GCSE

Mathematics A

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

General Certificate of Secondary Education

Mark Scheme for November 2015

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)		(3, 2)	1		
	(b)		Plots (0, -1)	1		Condone label omitted Mark intention
	(c)		Plots B and D at (0, 2) and (3, -1) [and draws the square]	2	**B1** for each of B and D correctly plotted Or **SC1** (5, -2) and (1, -4) if (b) plotted at (-1, 0) or for (0, 5) and (-3, 2)	Ignore labels
			Gives correct coords for their B and D	1FT		Allow in any order
2	(a)	(i)	225	1		
		(ii)	15.6 oe	1		
		(iii)	-22	1		
	(b)	(i)	metres or m	1		
		(ii)	litres or *l*	1		
		(iii)	kilometres or km	1		
3	(a)		[A =] 18.5 oe [B =] 14 A by 4.5 oe	2 1FT	**B1** for each correct area FT their areas A and B	
	(b)		18	1		
4	(a)		Unlikely Likely Impossible	3	**B1** for each correct	

Question			Answer	Marks	Part Marks and Guidance	
	(b)		O R W Y 2 5 1 2 or 1 5 1 3 or 3 5 0 2 or 4 5 0 1 or 1 5 0 4 or 2 5 0 3	4	**B1** for red = 5 And **B1** for 0 < orange < 5 And **B1** for yellow > white	
5	(a)		[Tuesday =] 1625 [Thursday =] 7 [hours] 20 [minutes] [Friday=] 14 35	3	**B1** for each correct	Accept 4 25[pm] Accept 2 35[pm]
	(b)		39 [hours] 20 [minutes]	2 FT	**FT** 32 hours + their 7 hours 20 minutes correctly evaluated in hours and minutes **B1FT** for 39 hours	For B1FT Accept correct FT non-standard time e.g. 37 hours 140 minutes soi
6	(a)		18y	1		Do not accept 18 × y, y18 etc
	(b)		11x	1		
	(c)		4p	1		
	(d)		$a - 3b$ final answer	2	**B1** for [1]$a + kb$ or $ka - 3b$ as answer Or for correct answer seen then spoiled	Condone 1$a - 3b$ for 2 marks [1]$a + - 3b$ gets B1 2$a + - 3b$ gets B0

Question			Answer	Marks	Part Marks and Guidance	
7	(a)	(i)	B	1		
		(ii)	D	1		
		(iii)	F	1		
	(b)		1.30 or 1.40 nfww	3	**B2** for change is £3.60 or £3.70 Or **B1** for 8 of the 16 coins are 50p or 7 of the 8 coins received in change are 50p	For B1 condone shows 7 or 8 50p's in working
8	(a)	(i)	$\dfrac{13}{30}$	1		
		(ii)	4.8	2	**B1** for 4.75 to 4.76 or answer 4.7	
		(iii)	3.024 km or 3024 m	2	**B1** for figs 3024	
	(b)		$2\ \dfrac{3}{1}$ oe	1		Accept 3 over blank
			$\dfrac{2}{3}$	2	**B1** for $\dfrac{6}{9}$ oe	
9	(a)		-4	1		Allow embedded solutions in all parts
	(b)		6.5	1		Accept 13/2 or better
	(c)		45	1		
	(d)		4.75 oe	2	**M1** for $16 + 3 = 4x$ Or correct FT step to answer after incorrect first step	Accept 19/4 or better

Question			Answer	Marks	Part Marks and Guidance	
10			12.10 [p]	3	**M2** for 8.47 ÷ 7 × 10 oe [implied by 12.1] Or **M1** for 8.47 ÷ 7 [1.21] or 8.47 × 10	Do not accept 12.1 for 3 marks Allow method marks if working in pence
11	(a)	(i)	$\frac{1}{4}$ oe	1	isw conversion to other forms	
		(ii)	$\frac{2}{4}$ oe	1	isw conversion to other forms	
	(b)		15	2	**M1** for *their* (a)(i) × 60 or 15 seen	Condone 15/60 for 2 marks
12	(a)		48 nfww	4	**B3** for 48000 isw conversion Or **M2** for 400 × (60 − 10) ÷ 5 × 12 Or **M1** for [400 ×] (60 − 10) ÷ 5 oe [4000] or 4 km oe seen or for n ÷ 5 ×400 soi [4800] Or **B1** for 120 [mins] or 2 [hrs] or 600 [mins] or 10 [hours] seen <u>After 0 scored</u> **SC3** for answer 57.6 km Or **SC2** for 57600 m soi Or **SC1** for figs 576 seen	Allow method marks if working in km
	(b)		30	1FT	**FT** *their* (a) × $\frac{5}{8}$ correctly evaluated	To nearest whole number or better
13			135 nfww	3	**B2** for 134.9... Or **M1** for 424 = $\pi \times d$ or better soi	

