



Pearson
Edexcel

Mark Scheme (Results)

January 2020

Pearson Edexcel Level 2 Award
In Algebra (AAL20)
Paper 01

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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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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)	$6e^2f$	2	B2 for fully simplified expression (B1 for two of 6, e^2 , and f in correct partial simplification)
	(b)	w^6	1	B1 cao
	(c)	n^5	1	B1 cao
	(d)	$32r^{15}$	2	M1 for $2^5 (= 32)$ or $r^{3 \times 5}$ A1 for fully simplified expression
2	(a)	$(7), 5, 3, 1, (-1), -3, -5$	2	B2 all 5 missing values correct (B1 for 3 or 4 correct values)
	(b)	Straight line from $(-3, 7)$ to $(3, -5)$	2	M1 (dep B1) for at least 5 points correctly plotted A1 fully correct graph
3	(a)	$\frac{x}{2}$	1	B1 oe
	(b)	$tx + 2x$	2	M1 for tx or $2x$ oe ft (a) A1 ft (a)
4		$5x - 10 + 12 - 3x$	2	M1 for correctly expanding either bracket or one correct term from two terms, may be seen in separate working areas A1 for $2x + 2$ or $2(x + 1)$

PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
5		Correct sketch with (0, -18) labelled	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, -18)
6	(a)	4	1	B1 cao
	(b)	-1	2	M1 for a correct first step eg $5y = 2 - 7$ A1 cao
	(c)	4	3	M1 for a correct first step eg $8e - 20 = 3e$ M1 for isolating terms in e , eg $5e = 20$ A1 cao
	(d)	$\frac{22}{7}$	3	M1 for a correct first step eg $7f - 2 = 4 \times 5$ M1 for isolating terms in f , eg $7f = 22$ A1 oe
7	(a)	24	1	B1 for value in the range 23.8 to 24.2
	(b)	10	1	B1 for value in the range 9.9 to 10.1
	(c)	120	2	M1 for a full method eg $7 \times 16 + 8$ or 5×24 A1 ft provided method is clear and unambiguous
	(d)	Description	1	B1 eg number of km per mile

