Pearson
Edexcel

Mark Scheme

Summer 2023

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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.

Question			Answer	Mark	
1	(a)		$5m + m^2$	1	B1 oe
	(b)		x^8	1	B1 cao
	(c)		p^3	1	B1 cao
	(d)		$3qr$	2	M1 for any 2 of 3, q, r correct in a product A1 oe
2	(a)		$h - 35$	1	B1 for an expression eg $h - 35$
	(b)		$50x + 200y$	2	M1 for $50x$ or $200y$ A1 oe
3	(a)		$c(5c + d)$	1	B1 oe
	(b)		$4x(1 + 4x)$	2	B2 $4x(1 + 4x)$oe (B1 for correct partial factorisation with 2 factors, $4(x + 4x^2)$ or $x(4 + 16x)$ or $2(2x + 8x^2)$ or $2x(2 + 8x)$
	(c)		$ab^2(b - 2)$	2	B2 for $ab^2(b - 2)$ oe (B1 for correct partial factorisation with 3 factors, $b^2(ab - 2a)$ or $ab(b^2 - 2b)$)
4			$R = \frac{1}{2}t + 6$	1	B1 Correct selection $R = \frac{1}{2}t + 6$

Question			Answer	Mark	
5	(a)		Graph drawn	1	B1 for $y = 4$ drawn
	(b)	(−2,10), (−1,8), (0,6), (1,4), (2,2), (3, 0), (4, −2)	Graph drawn	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 $x = -2$ and $x = 4$ **(No table of values)** M2 for at least 2 correct points and no incorrect points plotted OR line segment of $y = 6 - 2x$ 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 $x = 4$ **(Use of $y = mx + c$)** M2 line segment of $y = 6 - 2x$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of –2 OR line drawn with y intercept of 6 and a negative gradient) A1 for correct line between $x = -2$ and $x = 4$
			Gradient –2		
			Intercept 6		

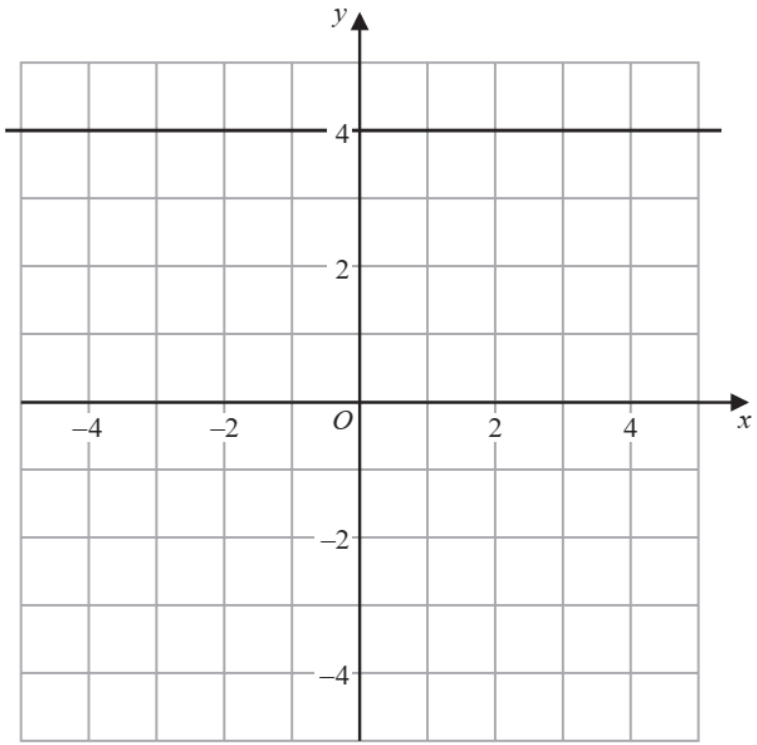
Question			Answer	Mark	
6	(a)		Correct diagram	2	B2 for correct diagram (must have full circle at 3 and empty circle at 5) (B1 for line from 3 to 5 without correct notation at each end or a line ending at either critical value with one end point correct and no contradiction)
	(b)		$y \leq -2$	1	B1 oe
	(c)		5	1	B1 cao
	(d)		$w \leq -1$	3	M1 for a correct first step eg $4w \leq 3 - 7$ M1 for critical value of -1 A1 oe
7	(a)		$3w + 6$	1	B1 oe
	(b)		$3t^3 + 9t^2$	2	B2 oe (B1 for one correct term)
	(c)		$10x + 8y$	3	M1 for expanding one bracket correctly eg $12x + 4y$ or $-2x + 4y$ or $-(2x - 4y)$ M1 for correctly collecting like terms in one variable eg $10x$ or $8y$ A1 oe
8	(a)		50	1	B1 cao
	(b)		12.5	2	M1 for correct method to find the gradient eg sight of right angled triangle with their height divided by their base using the given scales A1 12.5 or $12\frac{1}{2}$ or $\frac{25}{2}$
	(c)		Explanation	1	B1 eg cost per metre (of fabric)

