



Pearson

Mark Scheme (Results)

Summer 2017

Pearson Edexcel Level 2 Award
In Algebra (AAL20)

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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

ft – follow through

isw – ignore subsequent working

SC: special case

oe – or equivalent (and appropriate)

dep – dependent

indep - independent

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

8 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

9 Use of ranges for answers

If an answer is within a range this is inclusive, unless otherwise stated.

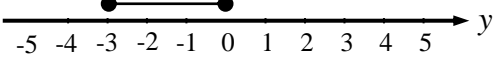
PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
1 (a)		$25m^2t^3$	2	B2 for fully simplified expression (B1 for partial simplification)
(b)		g^7	1	B1 cao
(c)		p^8	1	B1 cao
(d)		$10ru$	2	M1 for correct simplification of $\frac{20}{2}$ or $\frac{r^2}{r}$ as one term in a product of 2 or 3 terms A1 for fully simplified expression
2 (a)		5	2	M1 for subtracting 7 from both sides or dividing by 4 throughout A1 cao
(b)		4	2	M1 for adding 3 to both sides or dividing by 2.5 throughout A1 cao
3 (a)		Graph drawn	2	M1 for at least 3 points correctly plotted A1 for correct graph between 0 and 12 litres
(b)(i)		15.8	2	B1 for 15.4 – 16
(ii)		6.8		B1 for 6.7 – 7.0
(c)(i)		1.75	3	M1 for complete method to find gradient, eg sight of right-angled triangle with “height” divided by “base” A1 for 1.75 oe (accept value in the range 1.7 to 1.8)
(ii)		Correct interpretation		B1 e.g. “the number of pints in a litre” oe

Question	Working	Answer	Mark	Notes														
4	<table border="1" data-bbox="371 284 768 363"> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>12</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>2</td> </tr> </table> <p data-bbox="371 400 416 427">OR</p> <p data-bbox="371 469 573 496">Using $y = mx + c$</p> <p data-bbox="371 537 533 564">gradient = -2</p> <p data-bbox="371 569 539 596">y intercept = 8</p>	x	-2	-1	0	1	2	3	y	12	10	8	6	4	2	Straight line from (-2, 12) to (3, 2)	3	<p data-bbox="1435 264 1644 292">(Table of values)</p> <p data-bbox="1435 296 2040 360">M1 for a correct method to find at least 2 points by substituting values of x</p> <p data-bbox="1435 365 2056 461">M1 (dep) ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted)</p> <p data-bbox="1435 466 1957 493">A1 for correct line between $x = -2$ and $x = 3$</p> <p data-bbox="1435 534 1680 561">(No table of values)</p> <p data-bbox="1435 566 2040 662">M2 for at least 2 correct points and no incorrect points plotted OR line segment of $y = 8 - 2x$ drawn (ignore any additional incorrect segments)</p> <p data-bbox="1435 667 2056 730">(M1 for at least 3 correct points with no more than 2 incorrect points)</p> <p data-bbox="1435 735 1957 762">A1 for correct line between $x = -2$ and $x = 3$</p> <p data-bbox="1435 804 1666 831">(Use of $y = mx + c$)</p> <p data-bbox="1435 836 2018 900">M2 line segment of $y = 8 - 2x$ drawn (ignore any additional incorrect segments)</p> <p data-bbox="1435 904 2074 968">(M1 for line drawn with gradient of -2 OR line drawn with y intercept of 8 and a negative gradient)</p> <p data-bbox="1435 973 1957 1000">A1 for correct line between $x = -2$ and $x = 3$</p>
x	-2	-1	0	1	2	3												
y	12	10	8	6	4	2												

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Question	Working	Answer	Mark	Notes
5	(a)	$3m^2 - 6m$	2	M1 for $3m \times m - 3m \times 2$ or one correct term A1 for $3m^2 - 6m$
	(b)	$n^6 - n^5$	2	B2 for $n^6 - n^5$ (B1 for one term correct)
	(c)	$5q + 11$	2	M1 for correct expansion of one bracket or one correct term from two terms A1 for $5q + 11$
6	(a)	489	2	M1 for $10 \times 5 - 1$ or 49 A1 cao
	(b)(i)	46	3	B1 cao
	(ii)	$-9n + 109$		M1 for $-9n (+ c)$ A1 for $-9n + 109$ oe
	(c)	200	2	M1 for 8×5^2 oe A1 cao
7	(a)	$2(m - 5)$	1	B1
	(b)	$3n(2n + 1)$	2	B2 (B1 for $n(6n+3)$ or $3(2n^2+n)$)
	(c)	$rt(1 - r)$	2	B2 (B1 for correct partial factorisation eg $r(t - tr)$ or $t(r - r^2)$)

