OCR
Oxford Cambridge and RSA

GCSE

Mathematics B (Linear)

Component **J567/01:** Mathematics Paper 1 (Foundation)

General Certificate of Secondary Education

Mark Scheme for November 2014

Oxford Cambridge and RSA Examinations

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Annotations used in the detailed Mark Scheme.

Annotation	Meaning
✔	Correct
✘	Incorrect
BOD	Benefit of doubt
FT	Follow through
ISW	Ignore subsequent working (after correct answer obtained), provided method has been completed
M0	Method mark awarded 0
M1	Method mark awarded 1
M2	Method mark awarded 2
A1	Accuracy mark awarded 1
B1	Independent mark awarded 1
B2	Independent mark awarded 2
MR	Misread
SC	Special case
∧	Omission sign

These should be used whenever appropriate during your marking.

The **M**, **A, B**, etc annotations must be used on your standardisation scripts for responses that are not awarded either 0 or full marks.
It is vital that you annotate these scripts to show how the marks have been awarded.
It is not mandatory to use annotations for any other marking, though you may wish to use them in some circumstances.

Subject-Specific Marking Instructions

1. **M** marks are for <u>using a correct method</u> and are not lost for purely numerical errors.
    A marks are for an <u>accurate</u> answer and depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.
    B marks are <u>independent</u> of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
    SC marks are for <u>special cases</u> that are worthy of some credit.

2. Unless the answer and marks columns of the mark scheme specify **M** and **A** marks etc, or the mark scheme is 'banded', then if the correct answer is clearly given and is <u>not from wrong working</u> **full marks** should be awarded.

    Do <u>not</u> award the marks if the answer was obtained from an incorrect method, ie incorrect working is seen <u>and</u> the correct answer clearly follows from it.

3. Where follow through (**FT**) is indicated in the mark scheme, marks can be awarded where the candidate's work follows correctly from a previous answer whether or not it was correct.

    Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word *their* for clarity, eg FT 180 × (*their* '37' + 16), or FT 300 − √(*their* '$5^2 + 7^2$'). Answers to part questions which are being followed through are indicated by eg FT 3 × *their* (a).

    For questions with FT available you must ensure that you refer back to the relevant previous answer. You may find it easier to mark these questions candidate by candidate rather than question by question.

4. Where dependent (**dep**) marks are indicated in the mark scheme, you must check that the candidate has met all the criteria specified for the mark to be awarded.

5. The following abbreviations are commonly found in GCSE Mathematics mark schemes.

    -   **figs 237**, for example, means any answer with only these digits. You should ignore leading or trailing zeros and any decimal point eg 237000, 2.37, 2.370, 0.00237 would be acceptable but 23070 or 2374 would not.
    -   **isw** means **ignore subsequent working** after correct answer obtained and applies as a default.
    -   **nfww** means **not from wrong working**.
    -   **oe** means **or equivalent**.
    -   **rot** means **rounded or truncated**.
    -   **seen** means that you should award the mark if that number/expression is seen anywhere in the answer space, including the answer line, even if it is not in the method leading to the final answer.
    -   **soi** means **seen or implied**.

6. In questions with no final answer line, make no deductions for wrong work after an acceptable answer (ie **isw**) unless the mark scheme says otherwise, indicated by the instruction 'mark final answer'.

7. In questions with a final answer line following working space,

    (i)   if the correct answer is seen in the body of working and the answer given on the answer line is a clear transcription error allow full marks unless the mark scheme says 'mark final answer'. Place the annotation ✓ next to the correct answer.

    (ii)   if the correct answer is seen in the body of working but the answer line is blank, allow full marks. Place the annotation ✓ next to the correct answer.

    (iii) if the correct answer is seen in the body of working but a completely different answer is seen on the answer line, then accuracy marks for the answer are lost. Method marks could still be awarded. Use the M0, M1, M2 annotations as appropriate and place the annotation ✗ next to the wrong answer.

8. In questions with a final answer line:

    (i)   If one answer is provided on the answer line, mark the method that leads to that answer.

    (ii)   If more than one answer is provided on the answer line and there is a single method provided, award method marks only.

    (iii) If more than one answer is provided on the answer line and there is more than one method provided, award zero marks for the question unless the candidate has clearly indicated which method is to be marked.

9. In questions with no final answer line:

    (i)   If a single response is provided, mark as usual.

    (ii)   If more than one response is provided, award zero marks for the question unless the candidate has clearly indicated which response is to be marked.

10. When the data of a question is consistently misread in such a way as not to alter the nature or difficulty of the question, please follow the candidate's work and allow follow through for **A** and **B** marks. Deduct 1 mark from any **A** or **B** marks earned and record this by using the MR annotation. **M** marks are not deducted for misreads.

11. Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures even if this is rounded or truncated on the answer line. For example, an answer in the mark scheme is 15.75, which is seen in the working. The candidate then rounds or truncates this to 15.8, 15 or 16 on the answer line. Allow full marks for the 15.75.

12. Ranges of answers given in the mark scheme are always inclusive.

13. For methods not provided for in the mark scheme give as far as possible equivalent marks for equivalent work. If in doubt, consult your Team Leader.

14. Anything in the mark scheme which is in square brackets […] is not required for the mark to be earned, but if present it must be correct.

MARK SCHEME

Question			Answer	Marks	Part marks and guidance	
1	(a)		960	1		
	(b)		495	1		
	(c)		15.63	1		
	(d)		5320	1		
	(e)		9.50134	1		
	(f)		135	2	**B1** [10% =] 90 or 45 or figs 135 or **M1** complete method with no more than 1 arithmetic error	
2	(a)		4.5 faces	1		Accept circles
	(b)		11 check table	1		
	(c)		9	1		
	(d)		96	2	**M1** 20, 18, 22, 12,11,13 as totals Allow 1 error or omission	ft *their* 11 for 2 marks

Question			Answer	Marks	Part marks and guidance	
3	(a)		$9p + 3q$ or $3(3p + q)$	2	**B1** $9p$ or $3q$ in final answer	$27pq$ or $12pq$ after correct answer scores B1
	(b)	(i)	3	1		
		(ii)	4	2	**M1** $8b = 26 + 6$ or for $b = k/8$ after $8b = k$	must be in equation
		(iii)	12	2	**M1** $x/3 = 29 - 25$ oe or for $x = 3 \times k$ after $x/3 = k$	must be in equation
4	(a)		Obtuse Right [angle] Reflex	1 1 1		
	(b)		19 Opposite [angles are equal]	1 1		
5	(a)		Parallelogram	1		
	(b)		Two correct lines only	2	**B1** for one correct line only	
6	(a)		11	1		
	(b)		7	1		
	(c)		12	2	**B1** Ordered list of 8 numbers or 11 and 13 identified	Must not be an attempt to find mean
7	(a)		6.4 to 6.8	2	**B1** 64 to 68	
	(b)		Circumference	1		Accept arc

Question			Answer	Marks	Part marks and guidance	
8	(a)		$\frac{3}{12}$ oe	1		must be a fraction
	(b)		12 squares shaded	2	**M1** 18 ÷ 3 × 2 or **B1** for 12	
9	(a)		Certain	1		
	(b)		Evens	1		
10			110 nfww	4	**M1** for (180 – 80)/2 or [Angle EBD =] 50 **M1** for 180 – 100 – *their* EBD or [Angle DBC =] 30 **M1** for 180 – 40 – *their* DBC	May be marked on diagram
11	(a)	(i)	55	1		
		(ii)	3 hours 50 minutes **oe**	2	**M1** for 3 hours or 50 minutes or 230 [minutes] in working	condone 230 minutes in minutes space for 2 marks
		(iii)	-2	1		
	(b)		480 000	2	**M1** for 600 [×] 800 if 0 scored **SC1** 480 or 4800 or 48000	
12	(a)	(i)	75	2	**M1** 30 × 2 +15	
		(ii)	265	2	**M1** 40 × 6 + 25	
	(b)		$P = 4r + 2h$ or $P = 2(2r + h)$ **oe**	2	**B1** $4r + 2h$ or $2(2r + h)$ **oe** as answer	

	Question		Answer	Marks	Part marks and guidance	
13	(a)		Correct net	3	**B2** 3 correct extra faces in correct position **B1** 1 correct extra face in correct position	
	(b)		60 × 40 × 30 = 72000. Correct decision based on their answer	1 1 1ft	 **Dep** on at least 1 other mark	Answer must be a volume
14	(a)		244.80	5	**M1** for × 2 **M1** for ×16 **A1** for 272 **M1** for correctly finding 10% of their total	Accept alternative correct methods for cost for 2 dogs for equivalent marks
	(b)		20	4	**M3** 96/5 oe **or** **M2** 3/5 ×16 × 2 oe **or** **M1** 3/5 ×16 or 3/5 × 2 oe	Accept alternative correct methods
	(c)		3000	1		
15	(a)		1/5 **oe**	1		
	(b)		$2 \times 3^2 \times 5^2$	2	**B1** for 2, 3, 3, 5 and 5 allow 1 omission or **M1** one correct factor pair	Accept 2 × 3 × 3× 5× 5 for 2 marks may be in factor tree
16	(a)	(i)	27	1		
		(ii)	Add 6	1		
	(b)		7, 12, 17	2	**B1** two values in the correct place	
	(c)		$3n - 1$	2	**B1** for $3n$	

