GCSE

Mathematics A

Unit **A501/01:** Unit A (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2015

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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.

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

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.

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, i.e. 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, e.g. 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 e.g. 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 e.g.. 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 (i.e. **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)		30 or 35	1		
	(b)		36	1		Not 6^2
	(c)		31 or 37	1		
2			g, mm, litres, km	4	**B1** for each	
3	(a)		(4, 1)	1		
	(b)		(−3, −4) plotted	1		ignore label
	(c)		(2.5, −1)	2	**B1 for** each coordinate if B0, allow **SC1** for correct midpoint indicated, tol 2 mm	
4	(a)		120 plotted correctly	1	tol < 1 mm	
	(b)		310	1		
	(c)		Paul by £10	3	**nfww** **M1** for Paul 170 + 280 + 90 + 120 or 660 and **M1** for Sumita 310 + 230 + 40 + 70 or 650 **alt method** **M1** for S 140 more on travel oe soi and **M1** for P 50 + 50 + 50 more oe soi or 150 more [on others] oe soi	at least 3 of 4 correct at least 3 of 4 correct at least 2 of 3 correct If answer is wrong or missing and no working then check graph in (a)

Question			Answer	Marks	Part Marks and Guidance	
5	(a)	(i)	0.08 or 2/25	1		
		(ii)	−8.5 or −8½	1		
		(iii)	28	1		
	(b)		multiply by *n*, where 0<*n*<1	1		
			their n×8 evaluated	**1FT**	For FT must have −1<*n*<1 and *n*≠0	
6	(a)		0	1		
	(b)		9.5	2	**M1** for at least 9 numbers ordered correctly or for at least one of 7 and 12 identified	
	(c)	(i)	[Mean for 11 M =] 10.2	3	**nfww** **M1** for 5 + 0 + ... + 20 or for 102 and **M1** for ÷ 10	Condone omission of 0s M2 is implied by (e.g.) Median = 10.2
			Y .... their <u>mean</u> was larger	1	Allow for Y and 14 and 10.2 or for Y and 3.8 mentioned Must see evidence of attempt to calculate a mean	
		(ii)	[Range for 11 M =] 22	1		
			M ..... their range was larger	1	Allow for M and 21 and 22 or for M and 1 mentioned Must see evidence of attempt to calculate a range, e.g. 22 or 1	
7	(a)		NW	1		Ignore mention of distance

Question			Answer	Marks	Part Marks and Guidance	
	(b)	(i)	10 to 11	**2**	**M1** for 5 to 5.5 [cm]	
		(ii)	246 to 251	1		
	(c)		15	1		
8	(a)		Nuts 15.90 Suet 7.60 Total 23.50 isw	1 1 1	 or 6.50 short of offer	Throughout condone omission of final zero, except in *their* final answer in (b)
	(b)		Seeds 4.50 or 2×2.25 buy another 5.30 bag or another 2.25 bag or another of <u>each</u> of 5.30, 2.25 and 1.90 total 33.30 or 30.25 or 37.45 or FT *their* total cost − 10	1 1 1 1	 FT *their* total in (a) at least 20.20 and less than 30; result must be at least 30 allow only if their total at least 30	3 extra bags of seeds implied by 6.75 or 3×2.25 earns first 2 marks
9	(a)		9*a*	1	**0** for 9×*a* etc	Condone capitals, *a*9 etc in (a) and (b)
	(b)		2*d* + 3*t* oe	1		Condone 2*dp* + 3*tp* Ignore cost= or tc= or c= before or after expression Incorrect simplification e.g. 6*dt* scores 0
	(c)	(i)	11	1		

Question			Answer	Marks	Part Marks and Guidance	
		(ii)	0.75	4	oe, nfww; isw wrong conversion after ¾ **M1** for $6x - 2$ [$= 10x - 5$] oe and **M2** for $3 = 4x$ oe or FT or **M1FT** for collecting xs <u>or</u> numbers correctly FT on opposite sides of equation and **M1FT** for *their* final answer FT *their* $ax = b$, dep on at least M1 already earned, for $a \neq 0$ or 1 and $b \neq 0$ (isw wrong conversion)	for dealing with brackets correctly, or division by 2: [$3x - 1 =$] $5x - 2.5$ oe award a max. of M3 if answer is not correct
10	(a)		Samira 420 and Joanne 280	3	**B2** for one of these correct or **M1** for 700 ÷ 5 or 140 **SC2** for answers reversed	
	(b)		210	3	**M2** for 5/2 × 84 oe or **M1** for 84 ÷ 2 or 42 or for 126 found	e.g. M2 for 84 + 42 × 3 or 84 + 126

Question	Answer	Marks	Part Marks and Guidance
11	arc of circle centre T radius 6 cm drawn	**1**	arcs for B and T circles must be compass drawn; radius tol 2 mm, and extending for a sector of at least 30°
	arc of circle centre B radius 4 cm drawn	**1**	
	Perpendicular bisector of WS drawn with correct arcs	**2**	must be at least 3 cm long **B1** if no/wrong arcs e.g. arcs touching at midpoint of WS; line must be within 1 mm of centre of WS and tol 1°; or allow **M1** for two correct pairs of arcs but no line or line inaccurate or too short (e.g. if arcs too close)
	Correct region indicated clearly, dep on arcs centres B and T drawn and straight line attempt at perpendicular bisector	**1**	accept lack of label R if other indication is clear; assume their region is bounded by the requested loci – ignore construction arcs for the perpendicular bisector going through this region

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