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Mark Scheme (Results)

Summer 2014

Pearson Edexcel Level 2 Award in Algebra (AAL20)

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Summer 2014
Publications Code EA037944

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

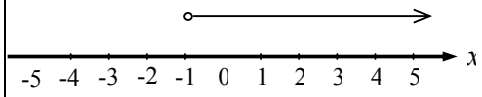
PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		c^7	1	B1 cao
	(b)		d^3	1	B1 cao
	(c)		g^6	1	B1 cao
	(d)		$20p^5q^2$	2	B2 for $20p^5q^2$ (B1 for two elements from 20 or p^5 or q^2 in a product)
2	(a)		$a(b - c)$	1	B1 for $a(b - c)$
	(b)		$3(2d - 1)$	1	B1 for $3(2d - 1)$
	(c)		$5f(2f + 5)$	2	M1 for correct partial factorisation A1 for $5f(2f + 5)$
3	(a)		Correct curve	2	B2 for correct curve (B1 for plotting all the values correctly)
	(b)		59 - 63	1	B1 for answer in the range 59 – 63
	(c)		4.8 - 5.3	2	M1 for method to find the difference in times A1 for answer in the range 4.8 - 5.3 or ft from (a) if curve drawn
4			C, A, E, B, D	3	B3 for all correct (B2 for 3 or 4 correct B1 for 2 correct)

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)	$2c - 2 = 3$ $2c = 5$	$\frac{5}{2}$	2	M1 for correct expansion of bracket or correct division of both sides by 2 A1 for $\frac{5}{2}$ oe
