



Pearson

Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE
Linked Pair Pilot in Mathematics
Applications of Mathematics (2AM01)
Foundation: (Calculator) Unit 2

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General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

- 1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

- 2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no 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.

Questions where working is not required: In general, the correct answer should be given full marks.

Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

- 3 **Crossed out work**

This should be marked **unless** the candidate has replaced it with an alternative response.

- 4 **Choice of method**

If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

- 5 **Incorrect method**

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 for your Team Leader to check.

- 6 **Follow through marks**

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, 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.

7 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 or its context. (eg. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified 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 (embedded answers).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and all numbers within the range.

Guidance on the use of abbreviations within this mark scheme

M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

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Question	Working	Answer	Mark	Notes
1				
(a)		1.75	1	B1 cao accept 1.75(0)
(b)		2.5	1	B1 cao accept 2.5(00)
(c)		3 hr 20 mins	2	M1 for demonstration of an understanding of 60 minutes in an hour e.g. $200 \div 60$ or $60 + 60 + 60 + 20 = 200$ A1 cao
(d)		1800	1	B1 cao
2				
(a)(i)		unlikely	2	B1 cao
(ii)		evens		B1 cao
(b)(i)		× at 0	2	B1 cao
(ii)		× at $\frac{1}{2}$		B1 cao
3				
(a)		20	1	B1 accept twenty
(b)		“5 tenths”	1	B1 “5 tenths” $\frac{5}{10}$ oe, 500g
(c)		265g	2	M1 for method to change 7.5 kg to grams or 7765 g to kg or $7765 - 7500$ or $7.765 - 7.5$ A1 for 265g or 0.265kg

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Question	Working	Answer	Mark	Notes
4 (a)		57	2	M1 $18 + 24 + 15$ A1 cao
(b)		3	2	M1 $18 + 24$ or $24 + 15$ or $18 - 15$ A1 cao
(c)		25	2	M1 for evidence that telephones are every mile including at B AND C (e.g. tally marks or similar) A1 cao
5 (a)		A	1	B1 cao
(b)		$\frac{1}{12}$	1	B1 cao
(c)		$\frac{7}{12}$	2	B2 oe (B1 for $\frac{x}{12}$ where $x < 12$ or $\frac{7}{y}$ where $y > 7$ or $\frac{6}{12} + \frac{1}{12}$)

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Question	Working	Answer	Mark	Notes
6 (a)		29	2	M1 for $12 \times 2 + 5$ or digits 29 seen A1 cao
6 (b)		26	3	M1 for $57 - 5$ or 52 seen M1 for $(57 - 5) \div 2$ oe A1 cao OR M2 for starting at "29" and adding on at least three 2s (M1 for starting by adding at least six 2s) A1 cao OR M1 for setting up an equation eg $57 = 2C + 5$ M1 for $57 - 5 = 2C$ or $2C = 52$ A1 cao
7		3700 – 4300 m ²	4	M1 for attempting to count the squares or for a number in the range 36 to 44 given M1 (dep) for multiplying any number of squares by 100 A1 for answer in range 3700 to 4300 B1 for m ² with an area value

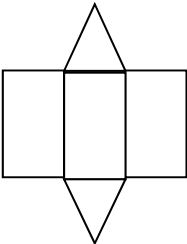
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Question	Working	Answer	Mark	Notes
8 (a)		10 25	1	B1 cao
(b)		45	1	B1 cao
*(c)		Sunita	4	M1 for correct method to calculate total time for Sunita 9h 10 m or 550 min M1 for correct method to convert 530 minutes and Sunita's total time to equivalent units A1 for 9 hours 10 mins and 8 hours 50 mins or 550 mins or 20 min extra C1 ft (dep on M1) for Sunita spends more time in exams
9		1470	6	M1 for correct method to find total costs e.g. $1200 + 480 (= 1680)$ M1 $380 \times 7.50 (= 2850)$ M1 $(500 - 380) \times 2.50 (= 300)$ A1 for 300 M1 for correct method to find profit A1 cao

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Question	Working	Answer	Mark	Notes
10 (a)		15.36	2	M1 for 16×96 or 1536 or 16×0.96 A1 for 15.36
10 (b)		6.32	3	M1 for 8×1.71 (=13.68) M1 for $20 - "13.68"$ A1 cao
10 *(c)		6 letters cheaper	3	M1 for 12×1.27 (=15.24) or 6×1.71 (=10.26) A1 for £15.24 and £10.26 C1 (dep on at least M1) statement that it is cheaper to send 6 large letters (oe on ft) OR M1 2×1.27 (=2.54) or $1.71 \div 2$ (= 0.855) A1 for "2.54" with 1.71 or for "0.855" with 1.27 C1 (dep on at least M1) statement that it is cheaper to send 6 large letters (oe on ft)
11 (a)		$T = 6x + 12$	3	M1 for using $4x$ or $x + 12$ M1 for writing $x + 4x + x + 12$ or $T =$ a linear expression in x A1 for $T = 6x + 12$ or $T = 6(x + 2)$
11 (b)		48	2	M1 ft for substituting 6 into their formula A1 ft OR M1 for using initial information with 6, 4×6 and $6 + 12$ identified A1 cao

