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Mark Scheme (Results)

Summer 2010

GCSE

GCSE Mathematics (1380)
Non-Calculator Paper 1F

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

1380/1F					
Question		Working	Answer	Mark	Notes
1	(a)		6	1	B1 cao
	(b)		11	1	B1 cao
	(c)		Bar drawn to height of 7	1	B1 for bar of height 7 cm
2	(a)		15672	1	B1 cao
	(b)		Three thousand and twenty	1	B1 cao
	(c)		8200	1	B1 cao
	(d)		thousands	1	B1 accept 1000, thousands, 6000, six thousands oe
3	(a)		6.5	1	B1 for 6.5 ± 0.2
	(b)		35	1	B1 for 35 ± 2
	(c)		Acute	1	B1 cao

Question	Working	Answer	Mark	Notes
4 (a)		-6,-3,-2,1,7	1	B1 cao
(b)		0.06,0.3,0.35, 0.56,0.63	1	B1 cao
5		(M,A) (M,S) (M,B) (J,A) (J,S) (J,B) (W,A) (W,S) (W,B)	2	B2 All correct combinations present and no incorrect combinations (B1 for 5 or more correct combinations present including the given one) Ignore repeated combinations
6 (a)			1	B1 for correct pattern drawn
(b)		9, 11	1	B1 ft from their diagrams
(c)		25	1	B1 for 25
(d)		method	1	B1 for $2 \times 100 + 1$ or 201 or add on 99 lots of 2 (to 3) or start with 3 and add on 2, 99 times oe or continue adding 2 until you reach the 100 numbers or count on in pattern until 100 odd numbers or build pattern to 100th pattern and then count sticks. Accept "times 2 and add 1" oe, "2*n* + 1" oe

Question		Working	Answer	Mark	Notes
7	(i)		7 or 21	1	B1 for 7 or 21 or both
	(ii)		10 or 20	1	B1 for 10 or 20 or both
	(iii)		4 or 16	1	B1 for 4 or 16 or both
	(iv)		7 or 21	1	B1 for 7 or 21 or both
8	(a)		15 cm^2	2	B1 for 15 B1(indep) for cm^2
	(b)		16	1	B1 cao
9	(a)		1.55	1	B1 cao
	(b)		Cornflakes	1	B1 cao
	(c)		Rice Krispies	1	B1 cao
	(d)	$2.79+1.85+1.85$	6.49	2	M1 for $2.79+1.85+1.85$ or $279+185+185$ oe or 649 seen A1 for 6.49 SC: B1 for 4.64

Question	Working	Answer	Mark	Notes
10 (a)		(2, 3)	1	B1 cao
(b) (i)		Point plotted	2	B1 for (1, 2) plotted (± 2mm)
(ii)		Point plotted		B1 for (−3, −2) plotted (± 2mm)
11 (i)		Square	3	B1 for square or drawing of a square
(ii)		$\frac{5}{9}$		M1 for $\frac{n}{9}$, $n < 9$ or $\frac{5}{m}$, $m > 5$ A1 for $\frac{5}{9}$ (SC B1 for 5 in 9, 5 out of 9, 5 : 4)
12 (a)		6	1	B1 cao
(b)		11	2	M1 for identification of 15 and 4 or −11 seen A1 cao
(c)		8	1	B1 cao

Question	Working	Answer	Mark	Notes
13 (a)		Science fiction	1	B1 cao
(b)		0.13	1	B1 cao
(c)		$\frac{6}{25}$	2	M1 for $\frac{24}{100}$ oe A1 for $\frac{6}{25}$
(d)		450	2	M1 for $\frac{15}{100}\times 3000$ or 300 + 150 oe or fully correct method to work out 15% of 3000 A1 for 450
14	Odd × even = answer	Working	2	M1 any example of odd number × even number A1 odd × even with a correct result that is even identified as final answer

