OCR
RECOGNISING ACHIEVEMENT

GCSE

Mathematics A

General Certificate of Secondary Education

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

Mark Scheme for June 2011

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, 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 2011

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

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, ie 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, 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.

   - **cao** means **correct answer only**.
   - **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).
   - **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.   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'. Place the annotation ✓ next to the correct answer.

       If the answer space is blank but the correct answer is seen in the body allow full marks. Place the annotation ✓ next to the correct answer.

       If the correct answer is seen in the 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. Use the M0, M1, M2 annotations as appropriate and place the annotation ✗ next to the wrong answer.

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.

Question			Answer	Marks	Part marks and guidance	
1	(a)		Runnymede	1	condone poor spelling if meaning clear condone R	
	(b)		**One** hundred **and** thirty thousand six hundred	1	condone extra 'and'; condone poor spelling if meaning clear, but not hundred**th** or thousand**th**	Condone '&' for 'and' but not '+'
	(c)		93 000	1		
	(d)		43 300	2	**M1** for 135 700 **and** 92 400 seen	92 <u>6</u>00 is NOT a MR
2	(a)		(4, 1)	1		
	(b)		(3, −2)	1		
	(c)		(0, −2) and (−3, 5) plotted	2	**1** for one correct Accept letter for plot	Ignore labels and extra plots
3	(a)		Montreal	1	Ignore sight of −10	
	(b)		30	2	Allow −30 **M1** for 22 and −8 seen or for 22 + 8	May be indicated on a number line
	(c)		3	2	**M1** for −1 + 4	
4	(a)			3	**1** each	

Question			Answer	Marks	Part marks and guidance	
	(b)	**(i)**	Answer in range 12 to 13	**2**	**M1** for other answer in range 10 to 15 or for 14.5 to 15 [cm] or 4 [cm] or for 1 cm rep 3 to 3.2 ft	i.e. a correct relevant measurement
		(ii)	Answer in range 13 to 15	**1**		
	(c)		57.7	**4**	Mark final answer **B3** for 57.71[4...] rot or $57\frac{5}{7}$ or 58 Or **M2** for figs 577[14…] or $\dfrac{their\ 404}{7}$, where *their* 404 is implied by 334 to 474 Or **M1** for Sum of lengths attempted [= 404] implied by 334 to 474 seen And **B1** for answer given to 1 dp Allow **SC2** for answer of 344	**SC2** from 45 + 46 +... + 68 + 70 ÷ 7
	(d)	**(i)**	NW or North West	**1**	Condone e.g. N,W but not WN etc.	Ignore any numbers
		(ii)	Answer in range 3 to 4	**1**		
5	**(a)**		19	**1**		

Mark Scheme

Question			Answer	Marks	Part marks and guidance	
	(b)		Pie chart with 5 sectors, 3 of which are correct and all radii ruled	**3**	Tolerance ±2° for each angle	Use Scoris angle tool to check Ignore labels for first 3 marks
					B2 for pie chart with 5 sectors, 2 of which are correct and all radii ruled Or **M2** for 150, 78, 36, 30, 66 seen	Tolerance ±2° for each angle throughout
					Or **M1** for one of 150, 78, 36, 30, 66 seen or 6° rep. one person soi or pie chart with 1 correct angle with radii ruled	
			Exactly 5 sectors, all labelled, largest labelled UK and smallest labelled USA or Spain	**B1**	Condone wrong spelling if meaning clear; accept abbreviations such as S, F, etc	Condone freehand for B1
6	**(a)**		5.7[0] + 17.9[0] + 5.3[0]	**M2**	**M1** for list with no addition or for 2 correct and added	
			28.9[0]	**B1**		**B1** may be implied by other strategies obtaining 90p by correct methods e.g. 5.70 + 5.30 = 11, 11 + 17 = 28 so 90p more
			90 or FT *their* 28.9 − 28 if answer is less than £1	**B1**	Allow **£**0.90 **B0** for 0.90 or £0.9	

