

GCSE

Mathematics A

Unit **A503/01**: Mathematics C (Foundation Tier) Paper 1

General Certificate of Secondary Education

Mark Scheme for November 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

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 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 $180 \times (\text{their '37' } + 16)$, or FT $300 - \sqrt{(\text{their '5}^2 + 7^2)}$. Answers to part questions which are being followed through are indicated by eg FT $3 \times \text{their (a)}$.

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)	(i)	0.80[p]	1		Do not accept 0.8 or 80p
		(ii)	15.625	1	Accept 15.6, 15.63, $15\frac{5}{8}$	Do not accept $\frac{125}{8}$
		(iii)	9.1	1	Accept $9\frac{1}{10}$	Do not accept $\frac{91}{10}$
	(b)		3.0	1		Do not accept 3
2			Arrow A: 8 th division from 0 Arrow B: at 0	2	B1 for either	Condone no labels but not incorrect labels
3	(a)	(i)	1350	1		
		(ii)	0.4[0]	1		
	(b)		40	2	M1 for 200 seen or 0.005 seen or answer figs 4	Ignore any units
4	(a)		-5 and 4	1	In any order	
	(b)		-5 and 9 or -9 and 5	1	In any order	
	(c)		-5	1		
	(d)		5 then -4 then -5 or 5 then -5 then -4	2	B1 for any correct sum	
5	(a)	(i)	6 cm ²	1 1	Independent	

Question			Answer	Marks	Part Marks and Guidance	
		(ii)	10.5 to 11	1		
	(b)		$[\times]2$	1		
	(c)		Ticks last 2 boxes only	2	B1 for one correct box ticked and no others or both correct boxes ticked and one other	Accept any clear indication
6	(a)		68	1		
	(b)		20	1		
	(c)		Stopped, puncture, fell off, crashed etc	1		Slowed down is not enough
7	(a)		metres or m grams or g kilometres or km litres or l	4	B1 for each	Condone spelling errors
	(b)		262	4	M3 for $11 \times 20 + 12 \times 1 + 2 \times 15$ soi Or SC3 for answer 282 Or M2 for any 2 products from above soi Or M1 for any 1 product soi	e.g. 220 or 12 or 30
8	(a)	(i)	$6x$	1		
		(ii)	a^2	1		
		(iii)	$2p$	1		
		(iv)	$5x + 3y$	1	Mark final answer	
	(b)		54	1		

Question			Answer	Marks	Part Marks and Guidance	
9	(a)		Evens Unlikely Likely Impossible	4	B1 for each	
	(b)		Orange 5 or 5 or 5 or 5 Strawberry 3 2 3 3 Blackcurrant 2 1 1 0 Lime 0 2 1 2	3	B1 for orange = 5 And B1 for more strawberry than blackcurrant	
10	(a)		15:07	1		
	(b)	(i)	18	1		
		(ii)	20	1		
	(c)		1 hr 30 mins oe	2	eg 1.5 hours, 90 minutes B1 for 75 (minutes) soi	For 2 marks units must be given e.g answer 90 or 1.5 without units implies B1
11			36450	5	B4 for 6750 and 29700 seen Or M3 for $360 \div 4 \times 75$ [6750] or $360 \div 4 \times 3 \times 110$ [29700] Or B2 for 90 or 270 Or M1 for $360 \div 4 [\times 3]$ After 0 scored SC1 for showing a multiplication by 75 or 110	
12	(a)		$\frac{1}{5}$	1	Allow any fraction equivalent	
	(b)		2	1		Accept 2/1
13	(a)	(i)	39	1		Accept embedded answer in full equation on answer line

Question			Answer	Marks	Part Marks and Guidance																									
		(ii)	3.5 or 3 ½ or 7/2	1		Accept embedded answer in full equation on answer line																								
		(iii)	48	1		Accept embedded answer in full equation on answer line																								
	(b)	(i)	[1]x then 6	2	B1 for each																									
		(ii)	3 then 5	2	B1 for each																									
			Answer	Mark	Answer																									
14	(a)	*	Chooses 4 pack and shows 2 supporting comparative values or 3 sets values if using common multiples of 6 and 4 or 3 sets of values if finding tins per £ oe	3	Mark best attempt Accept equivalents in pence throughout but not incorrect units Accept equivalent methods for finding costs of ‘common multiples’ of 4, 6 and 1 packs Some examples of comparative values <table><tr><th>6 pack</th><th>4 pack</th><th>single</th></tr><tr><td>0.48[3]</td><td>0.45</td><td></td></tr><tr><td>0.96 to 0.97</td><td>0.9[0]</td><td>1.30</td></tr><tr><td></td><td>2.70</td><td>3.90</td></tr><tr><td>1.92 to 1.94</td><td></td><td>2.60</td></tr><tr><td></td><td></td><td></td></tr><tr><td>5.80</td><td>5.40</td><td>7.80</td></tr><tr><td>2.06 to 2.07</td><td>2.2[2]</td><td>1.53 to 1.54</td></tr></table>		6 pack	4 pack	single	0.48[3]	0.45		0.96 to 0.97	0.9[0]	1.30		2.70	3.90	1.92 to 1.94		2.60				5.80	5.40	7.80	2.06 to 2.07	2.2[2]	1.53 to 1.54
6 pack	4 pack	single																												
0.48[3]	0.45																													
0.96 to 0.97	0.9[0]	1.30																												
	2.70	3.90																												
1.92 to 1.94		2.60																												
5.80	5.40	7.80																												
2.06 to 2.07	2.2[2]	1.53 to 1.54																												
			4 pack is chosen but only partly justified with one of the correct comparative values or makes errors with units but has two comparative values e.g. figures 45 and 48[3] with 4 pack chosen or full correct comparative values but wrong choice	2-1	Shows a method or figures which would result in one correct comparative value e.g. figs 290 ÷ 6 or figs 180 ÷ 4 soi by figs 45 or figs 48[3]																									
			No relevant or correct work seen	0																										

Question			Answer	Marks	Part Marks and Guidance	
	(b)		He might want more or less oe or he may not have enough money oe	1		Not acceptable 'because it comes in a pack of 4'
			Answer	Mark	Answer	
15	(a)	*	Well structured solution with the correct answer of £291.96 or £292 with at least two supporting steps [volume of the base as 1.62 m^3] and the cost of the concrete as £255.96 or £256] or obtains answer of £352 [from rounding volume of 1.62 to 2] with at least two supporting steps	5	Accept $158 + 97.96$ [or 98] Must show 1.62 first if rounding to 2	
			Obtains correct answer £291.96 or £292 or £352 solution but without two supporting steps	4-3	Shows $3 \times 3 \times 0.18 \times 158$ in working [255.96 or 256] or gives an answer of £25632 [only error is in non-conversion of 18 cm to m]	
			Shows $3 \times 3 \times 0.18$ [1.62] or shows $3 \times 3 \times \text{figs } 18 \times 158$ [figs 25596 or figs 256]	2-1	Shows $3 \times 3 \times \text{figs } 18$ [figs 162] or shows a value add 36 or shows a value multiplied by 158	
			No relevant or correct work seen	0		

Question			Answer	Marks	Part Marks and Guidance	
	(b)	(i)	900	1		
		(ii)	5400	1FT	FT 4500 + <i>their</i> (b)(i)	
	(c)		642.75	3	M2 for 1.35×365 [492.75] and 12×12.5 [150] Or M1 for 1.35×365 [492.75] or 12×12.5 [150]	
16	(a)		-- 46 119 37 44 -- -- 90 --	3	B2 for 4 correct Or B1 for 2 correct	
	(b)		$\frac{110}{200}$ oe isw	2	B1 for $\frac{n}{200}$ or $\frac{110}{n}$	In 16(b) &/or (c) and 20(a), (b), -1 once for poor notation eg 0.15/1
	(c)		$\frac{Their46}{200}$ oe isw	1FT		
17	(a)		$\frac{3}{10}$ cao	2	B1 for $\frac{150}{500}$ oe fraction seen	
	(b)		1.3 to 1.5	2	B1 for 2 to 2.2 soi in working	
18			6	3	B2 for answer 5 or 5.4 Or SC2 for answer 3 Or M1 for 15×1.8 oe soi by 27 or 54 Or for <i>their</i> area $\div 10$ soi	Allow round up or down

Question			Answer	Marks	Part Marks and Guidance	
19			Correctly evaluates 3.3 to 3.376 and 3.377 to 3.4 inclusive	3	Ignore incorrect trials	<i>Values rot to at least 1 dp</i>
			Answer 3.4 with justification	1	M1 for Correctly evaluating one value from 3 to 4 <u>inclusive</u> And M1 for Correctly evaluating one more value between 3 and 4 <u>exclusive</u> Final mark dep on 3 marks earned. Calculation to show 3.4 is closer to 25 or correctly evaluating a value between 3.35 and 3.39 inclusive	3.1 17.391 3.2 19.968 3.3 22.737 3.4 25.704 3.5 28.875 3.6 32.256 3.7 35.853 3.8 39.672 3.9 43.719 3.35 24.195375 3.36 24.493056 3.37 24.792753 3.38 25.094472 3.39 25.398219
20	(a)		0.15 oe	2	M1 for $1 - (0.15 + 0.7)$ soi by ans 0.78	
	(b)		0.85 oe	2	M1 for $0.15 + 0.7$ soi by answer 0.22	
	(c)		Same number of red and blue oe More white oe	1 1	Or other correct observations. Must refer to numbers of counters. Mark the best bit	Condone : 15% are red and 15% are blue 70% are white

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

