Pearson Edexcel

Mark Scheme (Results)

January 2021

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

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

January 2021
Publications Code AAL20_01_2101_MS

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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)		n^9	1	B1
(b)		t^6	1	B1
(c)		$81r^8$	2	M1 for 81 or r^8 A1
(d)		$10w^3y$	2	M1 for any 2 of 10, w^3, y correct in a product A1
(e)		$m + 3p - 9$	2	M1 for any 2 of m, $3p, -9$ correct in an expression of the form $am + bp + c$ where a, b and c are constants A1
2 (a)		$5(5 - g)$	1	B1 oe
(b)		$3y(3y + 2)$	2	B2 for $3y(3y + 2)$ (B1 correct partial factorisation with 2 factors, $3(3y^2 + 2y)$, $y(9y + 6)$ may be seen in working.)
(c)		$4em^2(4e - 3m)$	2	B2 for $4em^2(4e - 3m)$ (B1 for correct partial factorisation with a product of at least 3 factors, may be seen in working.) Note: for all answers a different order of factors may be seen

PAPER: AAL20_01

Question	Working	Answer	Mark	Notes
3	<table><tr><td>x</td><td>–3</td><td>–2</td><td>–1</td><td>0</td></tr><tr><td>y</td><td>–13</td><td>–10</td><td>–7</td><td>–4</td></tr></table> <table><tr><td>x</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>–1</td><td>2</td><td>5</td></tr></table> OR Using $y = mx + c$ gradient = 3 y intercept = -4	Straight line from (–3, –13) to (3, 5)	3	**(Table of values)** M1 for a correct method to find at least 2 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 $x = –3$ and $x = 3$ **(No table of values)** M2 for at least 2 correct points and no incorrect points plotted OR line segment of $y = 3x - 4$ 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 $x = –3$ and $x = 3$ **(Use of $y = mx + c$)** M2 line segment of $y = 3x - 4$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of 3 OR line drawn with y intercept of -4 and a positive gradient) A1 for correct line between $x = –3$ and $x = 3$
4 (a)		3	2	M1 for a correct first step, subtracting 5 from both sides or dividing throughout by 2, eg $2f = 6$ A1 cao
(b)		-8	2	M1 for isolating terms in k and constant terms or multiplying throughout by 2, eg $\frac{1}{2}k = –4$ A1 cao

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
(c)		$\frac{13}{4}$	3	M1 for multiplying out one bracket or dividing both sides by 3 or dividing both sides by 2, eg $6x - 3$ or $2x + 10$ M1 for isolating terms in x and constant terms, eg $4x = 13$ A1 for $\frac{13}{4}$ oe
5 (a)		6, 9	2	M1 for a correct substitution, may be indicated by one correct term, eg $3(1 + 1)$ or $3(2 + 1)$ A1 cao
(b)		40	2	M1 for $3(n + 1) = 123$ oe or $123 \div 3$ A1 cao
6 (a)		$2u^2 + uw + 3u$	2	M1 for 2 out of 3 terms correct, eg $2u^2 + uw + 3$ A1
(b)		$20q^3 - 4q^4$	2	M1 for 1 term out of 2 terms correct, eg $9q^3 - 4q^4$ A1
7		Equation Expression Equation Formula	3	B3 all correct answers (B2 for 3 correct answers B1 for 1 or 2 correct answers)
8 (a)		10	2	M1 for method to find the speed eg $7.5 \div 0.75$, $7.5 \div 45$ or to find the gradient, eg $15 \div 9$ from triangle seen A1 cao

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
(b)		Completed travel graph	2	B1 for line segment from (1345, 7.5) to (1435, 7.5) B1 for line segment from their (1435, 7.5) to (1500, 0)