A501/01 **Mark Scheme** **June 2011**

Question			Answer	Marks	Part marks and guidance		
	(b)		Replace Melon and ham by Chicken liver paté or replace Poached salmon by Lemon Chicken or by Mushroom risotto	1	Condone reversed order of dishes		
			Change which decreases total cost by more than 90p Or gives correct total cost less than £28	1	**dep** Accept calculations: replace Melon and ham by Chicken liver paté reduces cost by £1.05 or total is £27.85; Poached salmon by Lemon chicken is reduction of £2.25 or total cost is £26.65; Poached salmon by Mushroom risotto is reduction of £3.95 or total cost is £24.95		Calculations quoted must be correct
7	**(a)**		13	1			
	(b)		6.75 or 6.7 or 6.8	1			
8			Use of 1000 g = 1 kg	M1	Implied by 1100 g		3 different possible methods shown If more than one method shown mark the best
			300 ÷ 4 [= 75g for one person]	M1	Or **M1** for 14/4 [= 3.5 times the recipe]	Or **M1** for 1100÷300 [=3.6… or 3.7]	
			Their 75 × 14	M1	Then **M1** for *their* 3.5 × 300	Then **M1** for *their* 3.6 × 4	1050 implies **M0+M1+M1** 1.05 implies **M1+M1+M1**
			1.050 **and** yes [or 1050 **and** 1100 **and** yes]	A1		Then **A1** for 14.4 to 14.8 **and** yes	

A501/01 **Mark Scheme** **June 2011**

Question			Answer	Marks	Part marks and guidance	
9	(a)		Arcs drawn with radii 9.5 and 4.8 cm centres A and C resp.	1	Tolerance 2mm	the arcs should be inside circles on overlay but condone outside and very nearly touching circles; one of the arcs should extend through at least three circles, including D NB spurious arcs put in afterwards do not gain credit; ignore other arcs on the diagram
			Quadrilateral completed with ruled lines, with D in tolerance	1	[This mark available even if no arcs seen] condone dashed lines, if 0, allow SC1 for one correct arc	condone wrong / no label for D; tolerance – the vertex should be inside circle on overlay but condone outside and very nearly touching circle when screen is **set to width**; allow **SC1** for quadrilateral completed, with arcs, using CD = 9.5 cm and AD = 4.8 cm
	(b)		Correct construction arcs	1	Check by eye; use marking tool if in doubt	NB spurious arcs put in afterwards do not gain credit; ignore other arcs on the diagram
			Correct ruled bisector drawn	1	Within tolerance on overlay	to extend at least to the circles on overlay, going through or touching these
10	(a)		70*n* + 150 oe	2	**M1** for 70*n* oe or for e.g. 70*x* + 150 oe	Accept 70 × *n*, *n*70, etc; or capital N ignore £ or p;

Question			Answer	Marks	Part marks and guidance	
	(b)		$70n + 150 = 3300$ or $3300 - 150 = 70n$	**1FT**	or FT from *their* (a); must see equation to gain this mark	
			45	**2**	**M1** for one correct step in solving *their* equation eg $70n = 3150$ but M0 for just $3300 - 150 = 70n$ – not sufficient **SC1** for embedded answer on answer line or in body of script	allow **M1** for $n = \dfrac{C - 150}{70}$ seen and then 3300 substituted for C even if no equation with n then seen ignore £ or p allow **M1** for correct step in solving inequality and then **A1** for $n \leq 45$
11	**(a)**		$1 \leq g < 1.5$	**1**	Condone poor notation such as '1 to 1.5' or '<' used instead of '≤'	0 for single value within correct interval or for 13 0 for '$1 \leq g < 1.5$ 13' but allow '$1 \leq g < 1.5$ <u>because</u> 13' oe
	(b)		Plots at midpoints of intervals	**1**		Use overlay
			at least four heights correct: 5, 7, 13, 5, 2	**1**	tolerance 1mm (eg accept ht of 5 on nearest gridlines)	as well as correct, allow heights mark for bars or for plots not at midpoints but elsewhere in correct interval;
			Plots joined with straight line segments	**1**	Within 1 mm of points	Ignore joins to axes from endpoints, but last mark not earned if endpoints are joined ignore bars if a frequency polygon also seen; otherwise bars can earn the mark for heights correct

Question			Answer	Marks	Part marks and guidance	
12	**(a)**	**(i)**	0	**1**		0/2 not sufficient
		(ii)	45	**1**		
	(b)		$4n - 2$ oe	**2**	Mark final answer **M1** for $4n$ oe SC1 for $4n$th $- 2$	Condone $4 \times n$, $n4$, use of other letters instead of n; condone $4n + -2$; ignore '$n =$ ' or 'nth = '

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

OCR Customer Contact Centre

14 – 19 Qualifications (General)
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