Question			Answer	Mark	
9	(a)		10 (1) (–2) (1) 10 25	2	B2 for all values correct (B1 for 2 values correctly calculated)
	(b)		Graph drawn	2	M1 (dep B1) plotting all their points correctly A1 correct graph
	(c)		±1.5	2	M1 for a line drawn at $y = 5$ or one correct answer A1 1.4 to 1.6 **and** –1.6 to –1.4 **or** ft their quadratic graph (dep M1 in (b))
10	(a)		24	1	B1 cao
	(b)		3	2	M1 12 ÷ 2(=6) A1 cao
	(c)		$3n - 7$	2	M1 for $3n$ (+ c) A1 for $3n - 7$ oe
	(d)		32	2	M1 for full substitution of 12 eg $80 – 4 \times 12$ A1 cao

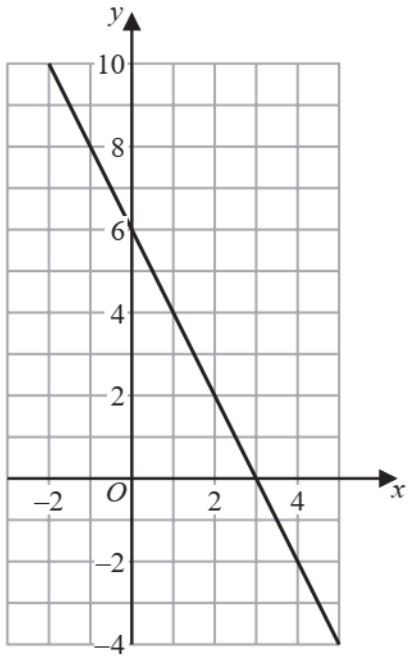
Question			Answer	Mark	
11	(a)		−4	1	B1 cao
	(b)		9	2	M1 isolating terms in y eg $3y - y = 11 + 7$ A1 cao
	(c)		16	3	M1 for a correct first step eg $2g = 3g - 12\ -4$ **or** $2g + 4 = 3(g - 4)$ M1 for isolating terms in g eg $2g - 3g = -12 - 4$ A1 cao
	(d)		11	3	M1 for multiplying both sides by 5 eg $3f + 2 = 35$ **or** for $\frac{3f}{5} = 7 - \frac{2}{5}$ M1 for isolating terms in f eg $3f = 33$ A1 cao
12	(a)		Graph drawn	3	M1 for a line drawn from (0,0) to (60,40) M1 for a horizontal line of 2.5 squares in length Al for a fully correct graph eg a line drawn from (0,0) to (60,40) and (60,40) to (65, 40) and (65,40) to (110,78)
	(b)		90	2	M1 for correct method to find the gradient eg sight of right angled triangle with their height divided by their base using the given scales eg $\frac{30}{20}$ or $30 \div \frac{1}{3}$ A1 cao
	(c)		15	1	B1cao
	(d)		100	2	M1 working with total distance eg shows 30, 30 and 40 **or** 60 and 40 A1 cao

Question			Answer	Mark	
13	(a)		40	2	M1 for substituting in 4,6 and 5 eg $V=\frac{4\times6\times5}{3}$ A1 cao
	(b)		4.5	2	M1 for substituting in 15, 5 and 2 eg $15=\frac{5\times2\times a}{3}$ **or** rearranges to ($a=$) $\frac{3V}{bh}$. A1 oe
	(c)		$t=\frac{w-5}{10}$	3	M1 for a correct first step eg $w = 10t + 5$ or $\frac{w}{5} = 2t + 1$ M1 for a correct step to isolate t eg $w - 5 = 10t$ or $\frac{w}{5} - 1 = 2t$ A1 oe
14	(a)(i)		9	1	B1 cao
	(ii)		3	1	B1 cao
	(b)		Sketch	3	M1 for parabola in correct orientation M1 for intersection at (0, 9) ft labelled **or** for (3, 0) ft labelled as minimum point A1 for a fully correct sketch, including symmetry, intersection at (0, 9) labelled and vertex labelled at (3, 0)
15			$y = 0.75x + 3$	3	M1 for correct method to find the gradient eg sight of right angled triangle with their height divided by their base M1 for $y =$ "0.75"$x + c$, $c \neq 3$ oe **or** for $y = mx + 3$, $m \neq 0.75$ oe A1 oe

