

Mathematics B (MEI)

General Certificate of Secondary Education **B291**

Paper 1

Mark Scheme for June 2010

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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.

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MARK SCHEME AND RATIONALE JUNE 2010

The rationale is intended to clarify the mark scheme. It may seem to labour some points but this is to aid clarity by covering as many likely responses as possible.

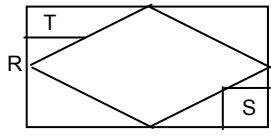
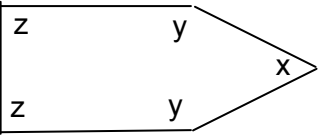
General comments

- Make sure you turn on the comments box whilst working on Practice scripts. Do the Practice scripts before attempting the Standardisation scripts.
- Ensure that you indicate **M, A, B** marks on the Standardisation scripts whenever an answer is not fully correct so that part marks you award are indicated. Questions completely correct or completely wrong do not need to be annotated.
- “No response” should be recorded whenever a candidate writes nothing or a message such as “cannot do” or “don’t understand”. [NB the # key gives a shortcut to NR]
- Questions with follow through should be marked candidate by candidate unless window shows previous answer.
- Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. answer on 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.
- Anything in the mark scheme which is in brackets is not required for the mark to be earned, but if present it must be correct.
- Ranges of answers given in the mark scheme are always inclusive
- Where you see **oe** in the mark scheme it means **or equivalent**.
- Where you see **isw** in the mark scheme it means **ignore subsequent working** (after correct answer obtained). However, if this subsequent working, totally destroys the previous method, do not allow the marks. ISW is normally reserved for wrongly cancelled fractions, conversion to decimals, finding new value rather than increase etc
- Where you see **cao** in the mark scheme it means **correct answer only**.
- Where you see **soi** in the mark scheme it means **seen or implied**.
- Where you see **www** in the mark scheme it means **without wrong working**.
- 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.
- Figs: for example **figs 237** means any answer with just these digits with leading or trailing zeros disregarding any decimal point. E.g. 237000, 2.37, 2.370, 0.00237 but not 23070 or 2374.
- Unless otherwise stated, for numerical answers mark the most accurate seen, for algebraic answers mark final answer.

If answers clearly come from totally incorrect working, do not award the marks.

1	(a)	(i) $\frac{59}{100}$	1	
		(ii) 75(%)	1	
		(iii) $\frac{20}{100}$ oe, isw	1	
	(b)	14	1	
2		d	1	
		e	1	
3		74°	1	
		angles on a straight line (add to 180°)	1	
4	(a)	31	1	
	(b)	5	2	M1 for 45 – 10, or 35 seen
5	(a)	16	1	
		30	1	
		7	1	
	(b)	8 or 2×2×2	1	

6	(a) $7a$	1	
	(b) (i) 16 (ii) 3	1 2	B1 for $16 - 5 = 11$, not contradicted. M1 for $7x = 21$ B2 for $7 \times 3 + 3 = 24$, not contradicted.
	(c) $3a + 15$	1	
7	(a) (i) A (ii) E	1 1	
	(b) 0.2	2	M1 for $1 - (0.3 + 0.5)$ soi
8	(a) 2.3 (cm)	3	M1 for $54.2 - 3 \times 15$ soi (=9.2) M1 for <i>their</i> $9.2 \div 4$
	(b) 27.5 (cm)	2FT	M1 for 20.6 or $3 \times$ (a)
9	(a) 750	2	M1 for $\frac{300}{50} \times 125$ or $150 \equiv 25$ seen, plus addition
	(b) 40	2	M1 for $\frac{50}{300} \times 240$

10	(a)	$\frac{200 \times 40}{80}$ or $\frac{210 \times 40}{80}$ 100 or 105	M1	for approximating at least two
			A1	
	(b)	3216.3	1	
SECTION B				
11	(a)		1 1 1	
	(b)		1 1 1	
	(c)	(Angle) greater than 180	1	
12	(a)	2.4	1	
	(b)	182.25	1	If 0 scored in both, SC1 for $\frac{12}{5}$ and $\frac{729}{4}$
13	(a)	Correct heights	2	B1 for two correct
	(b)	(i) 140 (ii) Any valid comparison	1 1	eg More English spoken at B

14	(a)	3 4	1 2	B1 for ordering data, 2, 2, 3, 3, 3, 4, 4, 5, 6, 6, 7, 9, 11.
	(b)	5 www	3	M1 for addition soi (65) M1 for their total ÷ 13 (or 14) or SC2 for 4.6(...)
15	(a)	28	2	B1 for 18 or 10 seen
	(b)	9	2	B1 for 12 or 3 seen www or $6 \times 2 - \frac{6}{2}$
16	(a)	28	1	
	(b)	(£)8	1	
17	(a)	81 cm ³	2 B1	M1 for $4.5 \times 4.5 \times 4$
	(b)			
18	(a)	21	2	M1 for product implying area
	(b)	Anything rounding to 2.45	4	M1 for $\pi \times 0.7^2$ or $\pi \times 1.4^2$ Dep M1 for dividing by 2 M1 for 1.2×1.4 soi or SC3 for 2.4 www
	(c)	10% of their (a) worked out Correct comparison	1 1ft	

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