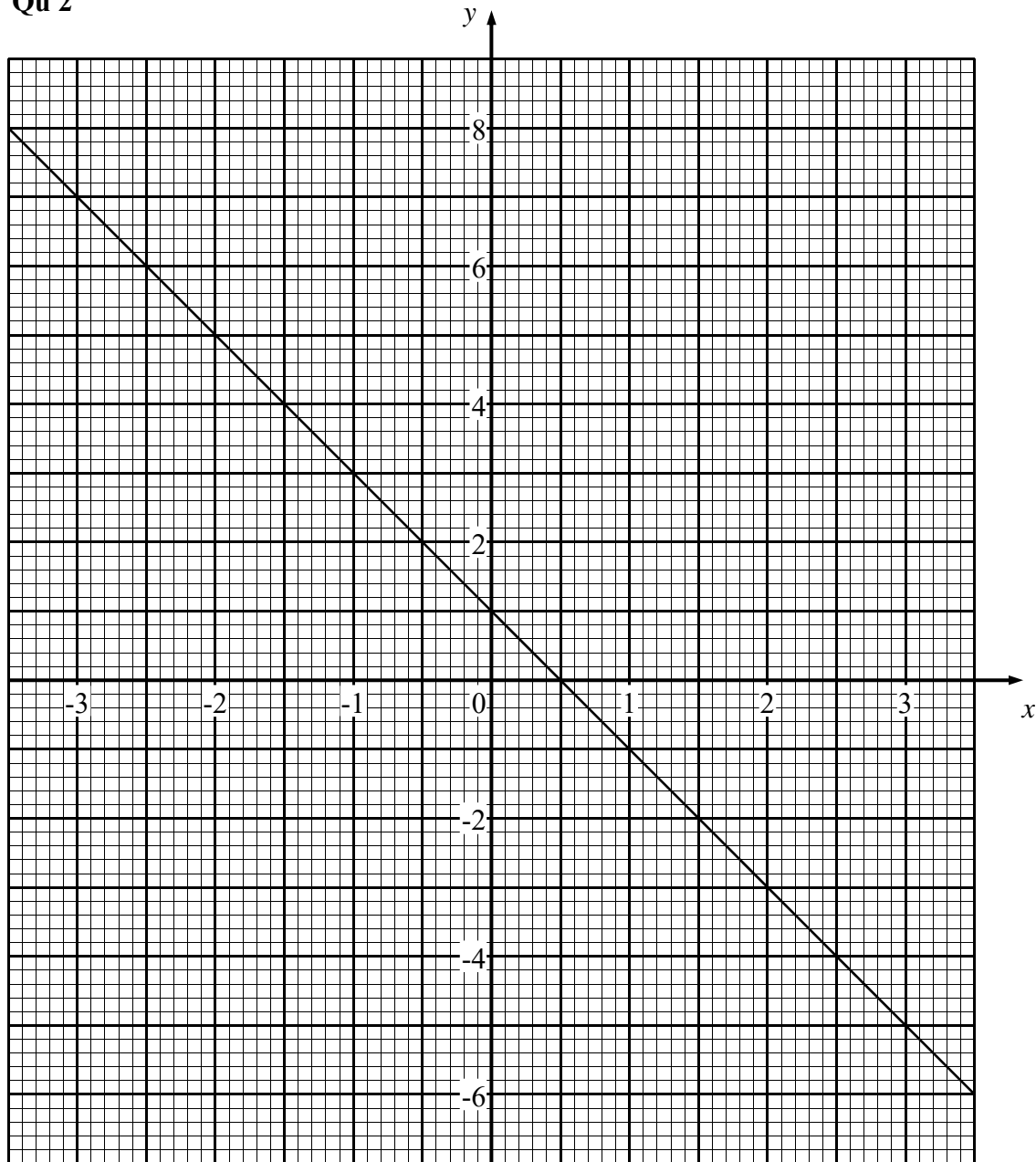
PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
8 (a)		$x(y + 3)$	1	B1 oe
(b)		$4ef(2 - 3e)$	2	M1 for correct partial factorisation with at least 3 factors A1
(c)		$5a^2(5a^2c^2 + 1)$	2	M1 for correct partial factorisation with at least 3 factors A1
9 (a)		4, 2.5	2	M1 for $(7 + 1) \div 2$ or 4 or 3 rd term ft their 2 nd term A1 for 4 and 2.5 oe
(b)(i)		$10n - 6$	2	M1 for $10n (+ c)$ A1 for $10n - 6$ oe
(ii)		114	2	M1 for “10” \times 12 – “6” oe A1 114 or ft expression in the form $an + b$, $a \neq 1, b \neq 0$
10 (a)		2	2	M1 for correct method to find the gradient eg sight of right angled triangle with their height divided by their base with correct use of scale A1 cao
(b)		$y = 3 - x$	2	M1 for $y = -x + c$ oe or for $y = mx + 3, m \neq 0, -1$ oe Or (N =) $3 - x$ A1 oe

PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
11 (a)		40	2	M1 for substitution, eg $\frac{1}{2} \times (3 + 5) \times 10$ A1 cao
(b)(i)		5	2	M1 for substitution and a first step to solve for h , eg $30 = (2 + 4)h$ A1 cao
(ii)		4	2	M1 for full substitution and a first step to solve for t , eg $18 = (t + 2)3$ A1 cao
(c)		$e = \frac{(f + 7)^2}{64}$	3	M1 for adding 7 to both sides, eg $f + 7 = 8\sqrt{e}$ or divide both sides by 8, eg $\frac{f}{8} = \sqrt{e} - \frac{7}{8}$ M1 for rearranging correctly to isolate \sqrt{e} , eg $\frac{f+7}{8} = \sqrt{e}$ A1 oe (If M0 scored SC B1 for $e^2 = \frac{f+7}{8}$)
12 (a)		7, (2), (-1), -2, -1, (2), 7	2	B2 for all 4 missing values correct (B1 for 2 or 3 missing values correct)
(b)		Curve drawn	2	B2 for correct curve (B1 for plotting all their points correctly, provided B1 scored in part (a).)
(c)		-2.4, 0.4	2	M1 for marks where parabola intersects with the x -axis or for one correct value for x A1 for -2.3 to -2.5 and 0.3 to 0.5 or ft parabola