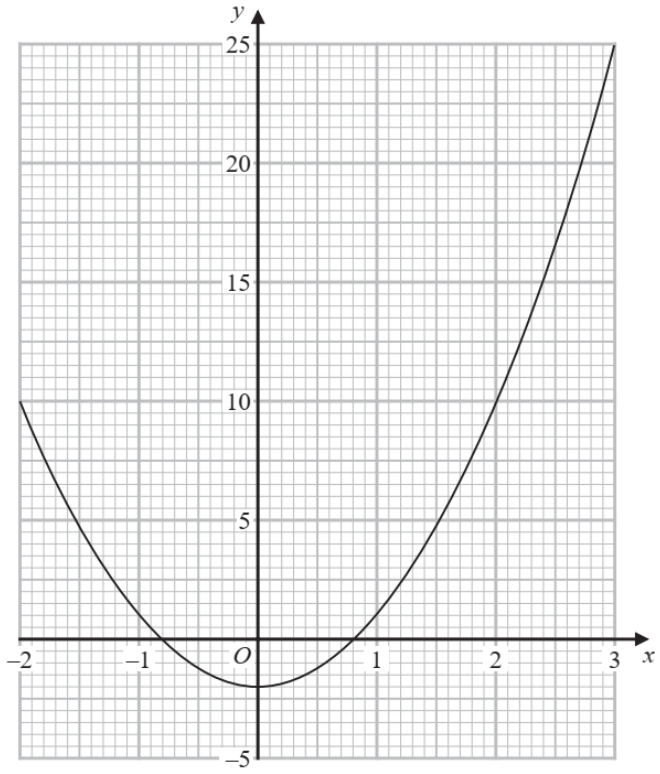
Question 5(a)



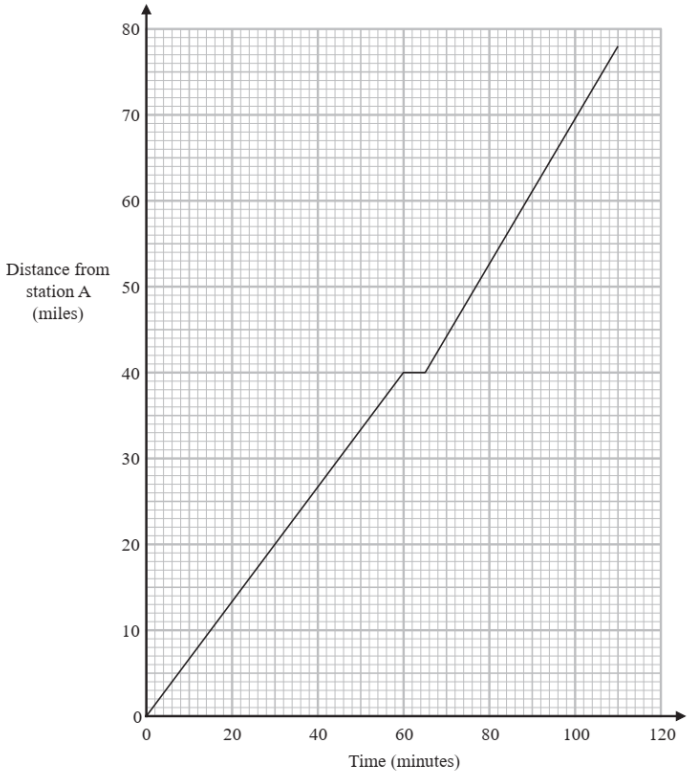
Question 5(b)



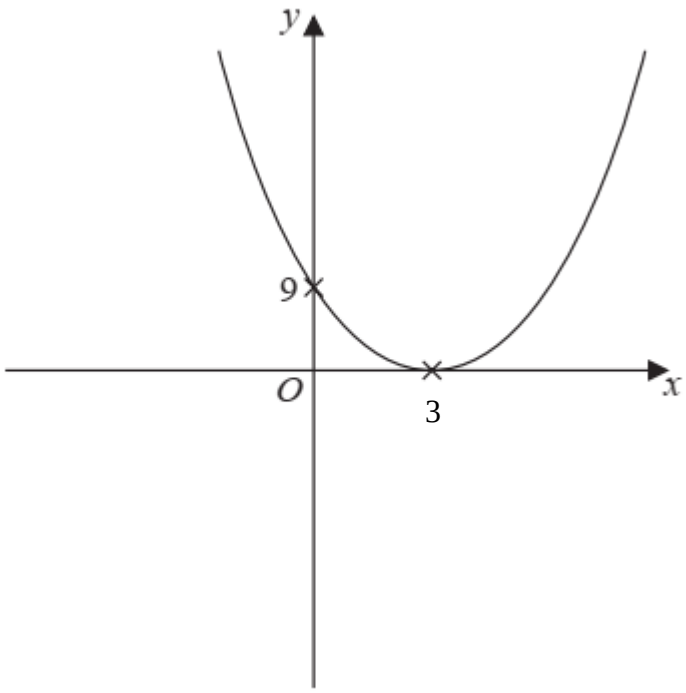
Question 9



Question 12


Distance from station A (miles)
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
Time (minutes)

Question 14



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