GCSE

Mathematics B (MEI)

General Certificate of Secondary Education

Unit **B291:** Paper 1 (Foundation – Modular)

Mark Scheme for January 2012

Annotations

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 (method) marks are not lost for purely numerical errors.
A (accuracy) marks 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.

1 The following abbreviations are commonly found in GCSE Mathematics mark schemes.
   i. Where you see **oe** in the mark scheme it means **or equivalent.**
   ii. Where you see **cao** in the mark scheme it means **correct answer only.**
   iii. Where you see **soi** in the mark scheme it means **seen or implied.**
   iv. Where you see **www** in the mark scheme it means **without wrong working.**
   v. Where you see **rot** in the mark scheme it means **rounded or truncated.**
   vi. Where you see **seen** in the mark scheme it 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.

vii. Where you see **figs 237**, for example, this 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.

2   Make no deductions for wrong work after an acceptable answer unless the mark scheme says otherwise.

3   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).

4   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.

5   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.

6   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.

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

8   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.

9   Where a follow through mark is indicated on the mark scheme for a particular part question, you must ensure that you refer back to the answer of the previous part question if this is not shown within the image zone. You may find it easier to mark follow through questions candidate by candidate rather than question by question by question.

10   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			b, d, e or f	1		
			a	1		
			c	1		
			It is between 90° and 180°	1		
2			0.9	1		
			0.75	1		
			$\frac{3}{10}$ oe	1		
			$\frac{7}{100}$ oe	1		Not $\frac{0.7}{10}$
3			4	1		
			10	1	**FT** from error in key where consistent	
			2 squares	1		
			15	1		
4	(a)		1827	2	**M1** for evidence of method with "carrying". **SC1** for one digit wrong by 1.	
	(b)		317	2	**M1** for evidence of subtraction with "borrowing". **SC1** for one digit wrong by 1.	or equivt method such as 2 of 21,200 and 96 seen **or** 17 and 300
5	(a)		10.4 to 11.2	2	**B1** for 5.2 to 5.6 or 10–10.3, 11.3–11.6 **or M1** for ×2	
	(b)		Point 3.3 to 3.7cm from T (on TP)	2	**B1** for correct distance, wrong direction **or** measured from P (on TP).	
6			(Q) 1 hour cost £90	2	**B1** for 1 hour or £90	
			(R) 50cl left after 3 mins	2	**B1** for either 50 cl or 3 mins	

Question			Answer	Marks	Part Marks and Guidance	
7	(a)		Drawing of any cuboid, 5 x 4 x 2	2	**B1** for a 5 cm and a 4 or 2 cm length as part of a cuboid, or any complete cuboid	Ignore internal/extra lines
	(b)		40	2	**M1** for 5 × 4 × 2 soi	
8			120 or 130	M1 A1	For sight of two of 60, 100 (or 110) or 50 Allow $\frac{60 \times 110}{50} = 12 \times 11 = 132$	This means 0 for no approximations shown even if answer is correct
9	(a)		2.5 nfww	3	**M1** for $2x + 6 = 11$ or $x + 3 = 5.5$ and **M1** for $2x = 11 - 6$ or $x = 5.5 - 3$	Or correct second step
	(b)		y^3	1		
	(c)		$(y =) \dfrac{x-5}{3}$	2	**M1** for $3y = x - 5$ or $\dfrac{x}{3} = y + \dfrac{5}{3}$ or **SC1** for $x - 5 \div 3$ or $\dfrac{x+5}{3}$ or $\dfrac{5-x}{3}$	
10	(a)	(i)	Any multiple of 12	1	No incorrect extras, ignore correct extras	
		(ii)	One of 1, 2, 5, 10,	1	No incorrect extras, ignore correct extras	
	(b)		700, "hundred" oe	1		
11			17 to 21	2	**M1** for 15, 16, 22, 23 or clear evidence of square counting.	

Question			Answer	Marks	Part Marks and Guidance	
12	(a)		5 www	1		
	(b)		4	2	**M1** for 133445566 seen in (a) or (b)	condone 1 error
	(c)		4.1	3	**M1** for addition soi no >30 **M1** for ÷ 9 or 4.1(1...)	Ignore subsequent rounding to 4
13	(a)	(i)	4	1		Condone embedded answer
		(ii)	3	1		Condone embedded answer
	(b)	(i)	23	2	**B1** for 15 or 8 seen	
		(ii)	9	2	**B1** for 12 or – 3 seen **SC1** 16	
14	(a)	(i)	13.69	1		Decimal answer
		(ii)	1.7	1		
	(b)		15	1	Condone – 15	
	(c)	(i)	23	2	**M1** for 40 ÷ 1.8 soi eg by 22.(2...)	or multiples of 1.8 (at least x 22)
		(ii)	1.4	1		
15			(A) A A B B B C C C (A) B C A B C A B C	2	Ignore repeat of A,A **B1** for 6 or 7 correct, or all correct + 1 repeat.	
16			4.10	3	**B2** for 8.20 or 4.1 **or B1** for 51.80 If **B0** scored **M1** for 60 – their k × 12.95 and/or **M1** for *their* (60 – k x 12.95) ÷ 2	(k>1) (any k)

Question	Answer	Marks	Part Marks and Guidance	
17	40	2	**M1** for 0×2+1×4+2×4+3×5+4×2+5×1 or 4+8+15+8+5	isw (attempt at mean)
18	0.31	2	**M1** for sight of adding **and** subtracting from 1.	
19	27.9	4	**B2** for 14.1 nfww or **B1** for 28.3 nfww or **M1** for Area of semicircle $=\dfrac{1}{2}\pi\times 3^2$ soi and **M1** for subtracting their area of semicircle from 42 **SC3** for 42 − 28.3 = 13.7	Accept anything that rounds to 27.9