	(b)	$2h = -6$	-3	2	M1 for correct method to isolate terms in h on one side and constants on the other side. A1 cao
	(c)	$\frac{1}{2}y = -2$	-4	2	M1 for subtraction of 7 from both sides or multiplication of all 3 terms by 2 A1 cao
6			-5	2	M1 for $-4 \times 2 + 3$ oe A1 cao
7	(a)		0	1	B1 cao
	(b)	Gradient $= -\frac{1}{2}$	$y = -\frac{1}{2}x + 4$	2	M1 for $m = -\frac{1}{2}$ oe or $y = -\frac{1}{2}x + c$ or for $y = mx + 4$, $m \neq 0$ A1 for $y = -\frac{1}{2}x + 4$ oe

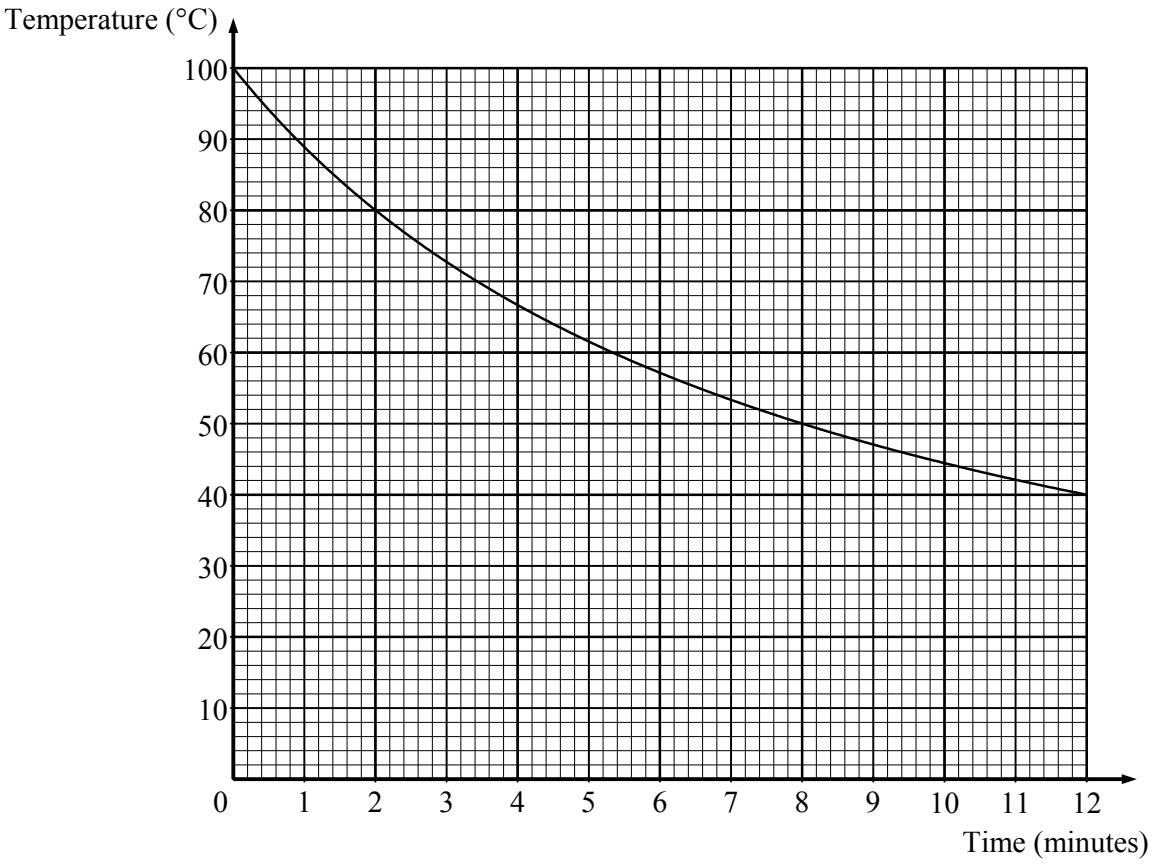
PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)(i)		43	4	B1 cao
	(ii)		163		B1 cao
	(iii)		$8n - 5$		M1 for $8n$ (+ c) A1 for $8n - 5$ oe
	(b)	$10 - 3$ $10 - 7$ $10 - 3$ $10 - 7$	7, 3, 7, 3	2	B2 for all four terms correct (ignore any extras) (B1 for 7,…. or for 3, 7, 3, 7,…)
9	(a)		$3ab + 4bc$	2	B2 for $3ab + 4bc$ (B1 for one term correct)
	(b)	$3u \times u + 3u \times t$	$3u^2 + 3ut$	2	M1 for $3u \times u + 3u \times t$ or one correct term A1 for $3u^2 + 3ut$
	(c)	$x^2 + 4x + 2x + 10$	$x^2 + 6x + 10$	2	M1 for $x^2 + 4x$ or $2x + 10$ or 2 correct terms out of final 3 terms A1 for $x^2 + 6x + 10$
	(d)	$10n^3 - 3n^2 \times n - 3n^2 \times 2$	$7n^3 - 6n^2$	2	M1 for $7n^3$ or $- 6n^2$ A1 $7n^3 - 6n^2$

