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Mark Scheme (Results)

Summer 2009

GCSE

GCSE Mathematics (Linear) - 1380
Paper: 1380/2F

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

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Question		Working	Answer	Mark	Notes
1	(a)		3.50	1	B1 for 3.50 cao
	(b)		3.05	1	B1 3.05 cao
	(c)		3510	1	B1 for 3510 or 3510.00
2	(a)		right angle marked	1	B1 for the right angle marked with square or R
	(b)		acute angle marked	1	B1 for either (or both) of the acute angles marked
	(c)		kite drawn	1	B1 for a kite drawn (accept square or rhombus or arrowhead)
3	(a)		circle drawn	1	B1 for a circle drawn within guidelines (see overlay)
	(b)		diameter drawn	1	B1 for line through *C* and touching circle at both ends
4	(a)	5.85 + 4.90	10.75	1	B1 for 10.75 cao
	(b)	60.55 ÷ 8.65	7	2	M1 for 60.55 ÷ 8.65 or 8.65 × 7 = 60.55 or for at least 4 repeated additions or subtractions of 8.65 A1 for 7 cao
	(c)	8.65 + (4.90 + 4.90) 20 – 18.45	1.55	3	M1 for 8.65 + (4.90 + 4.90) M1 (dep) for 20 – '18.45' A1 for 1.55 cao SC: award B1 for sight of 18.45 or 6.45 or 10.20 award B2 for 155

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Question		Working	Answer	Mark	Notes
5	(a)		6	1	B1 for 6 cao
	(b)	I I I I	diagram	1	B1 for correct diagram (4 vertical sticks and 8 horizontal sticks)
	(c)		12, 15	2	B2 for 12 and 15 (B1 for either 12 or 15 or '12'+3
	(d)		reason	1	B1 eg for '100 multiplied by 3' or '100 × 3' or '× 3' or 3*n* (but not 3n + a number) or 'keep adding 3' oe, as long as "3" is mentioned.
6	(a)		Bars at 8 and 5	2	B1 for bar of height 8 (above orange) B1 for bar of height 5 (above green)
	(b)		6	1	B1 for 6 cao
	(c)		yellow	1	B1 ft for yellow or ft from their diagram
	(d)	6 + 10 + 8 + 5	29	1	B1 correct answer or ft by adding the heights of the columns on the graph
7	(i)		cone	1	B1 for cone or alternative spellings only that sound like "cone".
	(ii)		cylinder	1	B1 for cylinder or alternative spellings only that sound like "cylinder". Accept circular based prism.

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Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)	$\frac{9}{12}$	$\frac{3}{4}$	2	B2 for $\frac{3}{4}$ cao (B1 for $\frac{9}{12}$ seen)
	(b)		shading	1	B1 for 6 squares (only) shaded
	(c)		0.3	1	B1 for 0.3 oe
	(d)		$\frac{39}{100}$	1	B1 for $\frac{39}{100}$ oe as a fraction
9	(a)		6.4	1	B1 for 6.2 – 6.6 inclusive; accept 62-66 with mm stated.
	(b)		Midpoint marked	1	B1 for midpoint marked at 3 – 3.4 inclusive
10	(a)		7, 4, 2, 1, 2	2	M1 for at least one correct frequency or tally A1 for 7, 4, 2, 1, 2 cao (B2 for correct frequencies without the use of tallies)
	(b)		2	1	B1 for 2 or ft values in table NB: B0 if the 7 is given with the 2
	(c)	6 – 2 =	4	2	M1 for identifying 6 and 2, eg 6-2, as long as 6 and 2 are not identified with any incorrect operation A1 cao

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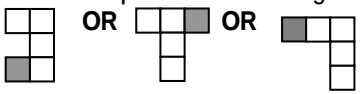
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)	$6 \times 3 + 4$	22	2	M1 for 6×3 or for '6×3' + 4 or 18 seen A1 for 22, accept 22.00 or 22.0
	(b)	$52 - 4 = 48$ $48 \div 6 =$	8	3	M1 for $52 - 4$ or 48 seen M1 (dep) for '$52 - 4$' $\div 6$ or $48 \div 6$ A1 for 8 cao **Alternative method:** M2 for a systematic attempt using $6 \times d + 4$ at least twice with at least one d greater than 5 with correct answers A1 for 8 cao
12	(a)		33	1	B1 for 33 cao
	(b)		180	1	B1 for 180 cao
	(c)		110 marked	1	B1 for 110 marked cao
	(d)		0.27 marked	1	B1 for 0.27 marked cao
13	(i)		12	1	B1 for 12 cao
	(ii)		3	1	B1 for 3 cao
	(iii)		3 or 11	1	B1 for 3 and/or 11 cao
14	(a)		Shading	1	B1 for one square shaded to get one of 
	(b)		Shading	1	B1 for one square shaded to get 

