

Mark Scheme (Results)

June 2011

GCSE Mathematics (5384F)
Paper 12F

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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

isw – ignore subsequent working

oe – or equivalent (and appropriate)

indep - independent

ft – follow through

SC: special case

dep – dependent

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

Accepted with and without the “p” at the end.

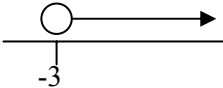
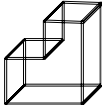
11 Range of answers

Unless otherwise stated, when any 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).

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Question	Working	Answer	Mark	Notes
1 (a)	$2.35 + 0.80$	3.15	1	B1 cao
(b)	$1.70 + 1.70 + 0.65 + 0.65$	4.70	2	M1 for $2 \times 1.70 + 2 \times 0.65$ oe (units may not be consistent) or 470 seen A1 allow 4.7
(c)		7	2	M1 for $10 \div 1.30$ or answer between 7.6 to and 7.7 inclusive or $7 \times 1.30 (=9.10)$ or successive addition/subtraction where at least 5 are shown oe A1 for 7
2 (a)		8.4 cm or 84 mm	2	B2 for $8.4 \text{ cm} \pm 0.2 \text{ cm}$ or $84 \text{ mm} \pm 2 \text{ mm}$ or $3.3 \text{ inches} \pm 0.1 \text{ inches}$ (o.e.) (B1 for 8.4 ± 0.2 or 84 ± 2 or 3.3 ± 0.1 o.e. or $x \text{ cm}$ where $6 < x < 11$ or $x \text{ mm}$ where $60 < x < 110$ or $x \text{ inches}$ where $2 < x < 5$)
(b)		midpoint drawn	1	B1 for midpoint marked at $4.2 \text{ cm} \pm 0.2 \text{ cm}$
3 (a)		0.15	1	B1 cao
(b)		$\frac{7}{100}$	1	B1 cao
(c)		60%	1	B1 cao
(d)	$210 \div 6 \times 5 = 35 \times 5$	175	2	M1 for $210 \div 6 \times 5$ oe or $210 \div 6 (=35)$ oe or $210 \times 5 (=1050)$ oe or 175 seen A1 cao

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Question	Working	Answer	Mark	Notes
4 (a)		D	1	B1 cao
(b)		right angled	1	B1 cao
(c)		A and E	1	B1 cao
(d)		2	1	B1 cao
5	$\frac{12}{100} \times 800 = 96$ OR $10\% = 800 \div 10 = 80$ $2\% = 80 \div 5 = 16$ $80 + 16 = 96$ $800 + 96$	896	3	M1 for $\frac{12}{100} \times 800$ oe or 96 or 80 + 16 M1 (dep) for “96” + 800 A1 cao OR M2 for 800×1.12 A1 cao SC : If no marks scored, award B1 for an answer of £704
6		$T = 8x$	2	B2 for $T = 8x$ (B1 for $T = x$ or $8x$ oe or any correct formula where T is not the subject, eg. $x = \frac{T}{8}$ or $x = T \div 8$)
7 (a)		6 to 6.2	1	B1 for answer in the range 6 to 6.2 metres
(b)	$5m + 10m \approx 16.5 + 33$	48 to 51	2	M1 for correct full method to convert 15m (eg. conversion of $5m + 10m$ or $5m \times 3$ or equivalent) A1 for answer in the range 48 to 51 or M1 for follow through from (a) ie $15 \div “6” \times 20$ A1 for answer in the range 48 to 51

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Question	Working	Answer	Mark	Notes
8 (a)		2	1	B1 cao
(b)		3	1	B1 cao
(c)		$\frac{9}{16}$	2	B2 for $\frac{9}{16}$ or 0.5625 (B1 for $\frac{x}{16}$ with $x < 16$, or $\frac{9}{x}$ with $x > 9$)
9	$320 \div 5$ $= 64$ $(295 - 64) \div 3$ $= 231 \div 3$	77p or £0.77	4	M1 for $320 \div 5$ or $3.20 \div 5$ or 64 or 0.64 M1 for $295 - '64'$ or 231 or $2.95 - '0.64'$ or 2.31 M1 for $(295 - '64') \div 3$ oe or $(2.95 - '0.64') \div 3$ oe A1 for 77p or £0.77 cao SC: B3 for 0.77(p) or (£)77 or £0.77p
10	$3 \times 4^2 = 3 \times 16 = 48$	No, with reason	1	B1 for 'No, because squaring must be carried out before multiplying by 3' or equivalent, or No, because the correct answer is 48
11	75:50	3 : 2	2	M1 for 75:50 or any correct ratio not simplified A1 for 3 : 2 [SC: B1 for 2 : 3]

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Question	Working	Answer	Mark	Notes
12 (a)	$2x = 10 + 3$	4	1	B1 cao
(b)		18	1	B1 cao
(c)		6.5	2	M1 for $2x = 10 + 3$ or $x - \frac{3}{2} = \frac{10}{2}$ oe or as a first step a clear intention to add 3 to both sides or clear intention to divide all 3 terms by 2 A1 for 6.5 oe
(d)			2	B2 for an open circle at -3 with either an arrow to the right or a line segment from -3 to at least 5, ± 2 mm (B1 for an open circle at -3 with either an arrow to the left or an incorrect line segment OR a closed circle or no circle at -3 with either an arrow to the right or a line segment from -3 to at least 5, ± 2 mm)
13			2	B2 for a clear sketch of a prism with an 'L' shaped cross-section [B1 for a sketch of a cuboid or a sketch of a 2D 'L' with an attempt to make it 3D with additional lines]
14	$360 - (90 + 80 + 55)$	135	3	M1 for $360 - (90 + 80 + 55)$ oe or $B = 135$ or 135 on diagram for angle B A1 cao B1 for the sum of the angles of a quadrilateral is 360°

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Question	Working		Answer	Mark	Notes																												
15	$\frac{3}{4} \times 120 = 90$ $120 - 90 = 30$ left $30 \div 3$		10	3	M1 for $\frac{3}{4} \times 120$ oe or 90 or $\frac{1}{4} \times 120$ oe or 30 M1 (dep) for ‘30’ – $(2 \times ‘30’ \div 3)$ oe or $\frac{1}{3} \times ‘30’$ oe A1 cao																												
16	<table><tr><td>x</td><td>$x^3 + 5x$</td></tr><tr><td>3</td><td>42</td></tr><tr><td>3.4</td><td>56.(304)</td></tr><tr><td>3.5</td><td>60.(375)</td></tr><tr><td>3.6</td><td>64.(656)</td></tr><tr><td>3.7</td><td>69.(153)</td></tr><tr><td>3.8</td><td>73.(872)</td></tr><tr><td>3.9</td><td>78.(819)</td></tr><tr><td>4</td><td>84</td></tr><tr><td>3.65</td><td>66.8(77)</td></tr><tr><td>3.66</td><td>67.3(27)</td></tr><tr><td>3.67</td><td>67.7(80)</td></tr><tr><td>3.68</td><td>68.2(36)</td></tr><tr><td>3.69</td><td>68.6(93)</td></tr></table>	x	$x^3 + 5x$	3	42	3.4	56.(304)	3.5	60.(375)	3.6	64.(656)	3.7	69.(153)	3.8	73.(872)	3.9	78.(819)	4	84	3.65	66.8(77)	3.66	67.3(27)	3.67	67.7(80)	3.68	68.2(36)	3.69	68.6(93)		3.7	4	B2 for a trial between 3 and 4 exclusive (B1 for a trial between 3 and 4 inclusive) B1 for a different trial of $3.65 \leq x < 3.7$ B1 (dep on at least one previous B1) for 3.7 NB For values of x to 1 dp trials should be evaluated to at least 2 significant figures and for values of x to 2dp trials should be evaluated to at least 1 dp Truncated or rounded. NB No working score 0 marks
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17	$BC^2 + 6^2 = 12^2$ $BC = \sqrt{144 - 36}$		10.4	3	M1 for $BC^2 + 6^2 = 12^2$ oe or $(BC^2 =) 12^2 - 6^2 (=108)$ M1 for $BC = \sqrt{144 - 36}$ or $\sqrt{108}$ A1 for 10.39 – 10.4																												
18	$\pi(6)^2 - \pi(5)^2$ $= 113(.0973...) - 78.5(398...)$ $= 34.55751919...$		34.6	3	M1 for $\pi(6)^2$ oe or $\pi(5)^2$ oe or 113... or 78.5... M1 for $\pi(6)^2 - \pi(5)^2$ oe A1 for 34.5 - 34.6																												

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