OCR
Oxford Cambridge and RSA

GCSE

Mathematics A

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

General Certificate of Secondary Education

Mark Scheme for November 2016

SUBJECT-SPECIFIC MARKING INSTRUCTIONS

1. 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.

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 awarded for a correct final 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 $300 - \sqrt{their\ '5^2 + 7^2\,'}$. Answers to part questions which are being followed through are indicated by eg FT 3 × *their* (a). For questions with FT you must ensure that you refer back to the relevant previous answer. You may find it easier to mark follow through 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.
    i.   **cao** means **correct answer only.**
    ii. **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.
    iii. **isw** means **ignore subsequent working** (after correct answer obtained).
    iv. **nfww** means **not from wrong working.**
    v.   **oe** means **or equivalent.**
    vi. **rot** means **rounded or truncated.**
    vii. **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.
    viii. **soi** means **seen or implied.**

6. Make no deductions for wrong work after an acceptable answer unless the mark scheme says otherwise, indicated for example by the instruction 'mark final answer'.

7. As a general principle, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered, mark the poorer (poorest).

8. 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.

9. 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.

10. If the correct answer is seen in the body and the answer given in the answer space is a clear transcription error allow full marks unless the mark scheme says 'mark final answer' or 'cao'. If the answer is missing, but the correct answer is seen in the body allow full marks. If the correct answer is seen in working but a completely different answer is seen in the answer space, then accuracy marks for the answer are lost. Method marks would still be awarded.

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

12. 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.

13. 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)	(i)	25	**1**		
		(ii)	35	**1FT**	FT their (a) +10	
	(b)		-4	**1**		
2	(a)	(i)	68	**1**		
		(ii)	$\frac{7}{10}$ oe	**1**		
		(iii)	-2	**1**		
	(b)	(i)	9	**1**		
		(ii)	$\frac{7}{4}$ oe	**1**		
		(iii)	18	**1**		
3	(a)		Pyramid	**1**		Ignore extras
	(b)		5 8	**1** **1**		
	(c)		C	**1**		
4			9 [bars] with 65p Or 9 [bars] with £0.65[p]	**3**	**M1** for 20 ÷ 2.15 soi by 9[.3...] **and B1** for 65 or 0.65 but no/incorrect units	

Question			Answer	Marks	Part Marks and Guidance	
5	(a)	(i)	likely	1		
		(ii)	evens	1		
		(iii)	impossible	1		
	(b)		both cards odd both cards less than 10	1 1		
6	(a)	(i)	3.5	1		
		(ii)	23	1		
	(b)		2275 g or 2.275 kg	**2**	**M1** for 2400 or 0.125 soi by figs 2275	
	(c)	(i)	35 final answer	1		
		(ii)	7.8 final answer	1		
		(iii)	3000 final answer	1		
7	(a)	(i)	12	1		
		(ii)	25	1		
	(b)		Any expression using p, t and r that gives 1 as the answer	**2**	Mark final answer **B1** for expression in one or two of p, t and r that equals 1	$p = 3$, $r = 7$ and $t = 5$ Ignore numeric responses e.g For 2 marks $[1]p + [1]t – [1]r$, $2r - 2t –[1]p$ e.g. For 1 mark $2p – [1]t$, $[1]r – 2p$

Question			Answer	Marks	Part Marks and Guidance	
8	(a)	(i)	30	1		
		(ii)	$\dfrac{7}{8}$	1	Accept equivalent fractions	
	(b)		$\dfrac{5}{12}$ final answer	2	**B1** for $\dfrac{100}{240}$ or better	
9	(a)		D	1		
	(b)		C	1		
	(c)		E	1		
	(d)		A	1		
10	(a)	(i)	4a final answer	1		In part (a) penalise first occurrence of poor notation
		(ii)	2b final answer	1		
		(iii)	24c final answer	1		
	(b)	(i)	16	1		Condone embedded answers in (b)(i), (ii), (iii)
		(ii)	4	1		
		(iii)	11	2	**M1** for $3x = 26 + 7$ or better	
11	(a)	(i)	54	3	**M2** for $3 \times 39 - 3 \times 21$ oe Or **M1** for 3×39 or 3×21 or $39 - 21$ oe After **0** scored, **SC2** for answer 150	eg 3×18