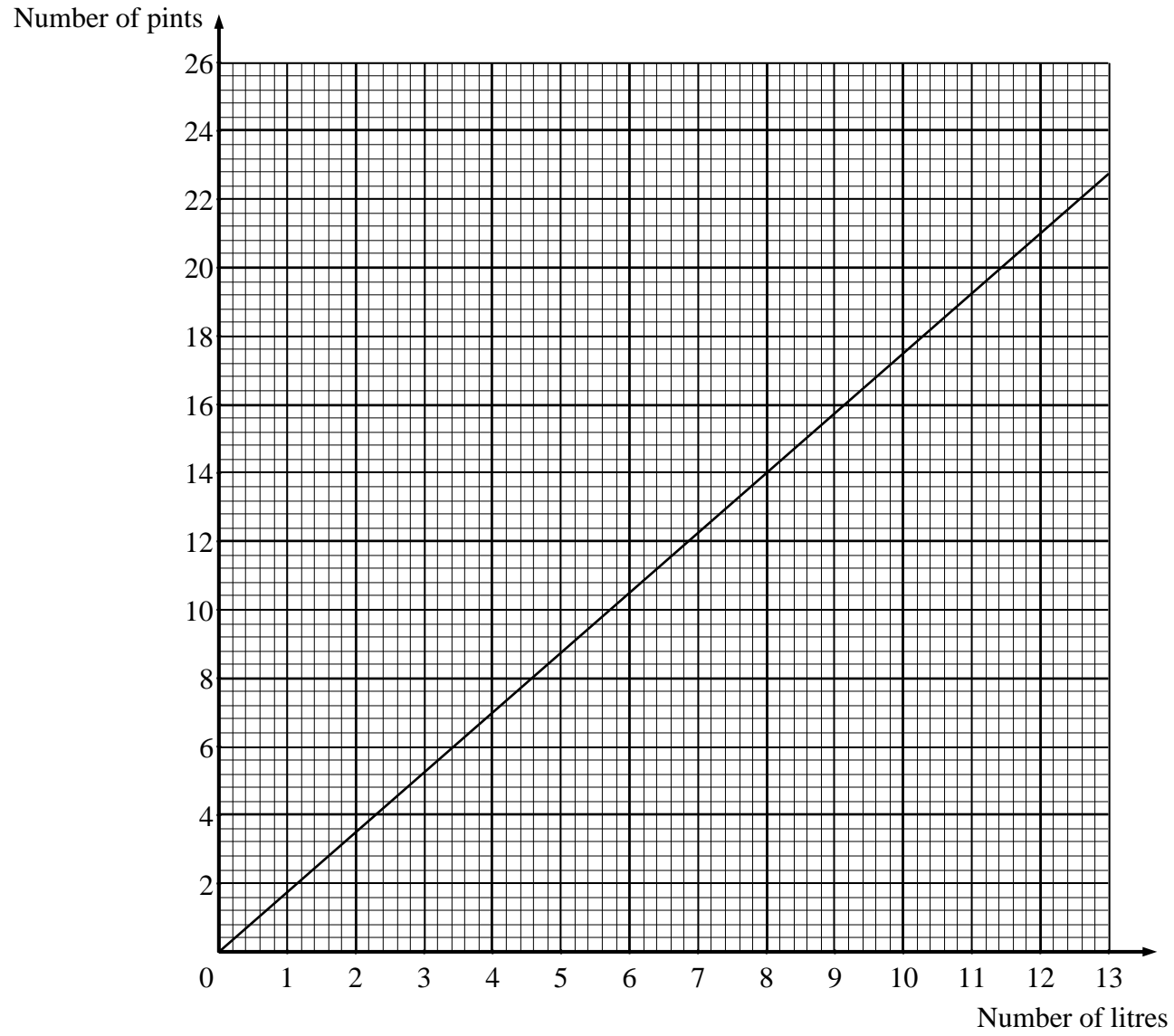
PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
8 (a)		$5x + 8y$	2	B2 for $5x + 8y$ (B1 for $5x$ or $8y$ as a single term)
(b)		$6x + 5y$	2	M1 for $4x + 2y$ or $2x + 3y$ or $2x + 4x$ or $2y + 3y$ A1 for $6x + 5y$
9		Correct sketch with $(0, -5)$ labelled	3	B1 for general shape, parabola in correct orientation, all 4 quadrants B1 for symmetry about y-axis (must be parabola) B1 for y intercept at $(0, -5)$
10 (a)(i)		-3	6	M1 for correct substitution of $s = 6$ and $t = 5$ A1 cao
(ii)		4		M1 for correct substitution of $m = 20$ and $t = -4$ A1 cao
(iii)		$t = \frac{2s - m}{3}$		M1 for correct method to isolate terms in t on one side eg $m - 2s = -3t$ A1 for $t = \frac{2s - m}{3}$ oe or $t = \frac{m - 2s}{-3}$ oe
(b)(i)		25	3	B1 cao
(ii)		8 or -8		M1 for $d^2 = 64$ A1 for 8 or -8