Question			Answer	Marks	Part Marks and Guidance	
14	(a)		2548	**3**	**SC2** for answer 2352 **Or M2** for 35 × 1.4 × 52 Or **M1** for any correct product pair soi	Accept 2555 for 3 marks (365 days in year) 49, 1820 or 72.8
	(b)		*See appendix*			
15	(a)		BC – increase speed CD – stops DE – returns [home]	**1** **1** **1**	Oe ignore extras Oe ignore extras Oe ignore extras	Allow high[er] or fast[er] oe
	(b)		21	**2**	**M1** for ¾ × 28 oe	
16			4.40	**3**	**B2** for answer 4.4 **Or M2** for (60.76 – 4 ×1.99) ÷ 3 or 4 or 12 soi Or for 60.76 ÷ 4 – 1.99 soi by 13.2[0] **Or M1** for 60.76 – 4 ×1.99 soi by 52.8[0] Or for 60.76 ÷ 4 soi by 15.19	Soi by13.2[0] or 17.6[0]
17			$\dfrac{1}{7}$	**3**	**B2** for $\dfrac{3x}{21x}$ or for $\dfrac{3}{21}$ **Or B1** for 21x seen	

Question			Answer	Marks	Part Marks and Guidance	
18	(a)		7½×2½ in correct place on grid 5 ×2½ in correct FT place on grid 7½×5 in correct FT place on grid	1 1 1		Ignore tabs Condone free hand -1 if extra faces
	(b)		13750	3	**M2** for (50×75 + 50×25 + 25×75) × 2 oe **Or M1** for any two of 50×75 and 50×25 and 25×75 After 0 scored Allow **SC1** for answer 137.5	Soi by 7500, 2500, 3750 Condone 1 numerical slip Soi by 3750, 1250, 1875 For M2 and M1 allow working to scale (ie using 5, 7.5, 2.5)
	(c)	(i)	125	2	**M1** for 5×5×5 soi	
		(ii)	750	3	**M2** for 10×15×5 Or for $\dfrac{50\times75\times25}{their\,(125)}$ **Or M1** for dividing one length by 5 Or for 93750 seen	
19			72	3	**M1** for $\dfrac{5}{6}-\dfrac{1}{4}$ oe soi by $\dfrac{7}{12}$ oe **And M1** for 42 ÷ a fraction oe	eg 5/6, 1/4 or *their* 7/12

APPENDIX 1

Question	Answer	Mark	Answer
14b*	<u>Daniel</u> Shows 11.1 to 11.2 miles per litre for Daniel's car **and** 10.1... miles per litre for Maja's car with at least one stage of working shown for each value	**6 - 5**	<u>Daniel</u> Shows 11.1 to 11.2 miles per litre for Daniel's car **or** 10.1... miles per litre but with no commentary/limited working
	<u>Daniel</u> Shows 11.1 to 11.2 **and** 10.1... with one supporting calculation **OR** shows both 49.25 **and** 45.5 with one supporting calculation **OR** 7.97 to 7.98 **and** 7.65 to 7.66 with one supporting calculation **OR** 0.1305.. rot to 2 dp **and** 0.1253.. rot to 2 dp with one supporting calculation **OR** 71.81.. **or** 57.66 to 57.67 with the supporting calculation	**4 - 3**	Shows both 49.25 **and** 45.5 in working **OR** 7.97 to 7.98 **and** 7.65 to 7.66 **OR** 0.1305.. rot to 2 dp **and** 0.1253.. rot to 2 dp **OR** 71.81.. **or** 57.66 to 57.67
	Shows 49.25 **or** 45.5 in working **OR** shows 7.97 to 7.98 **or** 7.65 to 7.66 in working **OR** shows 0.1305.. rot to 2 dp **or** 0.1253.. rot to 2 dp **OR** shows 68.95 ÷ 1.40 **and** 60.06 ÷ 1.32 **OR** 550 ÷ 68.95 **and** 460 ÷ 60.06 **or** their inverses **OR** 60.06 ÷ 460 × 550 **OR** 68.95 ÷ 550 × 460	**2 - 1**	Shows 68.95 ÷ 1.40 **or** 60.06 ÷ 1.32 **OR** 550 ÷ 68.95 **or** 460 ÷ 60.06 **or** their inverses
		0	No worthy working