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		£800	1	B1 £800
	(b)		60	1	B1 cao
	(c)(i)		200	3	B1 cao
	(ii)	$\frac{1100-200}{60-0}$	15		M1 for method to find the gradient eg sight of right angled triangle with their height divided by their base or solving a correct equation A1 for 15 (accept value in the range 14.5 to 15.5)
11	(a)		$x + y + w$	1	B1 for $x + y + w$ oe
	(b)(i)		$5x + 10y + 20w$	3	B2 for $5x + 10y + 20w$ oe (B1 for $5x$ or $10y$ or $20w$ oe seen)
	(ii)		$\frac{5x+10y+20w}{100}$		B1 for $\frac{5x+10y+20w}{100}$ oe or ft from an expression of at least two terms in b(i)

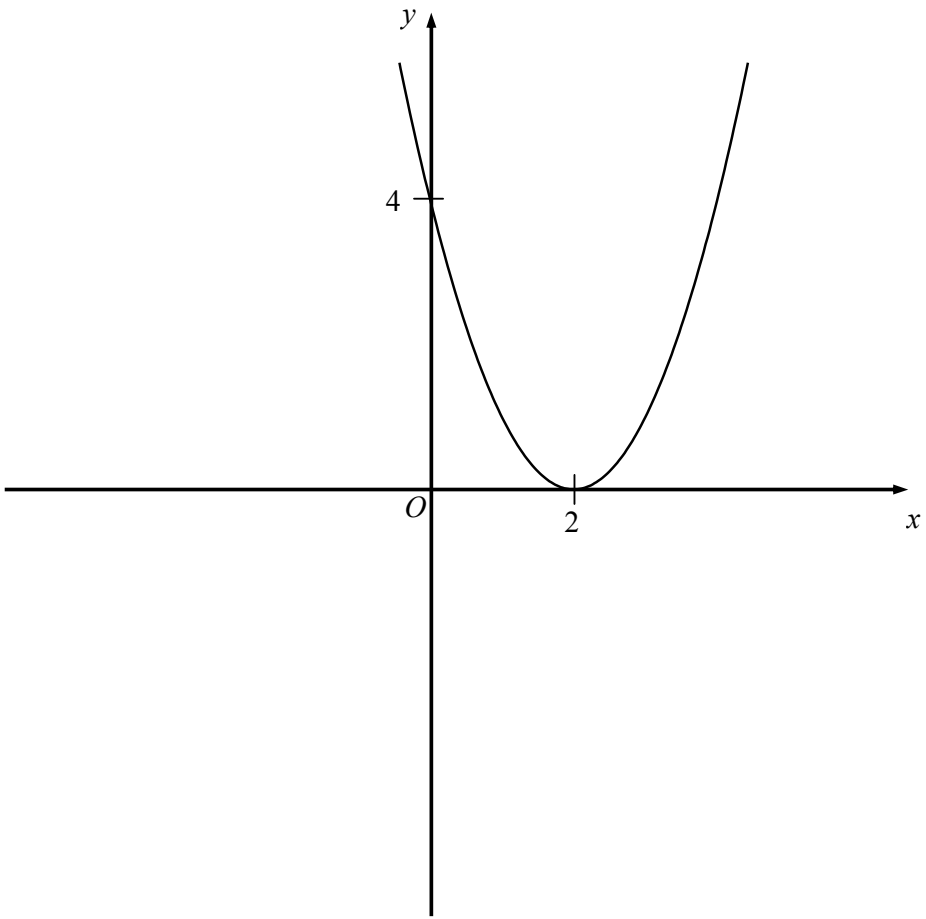
PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)(i)	$\frac{16}{2} - 3$	5	4	M1 for correct substitution of $p = 16$ A1 cao
	(ii)	$N + 3 = \frac{p}{2}$	$p = 2N + 6$		M1 for $N + 3 = \frac{p}{2}$ or $2N = p - 6$ A1 for $p = 2N + 6$ oe
	(b)	$20 = 5\sqrt{q}$ $\frac{20}{5} = \sqrt{q}$ $q = 4^2$	16	2	M1 for $20 \div 5$ (= 4) oe or $20^2 = (5\sqrt{q})^2$ oe or $\frac{M}{5} = \sqrt{q}$ or $M^2 = (5\sqrt{q})^2$ oe A1 cao
13	(a)(i)		4	3	M1 for substitution of $x = 0$ A1 cao
	(ii)		2		B1 cao
	(b)		Sketch graph	3	B1 for general shape (parabola) B1 for vertex at (2,0) B1 for y intercept labelled at (0, 4)
14	(a)	$1.6 \div 0.5$	3.2	2	M1 for $1.6 \div 0.5$ A1 cao
	(b)		completed graph	2	B1 for line from (2.50, 4) to (3.50, 4) B1 for line of constant gradient from ("3.50", 4) to axis after 1.5 hours

PAPER: AAL20_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)	5 (0) −3 (–4) (–3) 0 5	5, −3, 0, 5	2	B2 for all 4 missing values correct (B1 for 2 or 3 missing values correct)
	(b)		Correct curve	2	B2 for correct curve (B1 for plotting all their 7 values correctly.)
	(c)		−1.8, 3.8	2	M1 for line $y = 4$ drawn to intersect with the curve or for reading at least one value for x when $y = 4$ A1 for −1.8, 3.8 (accept values in the range −1.8 to −1.9 and 3.8 to 3.9) or ft from their parabola
16	(a)		one correct integer value	1	B1 for one correct value and no incorrect values
	(b)		$0 \leq y \leq 5$	2	B2 for $0 \leq y \leq 5$ (B1 for $y \geq 0$ or $y \leq 5$ or $0 < y < 5$) **NB** Accept the use of any letter other than y and ignore attempts to list integer values
	(c)		correct diagram	1	B1 for correct diagram (must have open circle)
	(d)		$n \leq 3$	3	M1 for a complete first step to add 1 to both sides or multiply all three terms by 3 M1 for complete and correct method A1 for $n \leq 3$ (Note: SC B2 for critical value of 3)

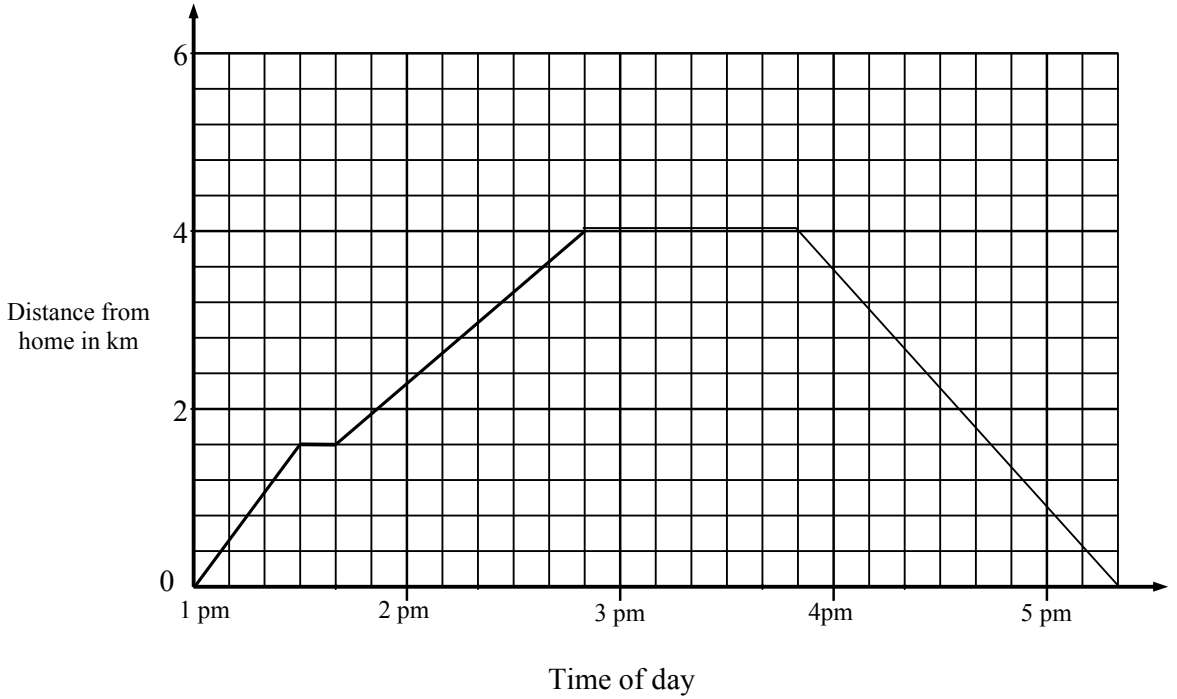
Q3 (a)


Temperature (°C)
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
Time (minutes)

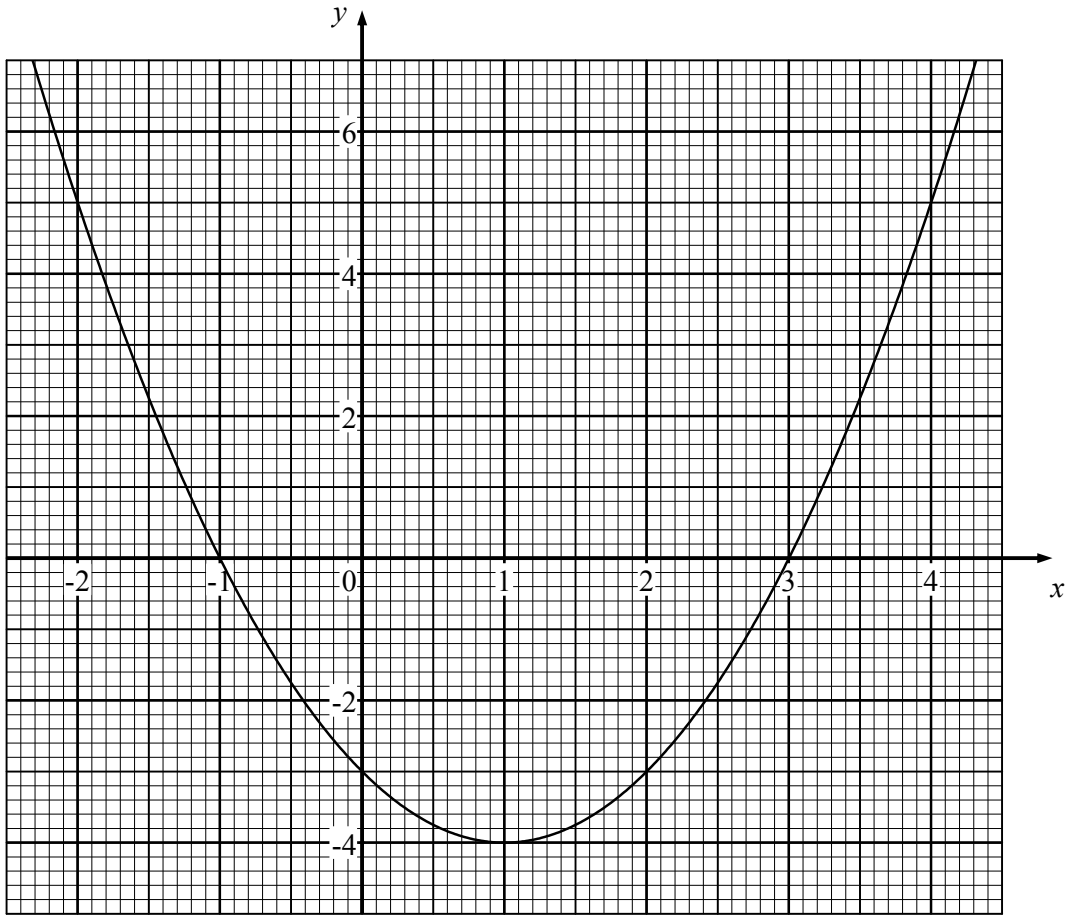
Q13



14(b)



Q15



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