PAPER: AAL20_01

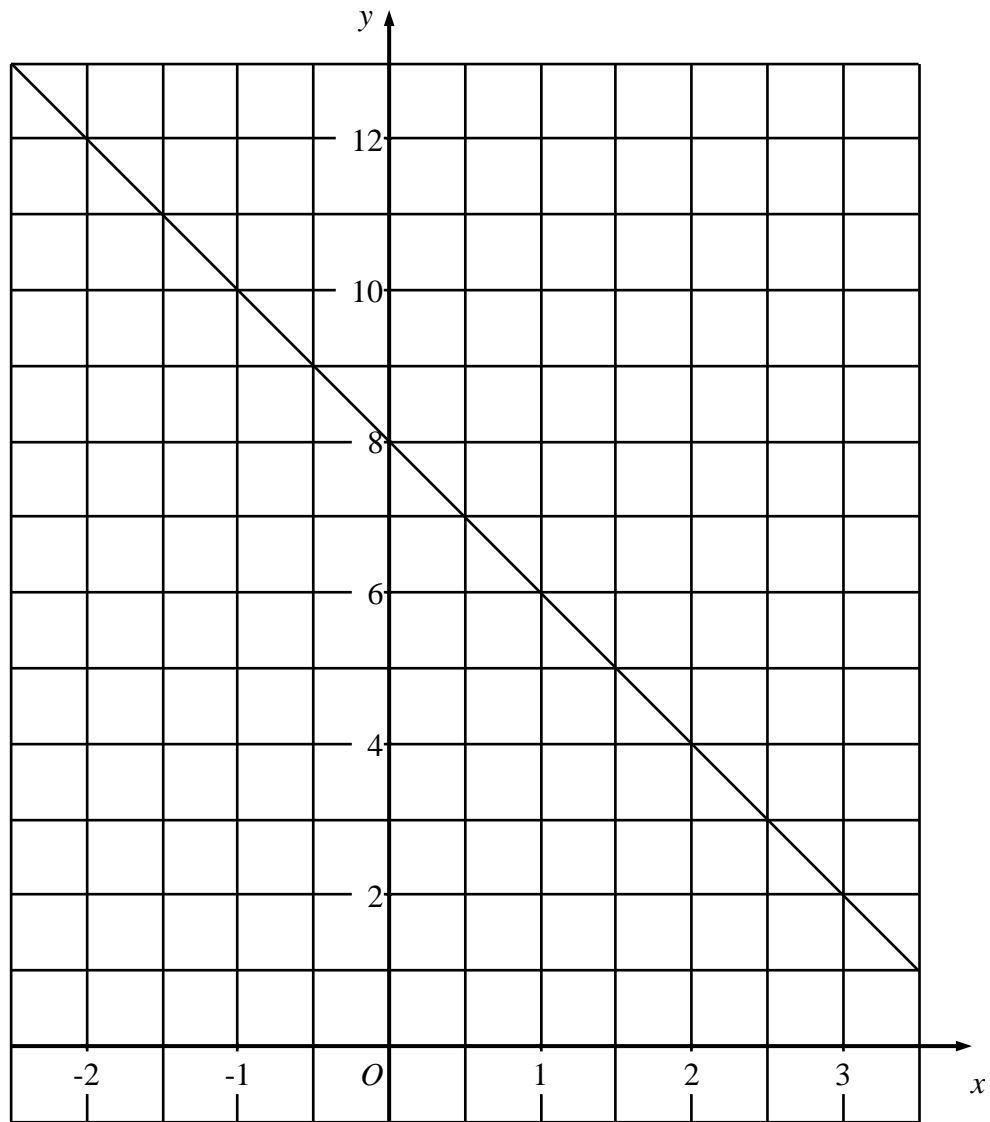
Question	Working	Answer	Mark	Notes
11 (a)		-3 or -2 or -1	1	B1 cao
(b)		$x < 2$	2	B2 for $x < 2$ (B1 for $x \leq 2$ or < 2) NB Accept the use of any letter other than x , ignore attempts to list integer values
(c)		correct diagram	2	B2 for correct diagram (must have correct endpoint notation) (B1 for line from -3 to 0 but not with correct end point notation or one end point fully correct with no contradiction)
(d)		$d > -1$	2	M1 for subtraction of 9 from both sides or dividing throughout by 4 or -1 seen as the critical value A1 for $d > -1$
12 (a)		completed graph	2	B1 for straight line from (1015, 1) to (1020, 1) B1 for straight line from ("1020", 1) to (1100, 3))
(b)		4	2	M1 for complete method to find gradient or $1 \div \frac{1}{4}$ oe or a complete build up method A1 cao
13 (a)		6	2	M1 for multiplying each side by 2 as first operation A1 cao
(b)		-3	3	M1 for correct expansion of brackets or dividing throughout by 2 M1 for method to isolate terms in y on one side and constants on the other side. A1 cao