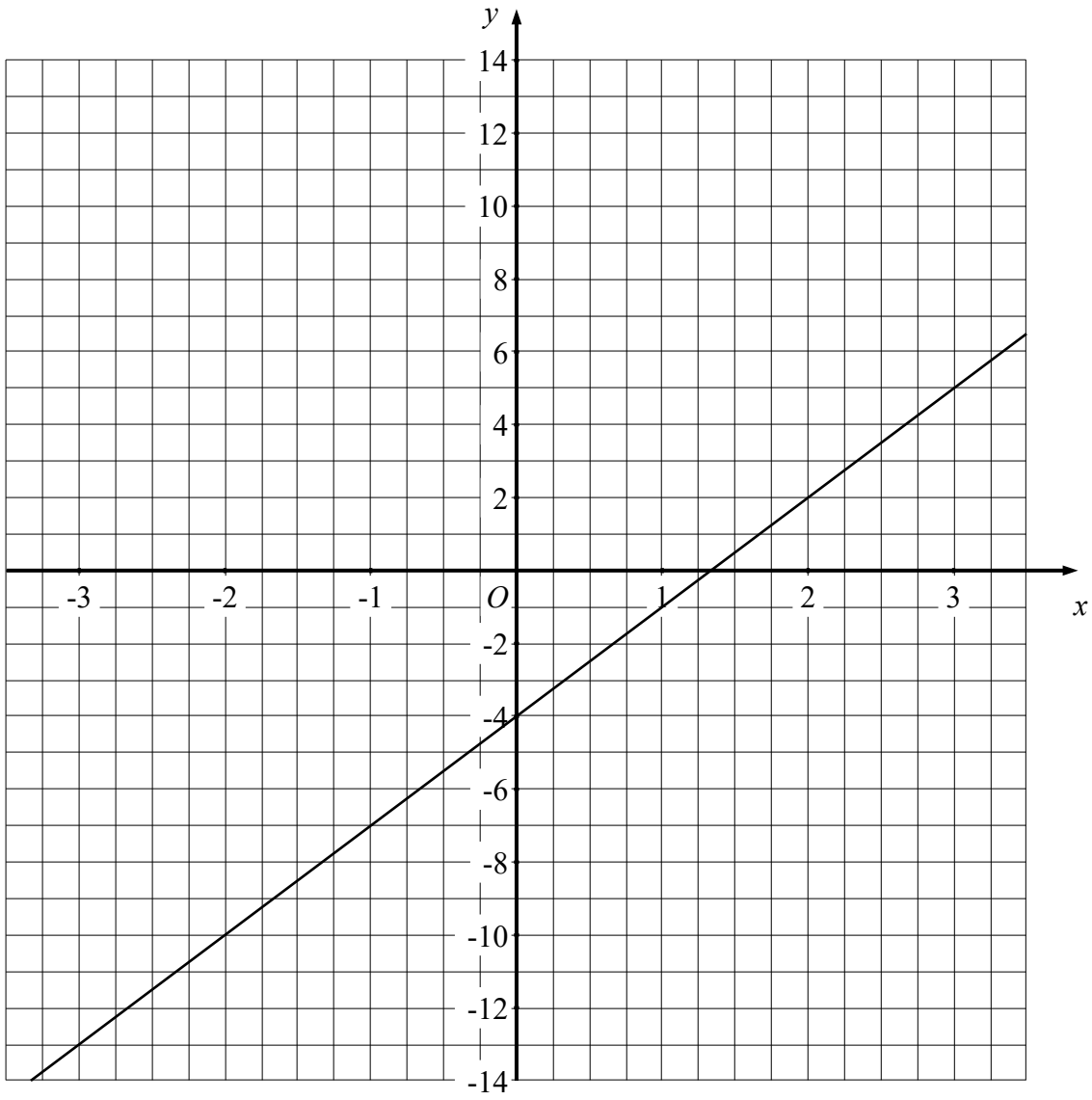
PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
9 (a)		$x \leq 3$	2	B2 for $x \leq 3$ (B1 for $x < 3$ or for $x \leq 3$ forming part of an incorrect inequality or for ≤ 3)
(b)		inequality shown	2	B2 for correct diagram (must have full circle at 1 and open circle at −3) (B1 for line from −3 to 1 but not with notation at end(s) **or** a line ending at either critical value with correct notation at that end **or** correct notation at both endpoints)
(c)		−2, −1, 0, 1, 2, 3	2	B2 for all 6 correct values, in any order (B1 for values with one error or omission or for −1, 0, 1, 2, 3, 4)
(d)		$w < 4$	3	M1 for a first step, eg multiplying both sides by 2, $5w < 20$ or dividing both sides by 5, eg $\frac{w}{2} < 2$ or for $2.5w < 10$ (accept any inequality sign or =) M1 for a critical value of 4 A1
10 (a)(i)		9	1	B1 cao
(ii)		−3	1	B1 cao
(b)		Sketch	3	B1 for general shape (parabola with correct orientation) B1 for vertex at $(-3, 0)$ B1 for y intercept labelled at (0, 9)

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		$5m$	1	B1 for $5m$ oe
(b)		$6m$	1	B1 cao
(c)		$11m + 4n$	2	M1 for "(a)" + n + "(b)" + $3n$ or one correct term A1 cao
12 (a)		1080	1	B1 cao
(b)		12	1	B1 cao
(c)		−45	2	M1 for correct method to find the gradient eg sight of right-angled triangle with their height divided by their base or for 45 A1 for −45
(d)		explanation	1	B1 for explanation, eg the money owed goes down (by £45) per month oe