Question			Answer	Marks	Part Marks and Guidance	
		(ii)	2 [h] 43 [min]	**2**	**M1** for 43 or 163 seen or **B1** for answer 2h .... mins or .... hrs 43 mins	
		(iii)	72	**2**	**M1** for 216 ÷ 3	
	(b)		121	**3**	**M2** for $\dfrac{14075 - 40 \times 125}{75}$ Or **M1** for 40 × 125	Implied by 5000 or 9075
12			75	**4**	**M3** for *their* 9000 × 30 ÷ 60 ÷ 60 or *their* (9000 × ½) ÷ 60 oe or **M2** for 30 × *their* 9000 or *their* 9000 × ½ or **B1** for 9000 or 0.001 soi After 0 scored, **SC2** for answer 450 or figs 75 or **SC1** for answer figs 45 or for 120 [ml] oe in one hour seen	their 9000 is from conversion error so should be figs 90… not eg 30 × 9 e.g. 240 [ml] oe in 2 hours
13	(a)		96	**2**	**M1** for 2 (30 +18) oe	
	(b)		252	**3**	**M2** for (30 × 18) − (24 × 12) oe Or **M1** for 30 × 18 or 24 × 12 soi	540 or 288
	(c)		42	**4**	**M1** for 200 ÷ 30 oe And **M1** for 130 ÷ 18 oe And **A1** for 6 and 7 After 0 scored **SC2** for answer 48[.1..] **or SC1** for answer figs 42 or figs 48[1]	Accept 30 × 6 = 180 Accept 18 × 7 = 126 Accept if embedded e.g 30 × 6 and 18 × 7

Question			Answer	Marks	Part Marks and Guidance	
14	(a)		35	**2**	**M1** for 140×¼ oe	
	(b)	(i)	2 3 .. 5 3 4 5 6 4 5 6 7 5 6 7 8	**2**	**B1** for 8 entries correct	
		(ii)	$\dfrac{3}{16}$ oe	**2**	**B1** for $\dfrac{n}{16}$ or $\dfrac{3}{k}$	-1 for poor notation $k < 25$
15			$a = 8$ $b = 1\frac{1}{2}$ oe $c = -2\frac{1}{2}$ oe	**1** **2** **1FT**	**B1** for $2b = 11 - their(a)$ oe soi FT $7 - their\ a - their\ b$	Mark answers
16			10π final answer	**3**	**B1** for radius = 5 or diameter = 10 And **M1** for $\pi \times their$ diameter oe	Answer 31.4… scores 2 *their* diameter less than 25
17	(a)		$2 \times 6 \times 9$ [= 108]	**1**		
	(b)		8 3 6 4 12 2 24 1	**4**	**B3** for three correct **Or B2** for one correct **Or M1** for 108 ÷ 4.5 soi by 24	Ignore repeats and extras Allow embedded answers eg $4 \times 6 \times 4.5 = 108$

Question			Answer	Marks	Part Marks and Guidance	
18	(a)		-1 and 3	**2**	**B1** for each	
	(b)		6 or 7 of *their* points correctly plotted Smooth curve thro' *their* 7 points	1 1	FT provided points fit on grid	Accuracy within overlay
	(c)		0.2 to 0.6 -2.6 to -2.2	1 1		

Question			Answer	Mark	Answer
19	(a)*		2A, 4P, 2C correct, with clear commentary [A= One set of arrangements, P=probability, C=correct conclusion] *For 5 marks or fewer, allow a pair of correct probabilities to imply a correct arrangement.* 2A, 2P, 1C 2A, 1P, 0C OR 2A, 0P, 1C OR 1A, 2P, 0C OR 1A, 1P, 1C OR 0A, 2P, 1C 1A, 0P, 0C or 0A, 1P, 0C	**6** **5-4** **3-2** **1-0**	Eg. 1) white moved Darius: 2W, 2B Ellie: 5W, 1B P(W) 0.5 oe 0.83 oe So, Ellie more likely 2) black moved Darius: 3W, 1B Ellie: 4W, 2B P(W) 0.75 oe 0.67 oe So, Darius more likely _____ 2A, 2P, 0C OR 1A, 2P, 1C 2A, 0P, 0C OR 1A, 1P, 0C OR 1A, 0P, 1C No worthy work.

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