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Edexcel GCSE

Mathematics A 1387

Paper 5521/02

November 2007

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Mark Scheme

Edexcel GCSE

Mathematics A 1387

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
oe – or equivalent (and appropriate)
dep – dependent
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 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.
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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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 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.
If there is no answer on the answer line then check the working for an obvious answer.

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: eg. incorrect cancelling 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 eg 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.

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No.	**Working**	**Ans.**	**Mark**	**Notes**
1(a)		75	1	B1 cao
(b)		correct place	1	B1(tol ± 1mm)
(c)		31, 52, 180, 1007	1	B1 cao
2(a)		Correct line	1	B1 cao (tol ± 2 mm)
(b)		Correct point	1	B1 (tol ± 2 mm)
(c)		Correct circle	1	B1 (tol ± 2 mm)
3 (a)		12	1	B1 cao
(b)		6	1	B1 cao
(c)		2 full circles 1¼ circles	2	B1 for 2 full circles in fourth week B1 for 1 full circle and one quarter in fifth week
4(a)		Diagram	1	B1 cao
(b)		12, 15	1	B1 cao
(c)		20	1	B1 cao
(d)		6	1	B1 cao

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No.	**Working**	**Ans.**	**Mark**	**Notes**
5 (a)		Multiple	1	B1 cao
(b)		15	1	B1 cao
(c)		16	1	B1 cao
6 (a)	75 + 160	£2.35	1	B1 cao
(b)	70 + 85 + 2×135	£4.25	2	M1 70 + 85 + 2×digits135 or 0.70+0.85+2× digits135 A1 cao
(c)	75 + 85 + 135 = 295 500 – '295'	£2.05	3	B1 for 295 or 2.95 M1 500 – "295" or 5.00 – "2.95" A1 cao
7 (a)		A and D	1	B1 cao
(b)		E	1	B1 cao
8 (a)		Correct line	1	B1 cao
(b)		2	1	B1 cao
9 (a)		Glasgow	1	B1 cao (accept -6)
(b)		6	1	B1 (accept –6)
(c)		3	1	B1 cao

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No.	**Working**	**Ans.**	**Mark**	**Notes**
10 (a)		Correct drawing	2	B2 (B1 for either angle *A* correct or for angle *B* correct ± 2°)
(b)		5.6 cm or 56 mm	2	B1 ft on triangle (tol ± 2 mm) B1 cm or mm (consistent)
(c)		right angle	1	B1 cao
11(a)		(3, 3)	1	B1 cao
(b)		(4,0)	1	B1 cao
(c)		*N* plotted correctly	1	B1 cao
(d)		(–3, 0)	1	B1 cao
12 (a)		89 – 91	1	B1 89 – 91
(b)		110	1	B1 109 – 111 or ft on 200 – (a)
(c)(i) (ii)		4.0 – 5.0 40 – 50	2	B1 4 – 5 B1 40 – 50 or ft 200 ÷ (c)(i)
13(a)		4	1	B1 cao
(b)		11	1	B1 cao

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No.	**Working**	**Ans.**	**Mark**	**Notes**
14(a)		0	1	B1 cao
(b)	(8+4+5+5+3+2+1)÷10	2.8	2	M1 (8+4+5+5+3+2+1)÷10 A1 cao
15(a)		30	1	B1 cao
(b)	45 – (10 + 20)	15	1	B1 ft on 45 – '30'
(c)	Distance AC is 30 Distance BD is 35	Josh	2	B1 for 'Josh' B1 for correct reasoning
(d)		11.00	1	B1 cao
(e)		Correct diagram	1	B1 (tol ± 2 mm)
16	800 ÷ 34	24	2	M1 800 ÷ 34 or 23.5 …seen A1 cao SC: B1 23 only on answer line.
17		$3x + 5y$	2	B2 for $3x + 5y$ oe (B1 for $3x$ or $5y$ oe)
18	$\frac{36}{100} \times 4500$	1620	2	M1 $\frac{36}{100} \times 4500$ A1 cao
19	78 + 119 + 105 = 302 360 – 302 = 58 180 – 58	122	3	M1 360 – (78 + 119 + 105) or 360 – 302 or 58 seen M1 (indep) 180 – "58" where "58"< 90 and not 78° A1 cao