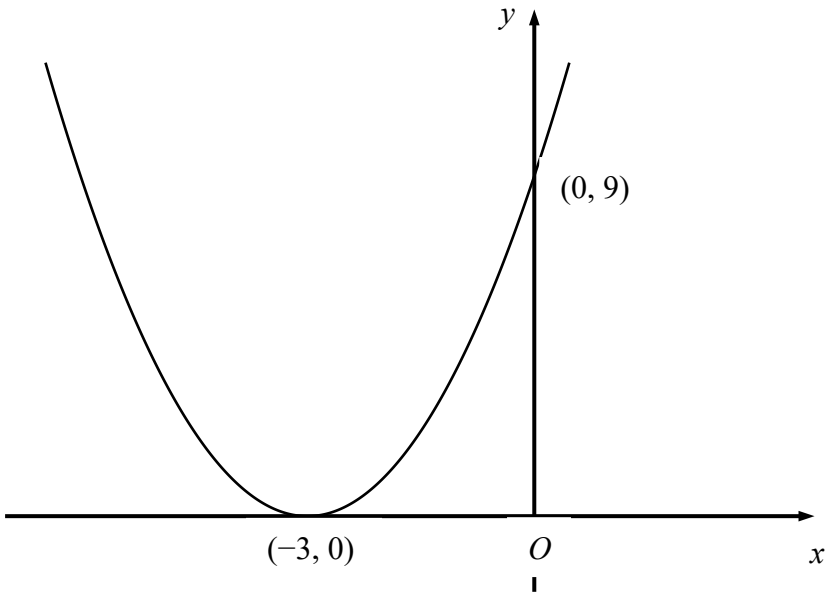
PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		20	2	M1 for substituting $g = 19$, may be seen in working or in flow chart, eg $5\sqrt{19-3}$ A1 cao
(b)		$g = \left(\frac{t}{5}\right)^2 + 3$	3	M1 for a first step to rearrange, eg $\frac{t}{5} = \sqrt{g-3}$ or $t^2 = 25(g-3)$ M1 for a second step, eg $\left(\frac{t}{5}\right)^2 = g - 3$ or $\frac{t^2}{25} = g - 3$ A1 oe
14 (a)		7, (3), 1, (1), 3, 7	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 (condone 1 error) A1 for correct curve between $x = -3$ and $x = 2$
(c)		−2.7 to −2.9 and 1.7 to 1.9	2	M1 for using $y = 6$, may be shown on graph or one correct value A1 for one value between −2.7 and −2.9 and one value between 1.7 and 1.9 or ft their curve (dep M1 in (b))
15		3, 2	2	B2 for both correct (B1 for 1 correct)
16		11.5	3	M1 for correct first step, eg $2c - 3 = 20$ M1 for isolating terms in c, eg $2c = 23$ A1 for 11.5 oe

PAPER: AAL20_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		$y = \frac{4}{3}x + 4$	3	M1 for correct method to find the gradient eg sight of right-angled triangle with height divided by base, eg $\frac{4}{3}$ M1 for $y =$ "m"$x + c$ or for $y = mx + 4$, $m \neq 0$, $\frac{4}{3}$, 4 or for $\frac{4}{3}x + 4$ A1 for $y = \frac{4}{3}x + 4$ oe

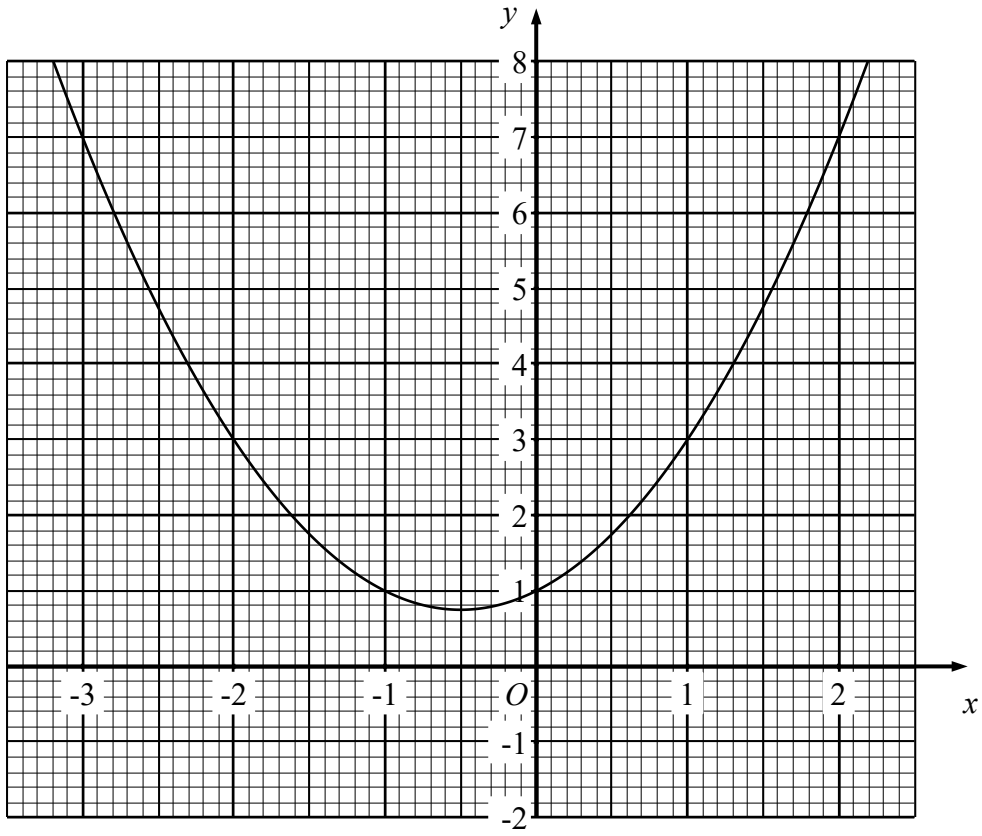
Question 3



Question 10



Question 14



Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom