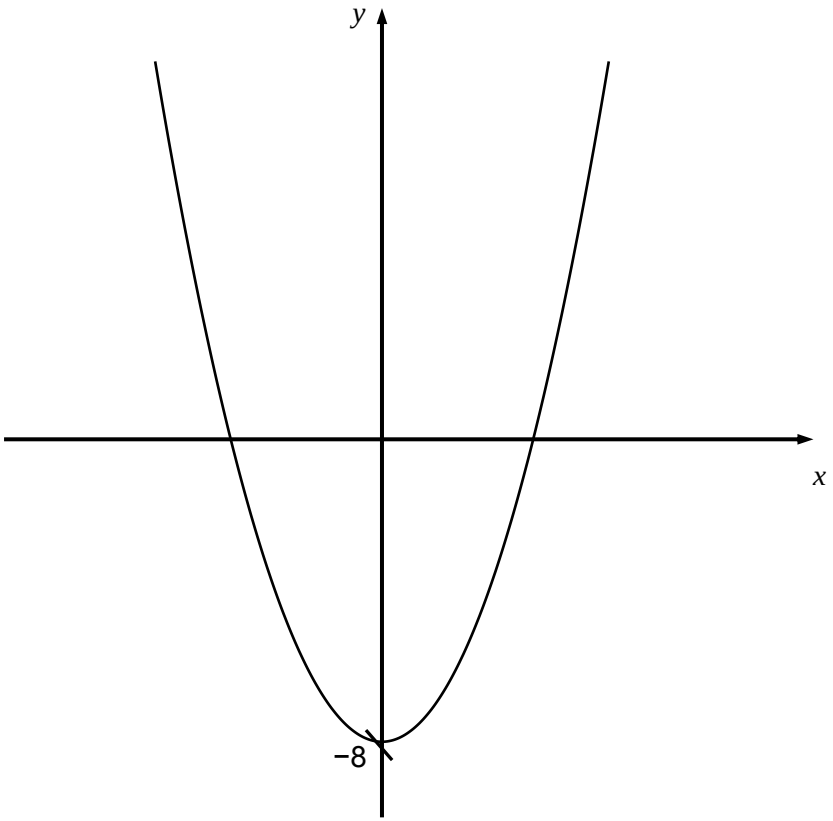
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		Fintan with reason	1	B1 for Fintan with reason, eg gradient of line is greater
(b)		100, 200	2	B2 for two correct values (and no incorrect values, accept 0) (B1 for one non-zero value)
(c)		1.3	2	M1 for a complete method to find the gradient eg sight of right angled triangle with their height divided by their base A1 1.3 or $\frac{13}{10}$ or $1\frac{3}{10}$
(d)		Graph drawn	2	M1 for straight line, gradient 0. A1 ft for line showing constant speed of "1.3" for values of t from 0 to 250
14		$x + y = 8$	2	M1 for gradient of -1 or use intercept of 8 eg $y = mx + 8$, $m \neq -1$ or $y = -x + c$, $c \neq 8$ or $-x + 8$ A1 oe
15 (a)		$-\frac{1}{4}$	2	M1 for correct first step eg multiply by 6 throughout A1 oe
(b)		$-\frac{1}{2}$	3	M1 for correct first step eg a correct expansion M1 (dep M1) for isolating terms in w A1 oe

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 (a)		12, (0), −4, 0, 12	2	B2 for all 4 missing values correct (B1 for 2 or 3 missing values correct)
(b)		Curve drawn	2	M1 (dep B1) for plotting their points A1 for correct curve between $x = -6$ and $x = 2$
(c)		−5.6, 1.6	2	M1 for a line drawn at $y = 9$ or one correct value ft their quadratic graph A1 for two correct values ft their quadratic graph