PAPER: AAL20_01				
Question	Working	Answer	Mark	Notes
14 (a)	26 10 (2) 2 10 (26)	26, 10, 2, 10	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 points correctly, provided B1 scored in part (a).)
(c)		-0.6, 6.6	2	M1 for line $y = 14$ drawn to intersect with the curve or for reading at least one value for x when $y = 14$ A1 for -0.6, 6.6 (accept values in the range -0.8 to -0.4 and 6.4 to 6.8) or ft from their parabola
15 (i)		2	4	M1 for correct method to find the gradient eg sight of right angled triangle with their height divided by their base A1 cao
(ii)		$y = 2x + 4$		M1 for $y = "m"x + c$ or for $y = mx + 4, m \neq 0, 2$ or $2x + 4$ A1 ft for $y = "m"x + 4$ oe

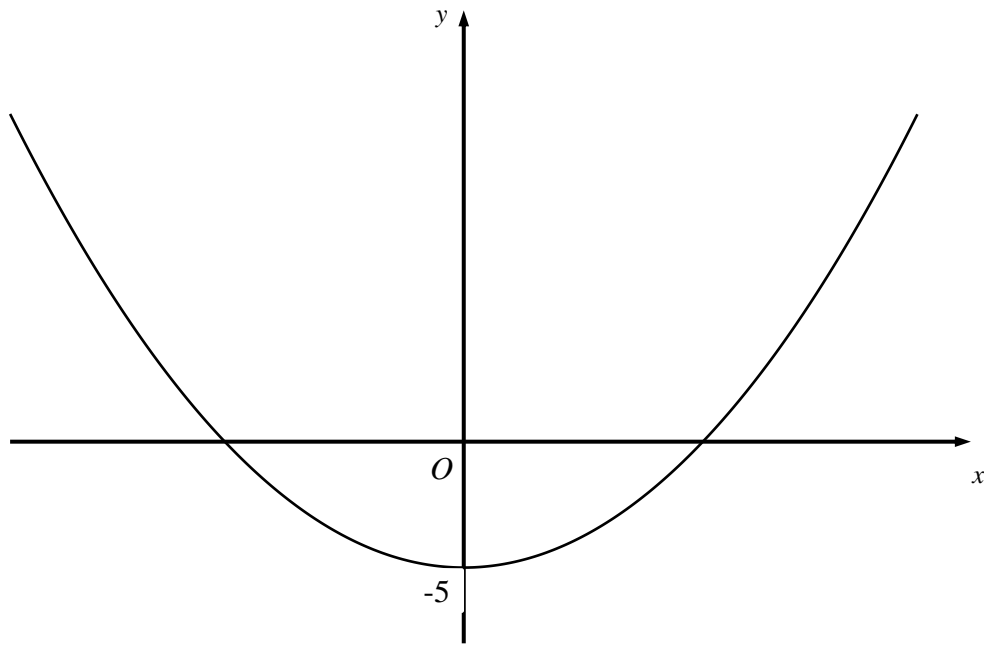
Q3 (a)