Question	Working	Answer	Mark	Notes
15 (a)(i)		38	2	B1 cao
(ii)		Reason		B1 (vertically) opposite angles OR angles on a (straight) line add to 180° (and angles at a point add up to 360°)
(b)(i)	$180-110=70$ $180-2\times 70$	40	4	M1 for $180-110$ or 70 seen
(ii)		Reasons		M1 for $180-2\times"70"$ or 110 - "70" A1 cao B1 for two out of three of: angles on a (straight) line add to 180° isosceles triangle (accept two sides equal or two angles equal) sum of angles in a triangle is equal to 180° OR B1 for two out of three of: angles on a (straight) line add to 180° isosceles triangle (accept two sides equal or two angles equal) exterior angle of a triangle is equal to the sum of the opposite interior angles

Question		Working	Answer	Mark	Notes
16	(a)		$4p$	1	B1 for $4p$ (accept p 4, 4× p, p×4)
	(b)		m^3	1	B1 cao
	(c)	$2\times5+12$	22	2	M1 for 2×5 or 10 seen A1 cao
	(d)	$22=4w-2$ $w=(22+2)\div4$	6	2	M1 for $22=4w-2$ or for $22+2\div4$ oe A1 cao
17	(a)		Kite	1	B1 cao
	(b)		6 shapes tessellating	2	B2 for 6 kites tessellating (can include given kite – ignore extras) (B1 for 3, 4 or 5 kites tessellating (can include given kite – ignore extras))

Question	Working	Answer	Mark	Notes
18 (a)		20 25	3	M1 for an attempt to partition eg. 60, 60, 15 or 2hr 15min or attempt to divide 135 by 60 A1 for digits 825 A1 for 20 25 or 8 25pm oe
(b)	$300 \div 6 = 50$ $300 \div 10 \times 3 = 90$ $300 - 50 - 90$ or $\frac{1}{6} + \frac{3}{10} = \frac{7}{15}$ $\frac{7}{15} \times 300 = 140$ $300 - 140$	160	4	M1 for $300 \div 6$ or 50 seen M1 for $300 \div 10 \times 3$ oe or $30 + 30 + 30$ or 90 seen M1 (dep on at least 1 previous M1) for $300 - "50" - "90"$ A1 cao Or M1 for $\frac{1}{6} + \frac{3}{10}$ or $\frac{7}{15}$ oe M1 for $"\frac{7}{15}" \times 300$ or 140 seen or $1 - "\frac{7}{15}"$ or $\frac{8}{15}$ oe seen M1 (dep on at least 1 previous M1) for $300 - "140"$ or 160 seen or $"\frac{8}{15}" \times 300$ A1 cao

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>19</td><td>(a)</td><td></td><td>10 10</td><td>1</td><td>B1 for 10 10</td></tr>
<tr><td></td><td>(b)</td><td></td><td>$13-14$</td><td>1</td><td>B1 for answer in range 13–14 inclusive</td></tr>
<tr><td></td><td>(c)</td><td></td><td>30</td><td>1</td><td>B1 for 30</td></tr>
<tr><td>20</td><td>(a)</td><td></td><td>$\frac{2}{15}$</td><td>1</td><td>B1 for $\frac{2}{15}$ oe</td></tr>
<tr><td></td><td>(b)</td><td>$\frac{3}{21}+\frac{2}{21}$

<table><tr><td></td><td>1</td><td>7</td></tr><tr><td>2</td><td>X</td><td>14</td></tr><tr><td>21</td><td>21</td><td>147</td></tr></table></td><td>$\frac{5}{21}$</td><td>2</td><td>M1 for $\frac{1\times3}{7\times3}$ and intention to combine with 2/21
or correct method to get two fractions with the same denominator
A1 for $\frac{5}{21}$ oe
OR
M1 for table
A1 for $\frac{35}{147}$ oe</td></tr>
</table>