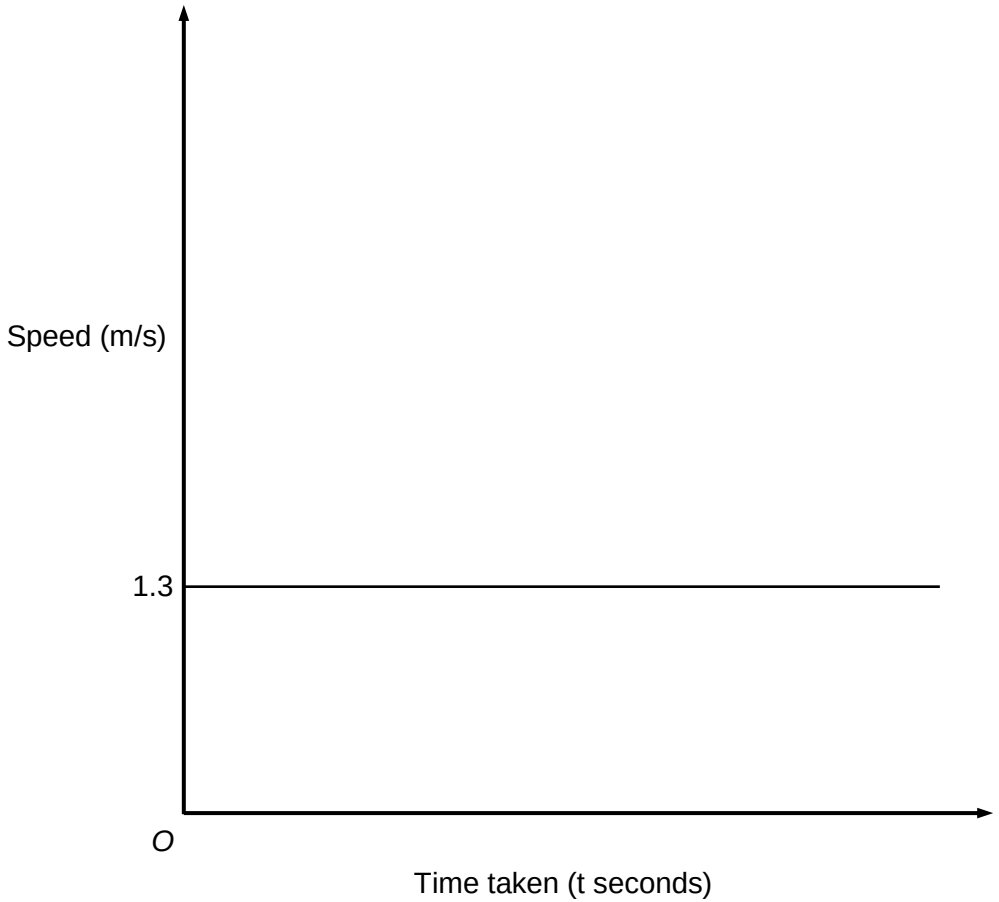
Question 7



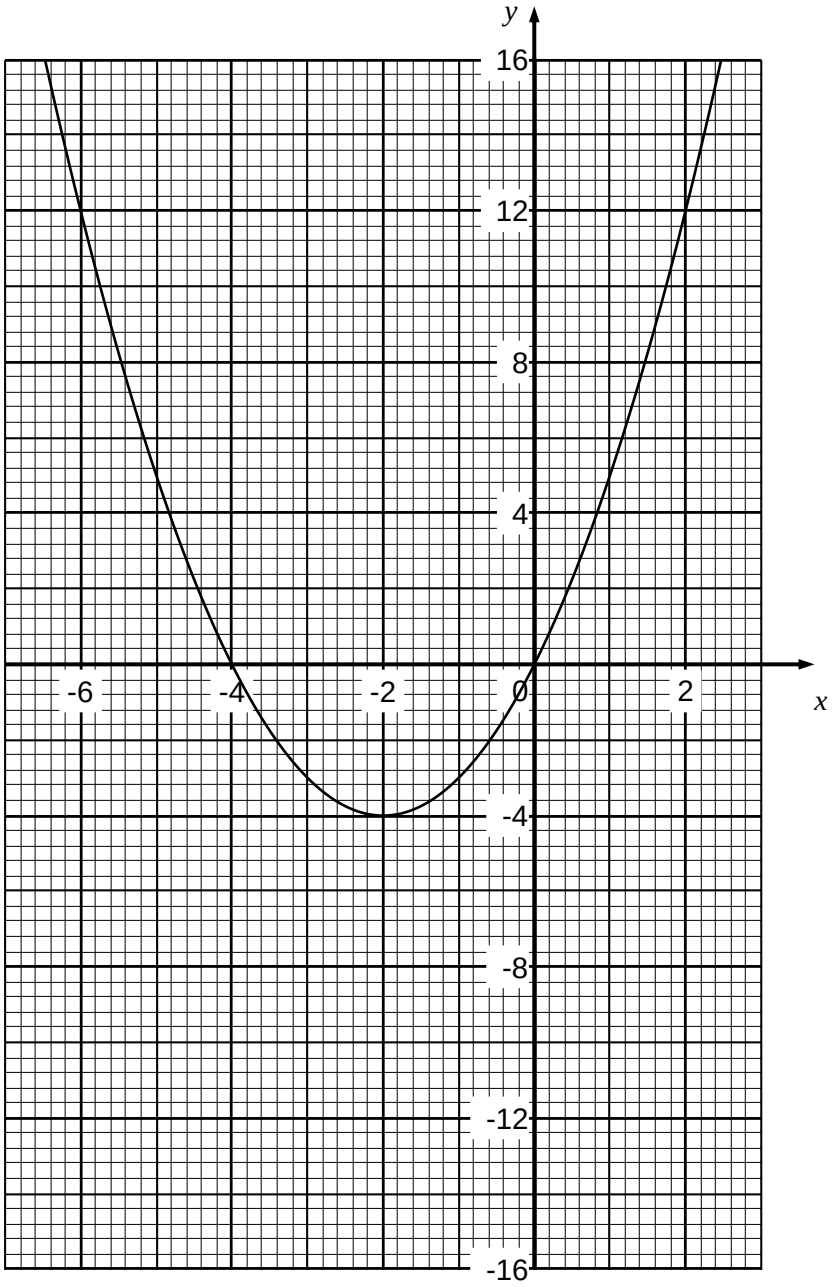
Question 11



Question 13(d)



Question 16



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