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20	3kg peaches is £1.68 £2.34 – £1.68 = £0.66 £0.66 ÷ 2 = £0.33	£0.33 or 33p	3	M1 2 × £0.84 or digits 168 seen M1(dep) digits 234 – digits "168" or digits 66 seen A1 £0.33 or 33p (units consistent with answer) NB: 0.33 or 33 without units M2, £0.33p, £33p M2A1
21(a)	450 × 28 = 12600p = £126 15 × 9.51 = £142.65 £142.65 + £126 =	268.65	3	M1 for 450 × 28 or 0.28×450 or digits 126 seen M1 for 15 × 9.51 or 951 × 15 or digits14265 seen A1 cao
(b)	$\frac{15}{450} = \frac{1}{30}$	$\frac{1}{30}$	2	M1 for $\frac{15}{450}$ A1 for $\frac{1}{30}$ SC B1 for 0.03 (.....) or 3.33(.....)%
(c)	360 × 1.175 or $360 \times \frac{17.5}{100} = 63$ 360 + 63	£423	3	M2 for 360 × 1.175 oe A1 cao Or M1 for $360 \times \frac{17.5}{100}$ (=63) Or attempt at 10%, +5%, +2.5% eg digits 36+18+9 M1 (dep) 350 + "63" A1 cao
22	60 × 15 × 30 = 27000	27000	2	M1 60 × 15 × 30 A1 cao

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No.	**Working**	**Ans.**	**Mark**	**Notes**
23	Σfreq = 60 $360^o \div 60 = 6^o$ 15 × 6 = 90 Cow 12 × 6 = 72 Hen 5 × 6 = 30 Pig 28 × 6 = 168 Sheep	90 72 30 168	4	M1 evidence of method for at least one angle (could be implied by 1 correct angle drawn, or 1 other than 90º in the table). A2 All three angles drawn (±4º tolerance, any order) (A1 at least 2 angles of 3 correctly drawn ±4º, or all 3 angles, other than 90º, in the table) B1 (dep on at least 1 angle drawn correctly, and exactly 4 sectors) for labels (names of animals only) NB mark table or pie chart to the benefit of the candidate if inconsistent
24(a)	4.5 + 2.7225	7.2225	2	M1 for 4.5 or 2.7225 A1 7.2225 cao
(b)		7	1	B1 ft to 1 sf on (a)
25(a)		1010	1	B1 (accept 10.10am , 10.10pm, ten past ten etc)
(b)		6.0 to 7.5 exclusive	1	B1 for 6.0 to 7.5 exclusive
(c)		30	1	B1 cao
(d)		graph	1	B1 cao Line from (11.10, 20) to (11.50, 0) (± 2mm) Accept freehand line if intention is clear
(e)		40	2	M1 20 ÷30 or 20 ÷ 0.5 oe or 0.6 or 0.66…… A1 cao SC B1 for 20 ÷ 40 in working or 0.5 or 30 given as answer.

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26	$2y = 5$	2.5	2	M1 for $2y + 3 = 8$ or $4y = 2y + 5$ oe A1 2.5 oe
27(a)	$\frac{1}{2}\times 12\times 5$	30	2	M1 $\frac{1}{2}\times 12\times 5$ A1 cao
(b)	Area $ABCD = 17^2 = 289$ Area $PQRS = 289 - 4\times$ "30" Or $(5+12)^2 = 289$ $289 - 4 \times$ "30"	169	3	M1 for Area $ABCD = 17^2$ or 289 seen M1(dep) for Area $PQRS$ = '289' – 4×'30' A1 cao Or M1 $5^2 + 12^2$ M1(dep) $\sqrt{25+144}$ or 13 or 13^2 A1 cao SC B2 for 169^2 or 28561 as answer
28(a)		Reason	1	B1 eg "mode is 7" "the mode is the one which is there the most " " because its got the lowest frequency"

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No.	**Working**	**Ans.**	**Mark**	**Notes**
(b)	$4\times4=16$ $5\times7=35$ $6\times10=60$ $7\times12=84$ $8\times5=40$ $9\times2=18$ Mean $=\frac{\Sigma fx}{\Sigma f}=\text{“}\frac{253}{40}\text{”}$	6.325	3	M1 Σfx (at least 3, implied by answers) or 253 seen M1 (dep) $\frac{\Sigma fx}{\Sigma f}$ A1 6.325, 6.33, 6.3, 6.32