AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Secondary Education

Mathematics 3301
Specification A

Foundation Tier Paper 2

Mark Scheme

2005 examination – June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

AQA GCSE Mathematics Specifications A & B

Notes for Examiners

In general if a response is fully correct then it is sufficient to tick the final answer and put the mark for that part in the margin. Parts not attempted or totally incorrect must have 0 for that part in the margin. Negative marks must not be used.

Errors **must** be underlined or ringed.

Responses that are partly correct will generally be awarded marks for method or partial working. In that case the following should appear in the margin to indicate what the mark(s) has been awarded for. These are detailed in the mark scheme.

M   Method marks are awarded for a correct method which could lead to a correct answer.

A   Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.

B   Marks awarded independent of method.

M dep A method mark dependent on a previous method mark being
or **DM**   awarded.

B dep A mark that can only be awarded if a previous independent mark
or **DB**   has been awarded.

Ft   Follow through marks. Marks awarded following a mistake in an earlier step.

SC   Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.

Within the script the following notations can be used to explain the decision further. These should appear next to the place in the script where the error or omission is made.

ft   Follow through marks. Wrong working should not be penalised
or ✔   more than once so that positive achievement later in the question can be recognised.

✘   An answer that does not follow through from previous working.

MR
or **MC**   Misread or miscopy. Candidates often copy values from a question
            incorrectly. If the examiner thinks that the candidate has made a
            genuine misread, then only the accuracy marks (A or B marks), up
            to a maximum of 2 marks are penalised. The method marks can
            still be awarded.

Fw   Further work. Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice   When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Wnr   Work not replaced. Erased or crossed out work that is still legible can be marked.

Wr   Work replaced. Erased or crossed out work that has been replaced is not awarded marks.

⋀   Work incomplete or method missing.

Allow   In general decisions should support the candidate. If an examiner feels that work is worthy of a mark then it can be allowed.

BOD   Benefit of the doubt should only be given in cases where evidence is not secure. For example overwriting numbers. It should not be used to avoid making a decision. Examiners are expected to make decisions based on the scheme.

seen or ✔   Every page containing working should be annotated to show it has been considered.

From page 23 ↘   Marks transferred from another part of the paper. Candidates often make a mistake in their original work and do the question on the back page or another page with some space. The part marks should be credited there **within the script** and the marks transferred to the margin by the printed question.

Wrong method   Candidates sometimes obtain the correct answer via a completely wrong method. If an examiner is sure that this is the case then the Method mark should not be awarded and subsequently the accuracy mark cannot be awarded. This notation should also be used when candidates 'fiddle' algebra to demonstrate a given result.

Pa   Premature approximation. Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise in the standardising meeting.

Unusual responses
Very occasionally situations may occur which are not covered by the above notations. In these rare cases examiners should write brief comments in the script to explain their decision, such as ignore, irrelevant etc.

Blank answer spaces and blank pages
Blank answer spaces should be crossed through to show that they have been seen. Blank pages at the end of a paper should also be crossed through to indicate that they have been seen. Any working on these pages must be marked.

Diagrams
Diagrams that have working on them should be treated like normal responses and marked with same notations as above. If the diagram is written on but the correct response is within the answer space the work within the answer space should be marked and the diagram ticked to indicate that the examiner has seen it. Working on diagrams that contradicts work within the answer space is **not** to be considered as choice but as working.

Responses which appear to come from incorrect methods
Whenever there is doubt as to whether a candidate has used an incorrect method to obtain an answer, as a general principle the benefit of doubt must be given to the candidate. In cases where there is no doubt that the answer has come from incorrect working then the candidate should be penalised as directed at the standardising meeting.

Questions which ask candidates to show working
Instructions on marking will be given at the standardising meeting but usually marks are not awarded to candidates who show no working.

Questions which do not ask candidates to show working
As a general principle, a correct response is awarded full marks.

Probabililty
Answers should be written as fractions, decimals or percentages. If a candidate uses an incorrect notation such as "1 out of 4" for ¼ consistently through the paper, then penalise the first occurrence but allow any following answers. Ratio is not acceptable as incorrect notation.

Recording Marks
Part marks for a question should be shown in the margin at the side of the work. The totals should be shown in the oval either at the end of each question or after each double page. These marks should be transferred to the appropriate box on the front of the paper. The grand total for the paper should also be shown in the appropriate box on the front of the paper. This total should agree with the total of the part marks within the paper.

Checkers at the board will first check that the part marks agree with the ringed totals, either at the end of each question or after each double page. They will then check that these marks have been transferred correctly and finally that the total on the front cover is correct. Papers that contain clerical errors may be returned to examiners.

Paper 2F

As a general rule for money answers, if £72.30 is the correct answer then:

Condone £72.30p A1;   £72.3 A0 (penalise every time);   £7230p A0

7230p with £ sign crossed out is OK for A1.

1ai	2.34	B1	
1aii	2.66	B1ft	£5 – their (a)(i)
1b	Total items = (£) 2.96	B1ft	f.t. their a(i) + 62p (must be seen)
	Saving = 46p	B1ft	Their total - £2.50, as long as their total is written
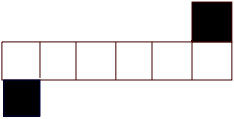
2	Checked – stripe; spot – stripe; spot – grey; plain – stripe; plain – grey	B2	-1 each omission or repetition; SC1 if 4 more correct award regardless of repetitions

3a	5	B1	
3b	5×100 (= £5)	M1	Or 5 + 5
	10	A1	
3c	£2.50 ÷ 5	M1	250 ÷ 5; their (7.50 – 5) ÷ 5 if shown
	50	A1	

4a	9/15	M1	
	3/5	A1	
4b	Any 12 squares shaded	B1	
4c	9/12 and 15/20 circled or marked	B2	-1 eeoo
4d	1/2 + 3/8 = 7/8	B1	Accept 4/8 + 3/8 = 7/8 oe; using + and = from diagram is OK

5a	65	B1	
5b	150	B1	

6a	A (2,1); B (6,3); C (4,7)	B2	Two correct, B1; SC1 co-ordinates reversed, all correct.
6b	Point marked at (0,5)	B1	Allow letter D close to point or any clear indication.