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Question		**Working**	**Answer**	**Mark**	**Notes**
15		$\frac{1}{6}\times 36 = 6$ $\frac{2}{9}\times 36 = 8$ 36 – (8 + 6)	22	3	M1 for $\frac{1}{6}\times 36$ or $36\div 6$; $\frac{2}{9}\times 36$ or $36\div 9\times 2$ or 8 seen or 14 seen or $\frac{1}{6}+\frac{2}{9}$ or $\frac{7}{18}$ oe or 6 seen as long as not with incorrect working. M1 (dep) for 36 – '(8+ 6)' or $36-"\left(\frac{2}{9}+\frac{1}{6}\right)"\times 36$ or $\left(1-\frac{"1}{6}+\frac{2"}{9}\right)\times 36$ A1 for 22 cao SC B2 for $\frac{22}{36}$ oe fraction
16		10/72×360=50 perch 23/72×360=115 bream 39/72×360=195 carp	50, 115, 195	4	M1 for evidence of method for at least one angle (could be implied by one correct angle on pie chart or in the table) A2 all three angles drawn ±2º tolerance, any order (A1 at least one angle correctly drawn ±2º, or all three angles in the table) B1 names of fish as labels (dep on at least one angle drawn correctly, and exactly three sectors; initials will do) **NB:** Ignore table if pie chart provides marks
17			87.75	2	M1 for 3 × 4.5 × 6.5 seen or implied eg from answer of 87.7 or 87.8 or 88 (with no other working shown) A1 for 87.75 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)	$1.8 \times -8 + 32$	17.6	2	M1 for 1.8×-8 or -14.4 or $\frac{-72}{5}$ seen or $32 - $ '1.8×8' or $1.8 \times -8 + 32$ seen A1 for 17.6 or $\frac{88}{5}$ or 17.60 oe
	(b)	$68 = 1.8C + 32$ $1.8C = 68 - 32$ $C = 36 \div 1.8$	20	2	M1 for $68 - 32$ or 36 or $68 = 1.8C + 32$ seen; condone replacement of C by another letter. A1 for 20 cao NB Trial and improvement score 0 or 2
19			construction	2	M1 for a pair of arcs drawn from the same centre on 2 lines at same distance from meeting point; or a single arc crossing both lines; using an arc with a radius which is the length of the shorter line will imply an intersection with the end of that line. ($\pm$ 2mm) A1 for bisector ($\pm 2^o$) and correct arcs **SC:** B1 for bisector ($\pm 2°$) with no arcs, or incorrect arcs if M0 awarded. Accept bisectors that are dashed or dotted.
20	(a)	325×1.68	546	2	M1 for 325×1.68 seen or digits 546 A1 for 546, accept 546.00, 546.0
	(b)	$117 \div 1.5$	78	2	M1 for $117 \div 1.5$ seen or digits 78 A1 for 78, accept 78.00, 78.0

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Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		(65, 100), (80, 110) plotted	1	B1 for plotting both points (65, 100), (80, 110) correctly (tolerance one square); ignore any additional plots given.
	(b)		positive (correlation)	1	B1 for positive (correlation) or length increases with height oe
	(c)		105 - 110	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 76 A1 for given answer in the range 105 – 110
22	(a)		Correct shape	2	B2 for correct shape; any orientation. (B1 for any two sides correct or all correct for scale factor other than 1 or 2), tolerance to within half square
	(b)		Reflection in line $x = 0$	2	B1 for reflection, reflect, reflected. B1 for line $x = 0$ or y-axis NB: more than one transformation should be awarded 0 marks.
23	(a)		$4m$	1	B1 for $4m$ oe
	(b)		$4pq$	1	B1 for $4pq$ or $4qp$ or $p4q$ oe
	(c)	$5 \times 3x - 5 \times 2$	$15x - 10$	1	B1 for $15x - 10$ cao
	(d)	$3y \times y + 3y \times 4$	$3y^2 + 12y$	2	M1 for $3y \times y + 3y \times 4$ or $3y^2 + a$ or $3y^2 + ay$ or $b + 12y$ or $by^2 + 12y$ where a, b are integers, and can be zero A1 for $3y^2 + 12y$ or $3 \times y^2 + 12 \times y$

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Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)	$18 \div 6 : 12 \div 6$	3 : 2	2	M1 for 18 : 12 or 12 : 18 or 1.5:1 or 1:0.67 oe or correct ratio reversed eg 2:3 A1 for 3 : 2 or 1 : 0.6 … [recurring]
	(b)	5 + 1 = 6 $54 \div 6 = 9$ 5 × 9	45	2	M1 for $\frac{5}{5+1} \times 54$ or $\frac{1}{5+1} \times 54$ or 54 ÷ '5+1' or 54 × 5 or 270 or 9 : 45 or 9 seen, as long as it is not associated with incorrect working. A1 for 45 cao
25		15 × 3 = 45 15 × 3.5 25 × 9 = 225 25 × 9.5 20 × 15 = 300 20 × 15.5 12 × 21 = 252 12 × 21.5 8 × 27 = 216 8 × 27.5 1038 ÷ 80 = 1078 ÷ 80 =	12.97 – 13.48	4	M1 for fx consistently within interval including ends (allow 1 error) M1 (dep) consistently using appropriate midpoints M1 (dep on first M) for $\Sigma fx \div \Sigma f$ A1 for 12.97 – 13.48
26	(a)	t^{6+2}	t^8	1	B1 for t^8 or for t^{6+2}
	(b)	m^{8-3}	m^5	1	B1 for m^5 or for m^{8-3}
27	(a)	4.6 + 3.85 = 8.45 $3.2^2 - 6.51 = 3.73$ 8.45 ÷ 3.73 =	2.26541555	2	M1 for $\frac{169}{20}$ or $\frac{256}{25}$ or $\frac{373}{100}$ or 3.73 or 10.24 or 8.45 seen A1 for 2.265(41555); accept $\frac{845}{373}$
	(b)		2	1	B1 ft for 2 or follow through their answer to part (a) NB: 2.0 gets B0

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Question		**Working**	**Answer**	**Mark**	**Notes**
28		$(0.5 \times 3.14\ldots \times 8) + 8$	20.56 – 20.58	3	M2 for $(0.5 \times \pi \times 8)$ or $\pi \times 4$ or $(\pi \times 8 + 8)$ or $(0.5 \times \pi \times 8 + 8)$ oe (M1 for $\pi \times 8$ or $2\pi \times 4$; for a value 25.1-25.2 inclusive unless seen with incorrect working eg πr^2) A1 for 20.56 – 20.58 (**SC**: B2 if M0 scored for 12.56 – 12.58)