OCR
Oxford Cambridge and RSA

GCSE

Mathematics A

Unit **A502/01:** Mathematics B (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2014

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2014

These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

Annotation	Meaning
BP	Blank Page – this annotation must be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	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

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 using a correct method and are not lost for purely numerical errors.
A marks are for an accurate answer and depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.
B marks are independent of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
SC marks are for special cases 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 not from wrong working **full marks** should be awarded.

   Do not award the marks if the answer was obtained from an incorrect method, ie incorrect working is seen and 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.

Question			Answer	Marks	Part Marks and Guidance	
1	(a)		1.5	1		
	(b)	(i)	5	1		
		(ii)	[£]9	1	Condone 9.0	9p scores 0
2	(a)		28	1		
	(b)		Laura does not have 47 oe or Mark has the only 47 oe or 53 + (10 and 41 and 24 and 95) $\neq$ 100	2	**B1** for 47 seen or Laura cannot make 100 oe or One counter example	Eg 47 makes 100 Eg 41 + 53 = 94 so no
3	(a)	(i)	2, 5	1		
		(ii)	Point plotted at (2, $^-$5)	1	Centre of point or cross within half small square of intersection	Mark intention and ignore extras
		(iii)	$^-$3, 0 or 7, 0	2	**B1** for *x*, 0 **If 0 scored** **SC1** for -8, 5 or -8, -5 or 12, 5 or 12, -5	
	(b)		Radius	1		
4	(a)		Trapezium	1		Ignore extra words that do not invalidate the answer
	(b)		180	1		Condone missing degree sign
	(c)		180	1	Condone "straight line"	Condone missing degree sign
	(d)		Hexagon	1		Ignore extra words that do not invalidate the answer

Question			Answer	Marks	Part Marks and Guidance	
	(e)		45	2	**M1** for 360 ÷ 8 soi Or **B1** for 135 as interior angle	Eg by 45 given as interior angle or seen in working
5	**(a)**	**(i)**	128	1		
		(ii)	90	1		
		(iii)	50	2	**M1** for 180 – 65 – 65 oe	
	(b)		55	2	**M1** for 180 – 125 or clear indication that ∠BCD = 125	
6	**(a)**		Ten cube(d) Square root [of] 19	1 1	Condone 10 [to the] power [of] 3 Condone 19 square root[ed]	
	(b)		121 8	1 1		
	(c)		8	3	**M2** for 2^3 seen or $\frac{32}{4}$ or 32 ÷ 4 or $\frac{16}{2}$ or 16 ÷ 2 Or **M1** for 2^5 or [2^4 =]16 seen or 32 as numerator or 4 as denominator	with no extras with no extras

Question			Answer	Marks	Answer
7			Complete and correct answer, well expressed including all required steps Method 1 • [8ft =] 240cm or 2.4m • [6ft 4in =] 190cm or 1.9m • Correct comparison of 2.5m with *their* 2.4m • Correct comparison of 1.9m with *their* 1.9m Method 2 • [2.5m =] 100in = 8ft 4in or 8.3[...]ft • [1.9m =] 76in = 6ft 4in or 6.3[...]ft • Correct comparison of 8ft 4in or 8.3[...]ft with 8ft or 100in with 96in • Correct comparison of 6ft 4in with 6ft 4in or 76in with 76in	5	Comparison is "2.5m is longer than 2.4m" oe Comparison may be implied EG Yes because the carpet is 2.5m by 1.9 and he [only] needs 2.4m by 1.9m Correct working involves all these steps. Method = 8 × 30 [÷ 100] oe or 8 × 12 × 2.5 Method = 6 × 30 + 4 × 2.5 oe or (6 × 12 + 4) × 2.5 240cm or 2.4m imply correct method if no working seen Method = 2.5 × 100 ÷ 2.5 and 100 ÷ 12 Method = 1.9 × 100 ÷ 2.5 and 76 ÷ 12 Do not isw for 5 or 4 marks
			• Attempt two conversions using correct method. • Two correct comparisons for *their* converted lengths and widths (may be poorly expressed eg 190cm = 1.9m OK or contained in statement that lists lengths and widths without individual comparisons) • *Their* correct answer consistent with *their* comparisons.	4 – 3	• Attempt two conversions using at least one correct method. • *Their* correct answer consistent with *their* conversions.
			• Attempt two conversions using at least one correct method.	2 – 1	• Attempt one conversions using correct method. Or • Attempt area Or • Yes the carpet is bigger than the bedroom oe (may be from wrong or no working) Or • *Their* correct conclusion from two converted lengths but using wrong method

Question			Answer	Marks	Guidance	
8	(a)		12	2	**M1** for £4 oe seen or 8 + 4 x 100 ÷ 100	Condone 12.0
	(b)		(12) (16) **20** **24**	1 + 1	Award marks for 20 and 24 only	
	(c)		*Their* four points correctly plotted	2	Centre of point or cross within half small square of intersection **B1** for 2 of *their* correct points	Use overlay and within circle when set to "fit to width" Ignore extras If columns then mark consistently left, middle or right of top
			Line	1	Ruled **straight** line or good freehand passing through all four points from 100 to 400 leaflets	Use overlay and line within circles when set to "fit to width"
	(d)		250	1		
	(e)	(i)	The answer is [£]808 and it should be [£]16 oe	2	**B1** for 808 seen or 16 as answer or read from table or graph	808 is from 8 + 4 × 200 not step in working
		(ii)	[w =] [0].04 × n + 8 oe	1	Condone any correct form	$\frac{n}{25} + 8$, 4 × n ÷ 100 + 8 etc **Not** 4 × n + 8 ÷ 100 or $\frac{4n+8}{100}$

Question			Answer	Marks	Guidance	
9			$\frac{3}{8}$, 40%, $\frac{5}{12}$ oe with correct method	4	**M1** for attempt at using correct method for changing a value to a different denominator, a decimal or % oe **A1** if correct $\frac{3}{8}=\frac{27}{72}=\frac{45}{120}$ = 0.3[7…] or 0.38 $\frac{5}{12}=\frac{30}{72}=\frac{50}{120}$ = 0.41[…] or 0.42 Or if converting to unit fractions **M1A1** for any 1 of $\frac{3}{8}=\frac{1}{2.6(..)}$, $40\%=\frac{1}{2.5}$, $\frac{5}{12}=\frac{1}{2.4}$ And **A1** for second correct conversion to same form OR If 0 scored **SC2** for reasonable attempt at drawing equivalent bars (or other diagrams) followed by correct answer Or **SC1** for correct answer with no working	soi by $\frac{48}{120}$, $\frac{40}{100}$, $\frac{2}{5}$ etc 0.38 does not alone imply correct method Condone 2.6[…], 2.5 or 2.4 for **M1** only Fourth mark dependent on **M1A2**

Question			Answer	Marks	Guidance	
10	(a)		C	1		
	(b)		A	1		
	(c)		D	1		
11	(a)		Negative Weak No oe	B1 B1 1	'Strong', does not score (Indep) 'Scattered' or 'random' without 'no' does not score	Allow 'moderate', 'medium' 'quite/fairly strong' 'low', 'poor' etc Strong / weak implies a correlation so does not score
	(b)	(i)	4 points correct	2	B1 for 2 points correct Or B1 for 2 or more columns correct height	☐ half a small square. Use overlay as a guide. If columns then mark consistently left, middle or right of top
		(ii)	The points are nowhere near a straight line oe	1	Accept 'No correlation', 'points form a curve', there is no linear correlation, the plotted points do not form a line	Random', 'scattered' does not imply no correlation
		(iii)	[Getting older means] reaction time decreases [remains stable] then starts to increase.	1	Condone 'slow' then 'fast' then 'slow' soi If describing just the ends or just the middle, need to see comparatives such as slower or fastest etc.	Do not accept a list of ages and reaction times alone. Do not accept "It starts high then falls and rises again" or converse (as, in either case, "it" is undefined)

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

Education and Learning
Telephone: 01223 553998
Facsimile: 01223 552627
Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

© OCR 2014

PART OF THE CAMBRIDGE ASSESSMENT GROUP

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9001 · UKAS MANAGEMENT SYSTEMS 001