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Mark Scheme (Results)

November 2011

GCSE Mathematics (5384F)
Paper 12F (Calculator)

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November 2011
Publications Code UG029744

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 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 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	(i)	17 55 + 1 20 OR 17 55 + 5 = 18 00 18 00 + 1 = 19 00 19 00 + 15 = 19 15	19 15	3	M1 for 17 55 + 1 20 oe or a complete build up method A1 for 19 15 or 7 15pm oe
	(ii)	18 34 – 17 55	39		B1 for 39 or ft19 54 – ’19 15’
2	(a)		54	1	B1 cao
	(b)		Two numbers	1	B1 for two numbers that multiply to give 0.08 (1 must not be used)
3			Circle	1	B1 for circle radius 4.5 cm drawn within guidelines tolerance ±2mm
4	(i)		Triangular prism	2	B1 accept mis-spellings
	(ii)		Sphere		B1 accept mis-spellings
5	(a)		8	1	B1 for 8 cm ±2mm
	(b)		50	1	B1 for angle in range 45 – 55
	(c)		Angle drawn	1	B1 for angle drawn within guidelines (allow an angle of 130º accurately drawn anywhere ±2 degrees)

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Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		Lines of symmetry	2	B2 for exactly6 lines of symmetry (B1 for 1 line of symmetry)
	(b)		6	1	B1 cao
	(c)		3	1	B1 cao
	(d)		Reflection	1	B1 cao
7			60	1	B1 cao
8	(a)		3, 15, 75	2	B2 for all 3 correct (B1 for 1 or 2 correct)
	(b)		Straight line from the origin to (100,150)	2	M1 for straight line drawn from (0, 0) or which when produced would pass through (0, 0) A1 for a single line from the origin to (100,150) tolerance one 2mm square (SC If M0 then B1 for plotting any two points correctly ft table)
	(c)		65 to 68	2	B2 for 65 – 68 OR M1 for a horizontal line drawn from 100to meet the graph oe A1 for 65 – 68 or ft their line tolerance one 2mm square OR M1 for 100 ÷ 1.50 A1 for 65 – 68

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Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	20 ÷ 4	5	1	B1 cao
	(b)	9 × 3	27	1	B1 cao
10	(a)	$3x + x + x + 6$	$5x + 6$	2	M1 for $3x + x + x + 6$ A1 for $5x + 6$ (B1 for (x), $3x$ or $x + 6$ seen)
	(b)	'$5x + 6$' = 41	7	2	M1 for '$5x + 6$' = 41 or '$5x$' = 41 – '6' or (41 – '6') ÷ '5' or 7, 21 and 13 seen A1 cao
11	(a)	0.568+1.14+2.27+3.41	7.388	2	M1 for conversion of 568 to 0.568 or '0.568'+1.14+2.27+3.41 **or** 1140 or 2270 or 3410 or 568+'1140'+'2270'+'3410' A1 cao
	(b)	1.53+2×0.86=3.25 10-3.25=	6.75	3	M1 for 1.53+2×0.86 or 3.25 oe M1(dep) for 10 – '1.53+2×0.86' oe A1 for 6.75 (SC B2 for 7.61)
	(c)(i)	2×2.27 and 2×3.41	2 of 2.27 and 2 of 3.41	3	M2 for a combination of different types of bottle with total ≥ 11 litres (M1 for a combination of different types of bottle **or** one type of bottle with total ≥11 litres)
	(ii)	£1.53×2 + £3.41×2	7.56		A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
12		5.08 – 1.24 × 3 = 1.36 1.36 ÷ 2	£0.68 or 68p	3	M1 for 1.24 × 3 or 3.72 oe seen M1 (indep) for (5.08 – '3.72') ÷ 2 oe A1 for £0.68 or 68p accept £0.68p
13		$\frac{6^7}{6^4}$ or $6^1 \times 6^2$ or $\frac{6^5}{6^2}$	6^3	2	M1 for $\frac{6^7}{6^4}$ or $6^1 \times 6^2$ or $\frac{6^5}{6^2}$ A1 cao (SC B1 for answer 216 if M0 scored)
14	(a)	$2x – 10 + x + 50$ (ext. angle of a triangle = sum of opp. int. angles) OR $180 – (2x – 10 + x + 50) = 140 – 3x$ (sum of the angles ina triangle = 180) $180 – (140 – 3x)$ (sum of angles on a straight line = 180)	Show results with reasons	3	M1 for $2x – 10 + x + 50$ or $2x + x$ and $50 – 10$ A1 for completing the algebra to complete the proof and showing $y = 3x+40$ B1 for 'ext. angle of a triangle = sum of opp. angles' OR M1 for $180 – (2x – 10 + x + 50)$ or $140 – 3x$ seen A1 for completing the algebra to complete the proof and showing $y = 3x+40$ B1 for 'sum of angles in atriangle = 180' oe **and** 'sum of angles on a straight line = 180' oe
	(b)(i)	$3x = 145 – 40 = 105$ $105 \div 3$	35	4	M1 for clear attempt to subtract 40 from both sides of the equation **or** divide all 3 terms by 3 or ($3x$=) 145 – 40 or 105 seen A1 cao
	(ii)	$35 + 50 = 85$ $2 \times 35 – 10 = 60$ $180 – 145 = 35$	85		M1(ft)for 2×'35'–10 or '35'+50 **or** 180–145 **or** can be implied by sight of 85 or 60**or** for substituting '35' in order to find at least one angle implied by sight of 85 or 60 A1 for 85or ft for '35' provided 'x'<47

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Question		**Working**	**Answer**	**Mark**	**Notes**
15		2800 ÷ (13+12+10)=80p/share 80 × 12 = 960 960 × $\frac{2}{3}$	6.40	4	M1 for 2800÷(13+12+10) or 28÷(13+12+10) or 80 or 0.8 seen OR 10.4(0) or 8 oe OR $\frac{13}{35}$ or$\frac{12}{35}$ or$\frac{10}{35}$ oe seen M1 for '80'×12 or '0.8'×12 OR 960 or 9.6(0) seen OR $\frac{12}{35}$×2800 or$\frac{12}{35}$×28 oe M1(indep) for× $\frac{2}{3}$ oe A1 for 6.40 or 640p (accept 6.4) SC B2 for answer of 10 supported by working
16		$12^2 = h^2 + 6^2$ h = √(144-36) = √108 = 10.392 area = ½ × 6 × 10.392	31.17 to 31.18	4	M1 for $12^2 = h^2 + 6^2$ or (h^2=) $12^2 - 6^2$ M1 for √(144-36) (=10.392) M1 (indep) for ½ × 6 × 'height' A1 for 31.17 to 31.18
17		1 ÷ 1.14 = 0.877… is worse than 0.86 OR 1 ÷ 0.86 = 1.162… is better than 1.14 OR Change (say) £100 1.14×100 = 114 100× $\frac{1}{0.86}$ = 116.28	Paris since 1.16…>1.14	3	M1 for an attempted conversion using 1.14 or 0.86 A1 for arriving at two comparable amounts of money in the same currency A1 for Paris with correct figures

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Order Code UG029744 November 2011

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