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Question	Working	Answer	Mark	Notes
12		20	3	B1 for 60 or angle $BDC = 120$ (could be on the diagram) M1 for a complete method to get x eg $180 - (2 \times 60) - 40$ A1 for 20
13	£100 = 120 euros £400 = 480 euros €480 – 420 euros	60	3	M1 Equates £100 and 120 euros oe M1 for correct method to change £400 into euros A1 cao
14			3	B3 for a fully correct net [award B2 for 3 rectangles and 2 triangles (not to correct scale) or award B1 for any rectangle or triangle drawn accurately to the correct scale] NB: ignore tabs.
15	(a)	List all 12 outcomes	2	B2 for listing all 12 possibilities condone repeats e.g. (2,1) and (1, 2) but not extras (B1 for at least 6 correct)
	(b)	(3, 7) and (6, 4) $\frac{2}{12}$	3	M1 for selecting at least one total of 10 A2 ft from part (a) for $\frac{2}{12}$ oe (A1 for $\frac{x}{12}$ where $x < 12$ or $\frac{2}{y}$ where $y > 2$)

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Question	Working	Answer	Mark	Notes
*16		Show cost of sand needed is more than £80 or volume of sand that can be bought for £80 is less than volume of sand needed	5	M1 for a correct method to find the volume of the sandpit e.g. $150 \times 90 \times 15 (= 202500)$ M1 (dep) for " $202500 \div 10000 (= 20.25)$ " M1 (dep on previous M1) for their number of bags $\times 3.99$ A1 for (£)83.79 (21 bags) or (£)80.80 or (£)80.79(75) (20.25 bags) C1 (dep on at least M2) for showing cost of sand needed (with units) is more than £80 OR M1 for a correct method to find the volume of the sandpit e.g. $150 \times 90 \times 15 (= 202500)$ M1 for $80 \div 3.99 (= 20.0501\dots)$ M1 (dep on previous M1) for " $20 \times 10\ 000$ " A1 for 200 000 (cm ³) C1 (dep on at least M2) for showing the volume of sand needed (with units) with volume that can be bought for £80
17		0.1	2	M1 for $1 - (0.35 + 0.25 + 0.30)$ A1 cao
(b)		0.65	2	M1 for $0.35 + 0.3(0)$ A1 cao
(c)		140	2	M1 for 400×0.35 A1 cao

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Question	Working	Answer	Mark	Notes
*18		Needed: 14 eggs 200 g butter 200 g sugar 1.5 kg flour	5	M1 number of cupcakes is $80 \times 2 + 152 (=312)$ M1 scaling " $312 \div 12 (=26)$ " M1 needed $200 \times "26"$ or $4 \times "26"$ or $250 \times "26"$ or 5200 or 104 or 6500 A1 5200 (g) and 104 (eggs) and 6500 (g) C1 (dep on at least M1) correct statement of which items are needed with quantities and units OR M1 number of cupcakes is $80 \times 2 + 152 (=312)$ M1 scaling " $312 \div 12 (=26)$ " M1 no. cupcakes $5 \div "26"$ or $90 \div "26"$ A1 0.192..., 3.46...6, C1 (dep on at least M1) correct statement of which items are needed with quantities and units. OR M1 number of cupcakes is $80 \times 2 + 152 (=312)$ M1 $200 \div 12(=16.6..)$ or $4 \div 12(=0.33..)$ or $250 \div 12$ ($=20.83$) M1 " $312 \times "16.6"$ " and " $312 \times "0.33"$ " and " $312 \times "20.83"$ " A1 5200 (g) and 104 (eggs) and 6500 (g) C1 (dep on at least M1) correct statement of which items are needed with quantities and units
19		2 051 000	4	M1 for $350\,000 \times 55 (= \pounds 19\,250\,000)$ M1 for $350\,000 \times 0.18 (= 63\,000)$ M1 for " $63\,000$ " $\times 273 (= \pounds 17\,199\,000)$ A1 cao

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Question	Working	Answer	Mark	Notes
*20		18	4	<p>M1 for a correct algebraic representation showing a correct relationship between at least two ages, eg (Carly =) x, (Brenda =) $2x$, (Abigail =) $2x + 5$ Note: $(x - 5)$, $\frac{1}{2}(x - 5)$ indicates Abigail = x. M1 (dep on M1) for deriving an algebraic inequality (or equality) correct from their three algebraic expressions eg $x + 2x + 2x + 5 < (or =) 40$ M1 (dep on M2) for a complete and correct method to simplify their inequality (or equality) to e.g. $5x < 35$ ($5x = 35$) C1 (dep on previous M1) for $x < 7$ ($x = 7$) and a statement identifying Abigail as 18 years of age, cao</p> <p>OR</p> <p>M1 for one correct trial showing total of ages under 40 M1 for one correct trial showing total of ages over 40 M1 for identifying 7, 14 and 19 as their ages with a sum of 40 years. C1 (dep on previous M1) for fully correct arithmetic and a statement identifying Abigail as 18 years of age, cao</p>
21		277	5	<p>M1 for $50^2 + 30^2$ M1 for $\sqrt{2500+900}$ or $\sqrt{3400}$ A1 for 58.3(095....) M1 (dep on M2) for $50 + 50 + 30 + 30 + "58.3" + "58.3"$ or $2 \times ("58.3" + 50 + 30)$ A1 for answer in range 276 to 277</p>