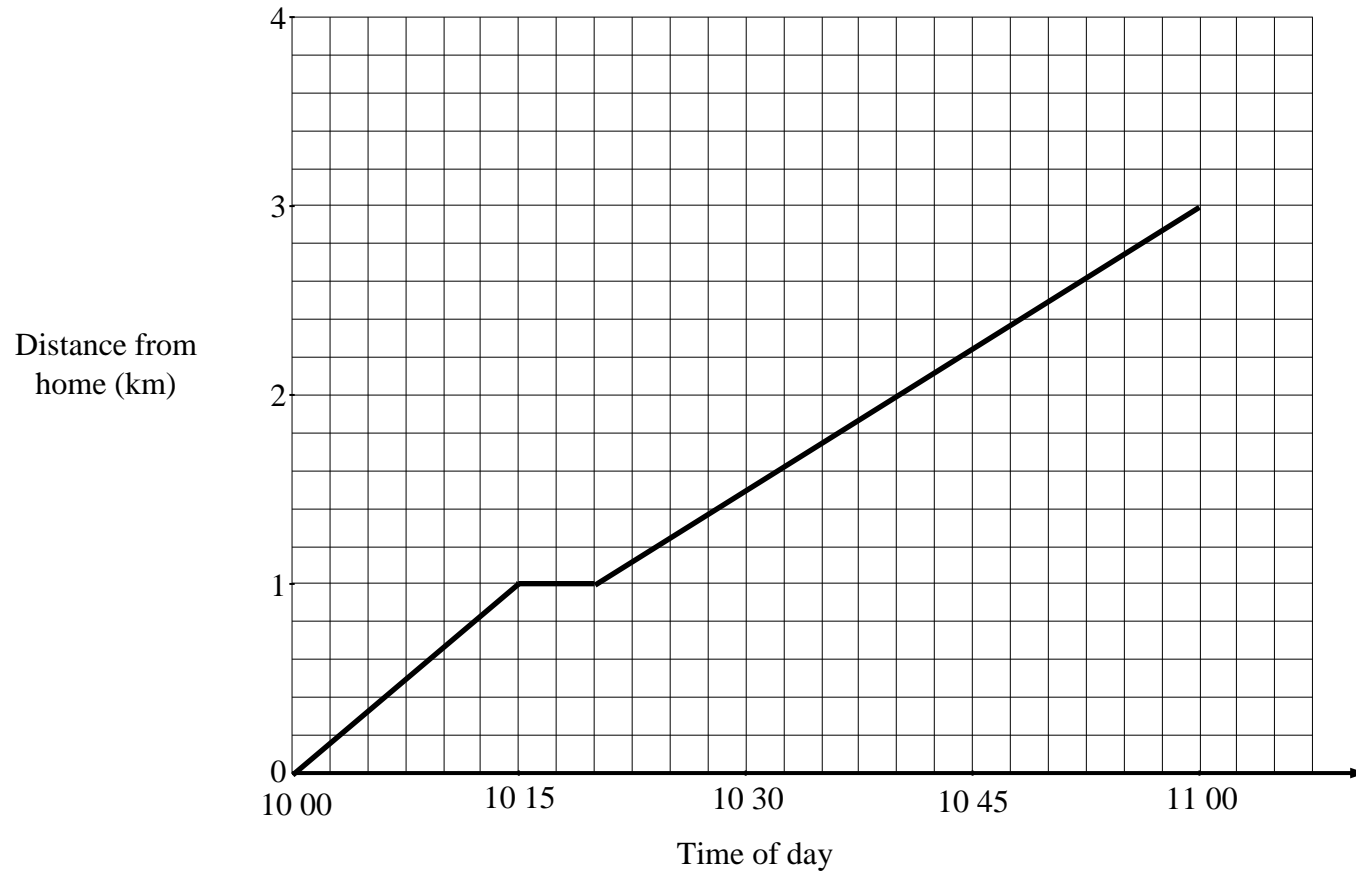


Q4



Q9





Q15