Question	Working	Answer	Mark	Notes
21		4 | 3 5 7 7 5 | 0 3 3 5 6 7 8 8 8 6 | 1 2 2 Key 4 | 3 means 43g	3	B2 for fully correct diagram. Accept a stem of 40, 50, 60. (The order of the numbers in the stem may be reversed) (B1 for ordered leaves or unordered leaves (with one error or omission)) B1 for a correct key (units may be omitted).
22		Triangle at (1,–2), (–1,–2), (1,–5)	2	B2 for triangle at (1,–2), (–1,–2), (1,–5) (see overlay) (B1 for rotation of 180° about the wrong centre or for a rotation of $90°$ centre (1,0) clockwise or anticlockwise)
23		Enlargement scale factor 2 centre (1,0)	3	B1 for enlargement B1 for scale factor 2 oe (eg $\times 2$, by 2, of 2) B1 for (1,0) (condone omission of brackets or the word "centre": do not accept a vector) Note: A combination of transformations gets 0 marks
24		2 reasons	2	B2 for 2 out of 3 of these aspects Aspect 1: no time frame Aspect 2: overlapping Aspect 3: not exhaustive (B1 for 1 aspect) (SC B1 for designing a better question identifying at least one aspect)

Question	Working	Answer	Mark	Notes
25	$40 \div (2+3) = 8$ 8×2 8×3	16, 24	3	M1 for $40 \div (2+3)$ oe or 8 or $\frac{2}{5}$ or $\frac{3}{5}$ seen or at least 3 multiples of 2 and 3. M1 for "8" $\times$ 2 or "8" $\times$ 3 oe A1 for 16 and 24 in correct places SC : B2 for 24, 16 SC: If M0 scored, B1 for just one correct answer in the correct place.
26	$\frac{1}{2} \times 3 \times 4 \times 20$	120	2	M1 for $\frac{1}{2} \times 3 \times 4 \times 20$ A1 cao

<table>
<tr><th>Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr>
<td>27</td>
<td>
452
36
2712
13560
16272

<table>
<tr><td></td><td>4</td><td>5</td><td>2</td><td></td></tr>
<tr><td>1</td><td>$^{1}2$</td><td>$^{1}5$</td><td>6</td><td>3</td></tr>
<tr><td>6</td><td>$^{2}4$</td><td>$^{3}0$</td><td>$^{1}2$</td><td>6</td></tr>
<tr><td></td><td>2</td><td>7</td><td>2</td><td></td></tr>
</table>

<table>
<tr><td></td><td>400</td><td>50</td><td>2</td></tr>
<tr><td>30</td><td>12000</td><td>1500</td><td>60</td></tr>
<tr><td>6</td><td>2400</td><td>300</td><td>12</td></tr>
</table>

$12000 + 1500 + 60 + 2400 + 300 + 12 = 16272$
</td>
<td>162.72</td>
<td>3</td>
<td>M1 for complete method with relative place value correct. Condone 1 multiplication error, addition not necessary.
OR
M1 for a complete grid. Condone 1 multiplication error, addition not necessary.
OR
M1 for sight of a complete partitioning method, condone 1 multiplication error. Final addition not necessary.

A2 for 162.72
(A1 (dep on M1) for correct placement of decimal point after final addition of appropriate values or for digits 16272 seen)
(SC; B1 for attempting to add 36 lots of 4.52)</td>
</tr>
</table>

Question	Working	Answer	Mark	Notes
28 (a)		$3(x+4)$	1	B1 for $3(x+4)$ Accept $3\times(x+4)$, $(x+4)3$, $(x+4)\times 3$
(b)	$8x-12=5x+7$ $8x-5x=12+7$ $3x=19$	$\frac{19}{3}$ oe	3	M1 for $4\times 2x - 4\times 3$ or $8x-12$ seen or intention to divide by 4 throughout eg $\frac{5}{4}x+\frac{7}{4}$ seen M1 for clear correct method to isolate terms in x **and** isolate number terms on opposite sides of a four term equation eg. "$8x$"$-5x=7+$"12" A1 for $\frac{19}{3}$ oe (accept 6.33 or better)
(c)	$y^2+5y+4y+20$ $\begin{array}{c\|cc} & y & +4 \\ \hline y & y^2 & 4y \\ +5 & 5y & 20 \end{array}$	$y^2 + 9y + 20$	2	B2 cao (B1 for 4 correct terms with or without signs, or 3 out of no more than 4 terms, with correct signs. The terms may be in an expression or in a table)

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