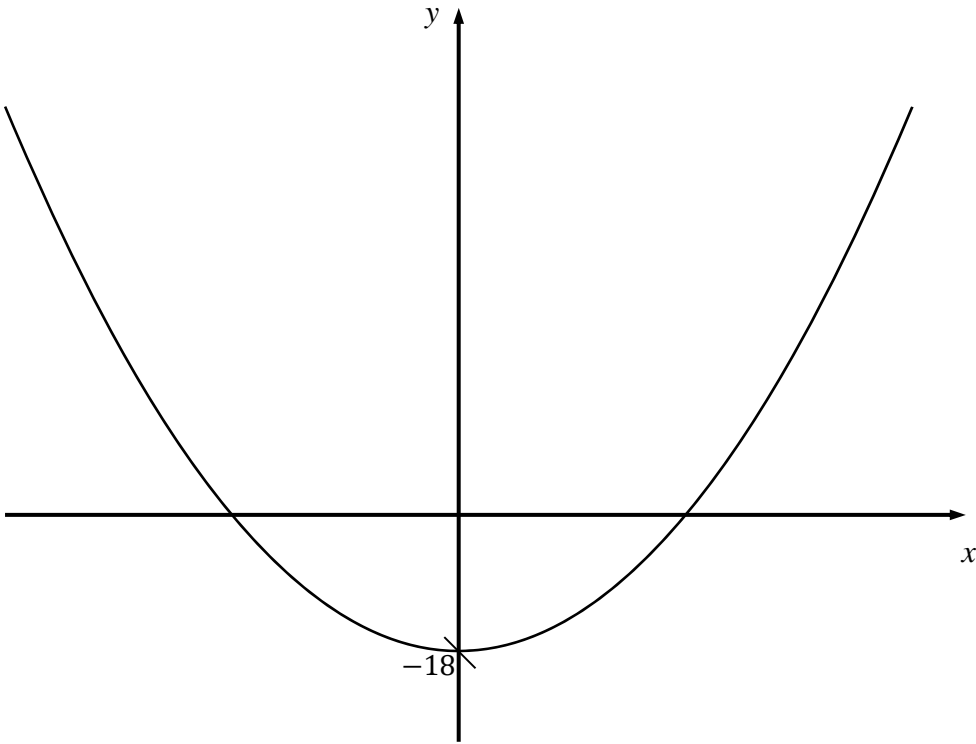
PAPER: AAL20_01									
Question		Working					Answer	Mark	Notes
13	(a)						$5x + 5y$	1	B1 cao
	(b)						$6d^2 - 8d$	2	B2 both terms correct (B1 for 1 out of 2 terms correct)
14	(a)	0	10	20	30	40	Graph drawn	2	M1 for graph passing through (0, 120) or line with gradient 12.5 or for at least two points calculated A1 for line through (0, 120) and (40, 620)
		120	245	370	495	620			
	(b)						28	2	M1 for indication of reading from the graph for x when $y = 470$ A1 cao
15	(a)						$t \geq 15$	1	B1
	(b)						correct diagram	2	B2 for correct diagram (must have correct endpoint notation) (B1 for line from -1 to 3 but not with correct endpoint notation or one end point fully correct with no contradiction)
	(c)						$f < 40$	2	M1 for subtraction of 75 from both sides or dividing throughout by 3 or 40 seen as the critical value A1 for $f < 40$

PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
16 (a)		3	2	M1 for complete method to find gradient, eg $\frac{4.5}{1.5}$ A1 value in the range 2.9 to 3.1
(b)		60	2	M1 for reading and adding the correct times eg $0.5 + 0.5 (= 1 \text{ hr})$ or 1 hour as answer A1 cao
(c)		Graph completed	2	B2 for a line drawn from (4.5,6.5) to (5.5,2.5) (B1 for a line drawn from (4.5,6.5) with appropriate gradient or for a duration of 1 hour)

Qu 2



Qu 5



Qu 12

