

Mark Scheme (Results)

November 2010

GCSE

GCSE Mathematics (5384F)

Paper 12F

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Publications Code UG025843

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NOTES ON MARKING PRINCIPLES

1 Types of mark

M marks: method marks A marks: accuracy marks
 B marks: unconditional accuracy marks (independent of M marks)

2 Abbreviations

cao - correct answer only	ft - follow through	isw - ignore subsequent working
SC: special case	dep - dependent	oe - or equivalent (and appropriate)
indep - independent		

3 No working

If no working is shown then correct answers normally score full marks
 If no working is shown then incorrect (even though nearly correct) answers score no marks.

4 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

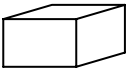
If it is clear from the working that the “correct” answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.


If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

- 5 Follow through marks**
Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.
- 6 Ignoring subsequent work**
It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.
- 7 Probability**
Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.
- 8 Linear equations**
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.
- 9 Parts of questions**
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.
- 10 Range of answers**
Unless otherwise stated, when an answer is given as a range (e.g 3.5 - 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

5384F/12F				
Question	Working	Answer	Mark	Notes
1	$4.38 + 0.45 + 0.29 + 0.29$ $= 5.41$ $10 - 5.41$ OR $10 - 4.38 = 5.62$ $5.62 - 0.45 = 5.17$ $5.17 - 0.29 = 4.88$ $4.88 - 0.29$	4.59	3	M1 for adding 3 or 4 items with consistent units (eg. $4.38 + 0.45 + 0.29 + 0.29$ or $0.45 + 0.29 + 0.29$) or digits 541, 512, 103 or 496 seen M1 (dep)for subtracting their total from 10 or 1000 (consistent with their monetary units) or for an answer that when added to their total gives 10 or 1000 A1 for £4.59 or £4.59p or 459p if '£' sign crossed out OR M2 for repeated subtraction from 10 or 1000 of 3 or 4 items with consistent units SC: B2 for digits 459 or 488 or 897 or 504 seen if M0 scored
2			1	B1 for sketch of a cuboid The sketch must be a 3-D configuration with 3 faces (ignoring any hidden definition) of which TWO must be approximately rectangular in shape (or a clear parallelogram within the 3-D drawing) with the third face being a quadrilateral
3	(a)	12.3 cm or 123 mm	2	¹ B1 for 12.1 – 12.5, $12\frac{1}{2}$ or 121 – 125 or $4\frac{14}{16} - 5\frac{1}{16}$ (4.8 to 5.1) B1 for an appropriate sensible unit: cm or mm or inches or for mixed units eg. 12cm 3mm
	(b)	$47 \pm 2^\circ$	1	B1 for 45 – 49 (could be on the diagram)
	(c)	Overlay	1	B1 75° angle drawn within guidelines (accept angle drawn from any point on the given line) [Note: If the given line is not used, award B1 for an angle of $75 (\pm 2^\circ)$ drawn anywhere]

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Question	Working	Answer	Mark	Notes
4	$29.76 \div 32 = 0.93$	93	3	M1 for $29.76 \div 32$ or $2976 \div 32$ (or digits 93 seen) A1 for 0.93 or 93 B1 ft for answer in pence, provided M1 scored
5 (a)	5.85×15	87.75	2	M1 for 5.85×15 [This maybe in parts 5.85×10 and 5.85×5 or repeated addition] A1 for 87.75 (accept £87.75p)
(b)	$134.55 \div 5.85$ $5.85 \times 10 = 58.5$ $5.85 \times 10 = 58.5$ $5.85 \times 3 = \underline{17.55} +$ 134.55	23	2	M1 for $134.55 \div 5.85$ or digits 23 seen A1 for 23 cao OR M1 for a complete 'chunking' method which attempts to reach the total of 134.55 A1 for 23 cao
6			1	B1 cao [Accept vertices positioned with a tolerance of \pm a quarter square from the required points]
7 (a)		$\frac{6}{11}$	1	B1 for $\frac{6}{11}$ or $\frac{12}{22}$ or any equivalent fraction or 0.5454...
(b)		$\frac{2}{5}$	1	B1 for $\frac{2}{5}$ or $\frac{4}{10}$ or any equivalent fraction or 0.4

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Question	Working	Answer	Mark	Notes
8	(a)	A and E	1	B1 for A and E or E and A
	(b)	2	1	B1 for 2 or x2 or times 2 or 2x or 2 times
9	(a)	50	1	B1 cao
	(b)	$\frac{1}{5}$	2	B2 for $\frac{1}{5}$ cao (B1 for 20/100 or 2 /10 or 4/20 or for any equivalent fraction or for 0.2 or 0.20)
	(c)	7.32	1	B1 for £7.32 or £7.32p (accept 732p if '£' sign crossed out)
10	(a)	5	1	B1 for 5 oe (accept $\frac{30}{6}$)
	(b)	3	1	B1 cao
11		Overlay	2	B2 for rectangle within guidelines (B1 for a line of length 4cm or 7cm or for a correct scale drawing using a scale of 1cm to 10m, giving a 2 cm by 3.5 cm rectangle or a scale of 2cm to 5m, giving a 8 cm by 14 cm rectangle)