7a		B1	Correct two squares must be shaded; shapes must match up with each other edge to edge; allow slightly different sizes
7b	2	B1	
7c	20	B1	

8a	76	B1	± 0.2
8b	340	B1	± 2
8c	87	B1	± 0.5

9	a = 17; b = 47; c = 15	B1,B1,B1ft	ft c from their b

10a	8	B1	
10b	A & C	B1	
10c	Attempt to find area	M1	Lines on diagram making triangles or rhombi; correct number of triangles/rhombi in two or more shapes: 12, 7, 8, 8 or 6, $3^1/_2$, 4, 4
	D & C	A1	

11	A correct net	B3	Six correct faces joined up(not a net), B2;
			Two more correct faces, B1;
			SC2 correct net of open box

12a	x =7	B1	
12b	4y = 11 + 5 (= 16)	M1	
	y =4	A1	
12c	7z – z = 6 + 3	M1	Allow one sign error:
			7z + z = 6 + 3; 7z – z = 6 – 3
	6z = 9	DM1	ft their correct simplification of their one error;
			8z = 9, 6z = 3 ;
	z = 1.5	A1	$1^1/_2$, 3/2 but not 9/6

| 13a | 9.16(…) | B1 | 9.2 |
| 13b | 74.1 | B1 | 74, 74.08, 74.088, 74.09 |

14a	19:23	B1	
14b	T, F, F, T	B2	Two or three correct, B1
14c	720	B1	
14d	1 h 59 m	B1	
14e	1.3×723	M1	940, 939.9
	939.90	A1	939.9 scores A0, as usual.

15	Arranging in order	M1	25, 26, 28, 30, 35, 39
	29	A1	
15b	Attempt to add all 6 (= 183)	M1	
	Their 183 ÷ 6	DM1	If no total shown brackets must be round their added numbers ie $(28 +…. + 26) ÷ 6$
	30.5	A1	
15c	$\dfrac{2}{5}$	B2	oe; numerator, B1; denominator, B1 (fraction ≤1)

16a	Rhombus	B1	
16b	Diagonals cross at right angles; One pair of opposite angles equal.	B2	-1 eeoo SC1 if only two more lines are drawn and one is correct

17a	$2 \times 7 + 3 \times 5 - 20$	M1	
	9	A1	
17b	$20 + 5$ or $7 + 4 \times 5$	M1	27
	25	A1	SC2 count a child as an adult then £20 5 people so get a family ticket

18	$374 ÷ 189$	M1	
	1.98	A1	Accept 1.97 ; and £2 with working

19a	x + 5 penalise once	B1	Allow x = x + 5
19b	x – 2 incorrect letter	B1	Ali + 2 = x is B0
19c	2x consistently used	B1	Accept x × 2, 2 × x, x + x but not x2
19d	2x = 180	M1	x – 32.5 = 57.5
	90	A1	Allow embedded solutions but if contradicted then M1 only.

20a	-24 to -23	B1	
20b	-58.5 to -57.5	B1	SC1 if both positive and numerically correct

21a	360 – (125 + 75 + 50)	M1	110, (125 + 75 + 50), 250
	180 – their 110 on diagram	M1	180 – (360 – their 250)
	70	A1	
21b	360/6	M1	120 seen , 720/6
	60	A1	

22a	Doesn't start at (0, 0), starts at 300	B1	£600 is 3 times as high as £400 oe £500 is 4 times higher than £350 or twice £400
22bi	No, 45 year old has wage above median	B1	…is highest wage; …well above middle wage; oe; median is £370; listing in order vertically with misreads is ok; but median = £350 is B0
22bii	No, mode is still £370	B1	No, no other value equal to it; No, 3 equal values for this mode; oe

23	Σ (goals × matches)	M1	Σ at least 3 multiplications
	Their 84 ÷ 15	DM1	÷ by 14, 16 with working
	5.6	A1	

24	$-10 + 1.8 \times 3.7$	M1	$-10 + 6.66$
	-3.34	A1	3.34 as answer no working M1 A0

25	$35600 \div 5$	M1	
	7120	A1	28480, SC1

26	Graph passing through (0,-1)	B1	1 correct point plotted or worked eg (0,-1) (1,2) (2,5) (3,8) (4,11) (5,14)
	Graph with a gradient of 3	B1	2 further correct points plotted or worked
	Line from (0,-1) to (5,14) with no errors	B1	Freehand line to ½ square accuracy

27a	Any 90° rotation	B1	Allow wrong length of flagpole
	90° anticlockwise about (0,0)	B2	B1, 90° clockwise about (0,0); No labels award best possible mark; no pole, correct position of flag, -1 each time
27b	Fully correct	B1	
27c	Fully correct	B2	ie flag drawn at (1,0), (1,-2), (1,-3), (2,-2), (2,-3) Reflected in x =1 , B1 Reflected in y = c, B1