Question			Answer	Marks	Part marks and guidance	
17	(a)	(i)	Cross at (0,1) 0 , 1	1 1FT	Accept any indication provided it is clear eg two lines intersecting	 Correct answer or FT their 'cross'
		(ii)	[+] 3	1		BOD x3, accept any indication of 3 times larger
	(b)		100	1		
18	(a)		bar chart : $\dfrac{4}{their\ 25}$ or 0.16 or 16% **oe** pie chart : $\dfrac{36}{360}$ or 0.1(0) or 10% **oe** statement showing $\dfrac{4}{25} > \dfrac{36}{360}$ eg 0.16 > 0.1 hence Andrew's sentence and their figures must be comparable eg percentages or fractions with common denominator	3 1dep	**B2** for first correct percentage/decimal/fraction *(condone words instead of fractions eg 4 out of 25, 4÷25)* **B1** for second correct percentage/decimal etc dep on all figures being correct eg 16% or 14[.4] **B1** for $\dfrac{4}{25} > \dfrac{36}{360}$ without explanation or for *their 16% > their 10%* if **0** scored then award **M1** for adding six frequencies from the bar chart implied by 24 or 25	alternatively ; $\dfrac{4}{their\ 25}$ scores **B2** $\dfrac{4}{25}\ of\ 'say40'[=6.4]$ scores **B1** and 6.4 > 4 hence Andrew's scores **B1** or $\dfrac{36}{360}$ **oe** scores **B2** $\dfrac{36}{360}$ of 25 (=2.5) scores **B1** and 4 > 2.5 hence Andrew's scores **B1** or 360÷*their 25 = their 14[.4]* scores **B2** *their 14[.4]* × 4 = 57.6 scores **B1** 57.6 > 36 scores **B1**
	(b)		need a larger sample	1	accept any correct statement	see exemplars

Question			Answer	Marks	Part marks and guidance	
19	(a)		two correct points plotted	1		Tolerance ±½ small square
	(b)		positive	1	Ignore embellishments	
	(c)		ruled line of best fit	1	On "10" crosses between 350 - 750 and on "35" crosses between 1250 – 1600	
	(d)		1850–2300 nfww	3	**B1** for use of the graph FT their line of best fit reading at 20 **and** **B1** for £1200 **or** **M1** for [0].5 × 2400 or 2400 × figs 5 or figs 12 or £[0].5 oe × 2000/2500	Consistent with graph

Question	Answer	Marks	Answer
20*	They correctly work out both prices with delivery and convert one of them correctly to the other currency. The price for the French watch is in the range £33.5[0] – 34.2[0] and the UK watch is £35, if euros are used then the French watch is €42 and the UK watch is €43 – 43.8[0]. They then draw the correct conclusion and their work is easy to follow. There is clear annotation and explanation of reasoning. Correct spelling, punctuation and grammar is used.	**5**	
	They obtain the correct prices for each watch in the same currency but either the conclusion is incorrect or the work is hard to follow, or they obtain one correct price and make one error in the other price, both prices are in the same currency, and they make the correct conclusion for their figures and their work is easy to follow.	**4-3**	They obtain a correct price with delivery for both watches or they obtain a correct price with delivery for one watch **and** they correctly convert a relevant price to the other currency .
	They obtain a correct price with delivery for one watch or they correctly attempt to add the delivery for one watch but make an arithmetic error **and** they correctly convert a relevant price to the other currency .	**2-1**	They correctly attempt to add the delivery for one watch but make an arithmetic error or they correctly convert a relevant price to the other currency.
	No worthwhile work attempted.	**0**	

APPENDIX

Exemplar responses for Q.18(b)

Response	Mark
need a larger sample	**1**
He needs to repeat the experiment/survey	**1**
He should have used other lines	**1**
It is not from the whole book	**1**
It is **only** the first sentence (BOD)	**1**
he hasn't redone it, it isn't a fair test (BOD)	**1**
She/he needs to base her search on more than one sentence	**1**
Andrew has only used the first sentence which could be unreliable. However Lucy has used her whole book which gives her more accurate results (BOD)	**1**
the test only shows 'e' being the most common vowel in the first sentence it could change when testing the whole book	**1**
he only looked at the first sentence not the whole book	**1**
Andrews only basing that of the first sentence (BOD)	**1**
Andrew only tested one page. He claims the whole book when he only recorded 1 page	**1**
he only recorded how many vowels he used in one sentence	**1**
his results show 'other' is the most frequent	**0**
he may be wrong because there are so many other letters in his book	**0**
he's not wrong because its his highest vowel	**0**
he might of miss counted them	**0**

Exemplar responses for

Response	Mark

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