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Question	Working	Answer	Mark	Notes
12	$5986 - 4176 = 1810$ $1810 \times 13.9 = 25159$ $5986 \times 13.9 = 832.054$ $4176 \times 13.9 = 580.464$ $832.054 - 580.464$	£251.59	4	M1 for $5986 - 4176 (=1810)$ M1 (dep) for $'1810' \times 13.9$ or $'1810' \times 0.139$ OR M1 for 5986×13.9 (or $\times 0.139$) and 4176×13.9 (or $\times 0.139$) M1 (dep) for $'832.054' - '580.464'$ A2 for £251.59 or 25159p (A1 for digits 25159 and no units)
13	(a)	Glasgow	1	B1 for Glasgow or -8
	(b)	5	1	B1 for 5 (accept -5)
	(c)	2	1	B1 cao
14	(i)	65	3	M1 for $360 - (120+100+75)$ or $360 - 295$ or $120 + 100 + 75 + x = 360$ A1 cao
	(ii)	reason		B1 for sum of angles (corners) in a quadrilateral (4-sided shape) is 360°

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Question	Working	Answer	Mark	Notes
15	$180 \div 5 = 36$ $105 \div 3 = 35$ $5 \div 1.80 = 2.777\dots$ $3 \div 1.05 = 2.857\dots$ Alternative: FM: $10 \text{ pots} = 1.80 \times 2 = 3.60$ JS: $10 \text{ pots} = 1.05 \times 3 + 1.05 \div 3 = 3.50$	Jim's store with reason	3	M1 for $180 \div 5$ oe or $105 \div 3$ oe or 36 or 35 oe seen A1 for 36 and 35 or 0.36 and 0.35 OR M1 for $180 \div 5$ oe or 180×3 oe or 36 or 540 oe seen A1 for 108 or 1.08 OR M1 for $105 \div 3$ oe or 105×5 oe or 35 or 525 oe seen A1 for 175 or 1.75 OR M1 for 180×3 oe or 105×5 oe or 540 or 525 oe seen A1 for 540 and 525 or 5.4(0) and 5.25 OR M1 for $5 \div 1.80$ oe or $3 \div 1.05$ oe or 2.777... or 2.857... oe seen A1 for 2.7(7..)and 2.8(57..) oe OR Alternative method (provided the same number of pots are considered from each shop) M1 for 1.80×2 oe or $1.05 \times 3 + 1.05 \div 3$ oe or 3.6(0) or 3.5(0) oe seen A1 for 3.6(0) and 3.5(0) oe PLUS A1 for a correct decision based upon their values provided M1 scored Note: units can be ignored

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Question	Working	Answer	Mark	Notes
16 (a)		1.15(µm)	1	B1 for 1.15 or 1315 or equivalent
(b)		30	1	B1 cao
(c)		30	1	B1 cao
17 (a)	$2x = 10 - 3 = 7$ $x = 7 \div 2$	3.5	2	M1 for $2x = 10 - 3$ oe or $2x = 7$ oe or $(10 - 3) \div 2$ A1 for 3.5 oe (accept $\frac{7}{2}$)
(b)(i)		c^{11}	2	B1 accept c^{5+6}
(ii)		e^8		B1 accept e^{12-4}
18		reflection $x = -2$	2	B1 for reflection B1 for $x = -2$ [Note any combination of two or more transformations gets B0B0]
19		2.4292(70474)	2	B2 for 2.42927..... (B1 for 19.56 or 8.0518 seen or 2.43 or 2.429 or 2.4292 or 2.4293 or digits 242927... or for an equivalent exact fraction, eg $\frac{97800}{40259}$)

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Question	Working	Answer	Mark	Notes
20 (a)	(i) $(2)^3 - 5 = 8 - 5$ (ii) $(-1)^3 - 5 = -1 - 5$	3 -6	2	B1 cao B1 cao
(b)		reason	1	B1 for example: 'he has worked out $4 \times x$ first' or 'the answer is 9' or 'when $x = 3$, $4x^2 = 36$ '
21	$60 \div (3+5) = 7.5$ $3 \times 7.5 = 22.5$ $5 \times 7.5 = 37.5$ OR 3 5 6 10 9 15 12 20 15 25 18 30 21 35	Carmen = 22.50 Dave = 37.50	2	M1 for $60 \div (3+5)$ or 7.5 or 22.5 or 37.5 seen A1 for C = 22.50 and D = 37.50 (accept C = 22.5 and D = 37.5) OR M1 for lists going down as far as 21 35 (ignore any further listings) A1 for C = 22.50 and D = 37.50 (accept C = 22.5 and D = 37.5) [Note: 21 and 35 seen with no working (lists) gets NO marks]
22	$BC^2 + 5^2 = 9^2$ $9^2 - 5^2 = 56$ $BC = \sqrt{56}$	7.48(3314774)	3	M1 for correct use of Pythagoras or 56 seen M1 (dep) for $\sqrt{(9^2 - 5^2)}$ A1 for 7.48 to 7.485 [Note: Condone incorrect rounding after sight of a correct answer]

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