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Edexcel GCSE

Mathematics A 1387

Paper 5523/03

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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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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)	375 24 × 1500 7500 9000 3 7 5 9 (6 1 1 / 1 2 2) 2 4 0 0 0 300 70 5 6000 1400 100 20 1200 280 20 4 6000 + 1400 + 100 + 1200 + 280 + 20 = 9000	90.00	3	M1 for a complete method with relative place value correct, condone 1 multiplication error, addition not necessary A1 for 9000 A1 (dep on M1) for correct conversion of their total into £s OR M1 for a completed grid with not more than 1 multiplication error, addition not necessary A1 for 9000 A1 (dep on M1) for correct conversion of their total into £s OR M1 for sight of a complete partitioning method, condone 1 multiplication error, final addition not necessary A1 for 9000 A1 (dep on M1) for correct conversion of their total into £s OR M1 for repeated addition (condone 23 or 25) with attempt to total. A1 for 9000 A1 (dep on M1) for correct conversion of their total into £s

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No.	**Working**	**Ans.**	**Mark**	**Notes**
(b)	$20\overline{)135.^{15}0^{10}0}$ 6.75	6.75	3	M1 for 135 ÷ 20 with 6 identified M1 for a correct method to deal with remainder A1 cao OR M1 for a complete method with division broken up correctly, e.g 135 ÷ 10 ÷ 2, 100 ÷ 20 + 30 ÷ 20 + 5 ÷ 20 M1 for a correct method to deal with remainder A1 cao
2(a)	$\frac{3}{4}=\frac{9}{12},\frac{5}{6}=\frac{10}{12},$ $\frac{2}{3}=\frac{8}{12},\frac{7}{12}=\frac{7}{12}$	$\frac{7}{12},\frac{2}{3},\frac{3}{4},\frac{5}{6}$	2	M1 for attempting to use a common denominator or attempting to convert fractions to decimals, rounded or truncated to 1 dp A1 for correct order Special case: B2 for fully correct order (B1 for 3 correctly ordered fractions or largest first and in order)
(b)	$\frac{9}{12}+\frac{2}{12}=\frac{11}{12}$	$\frac{11}{12}$	2	M1 for using a suitable common denominator, at least one of two fractions correct A1 for $\frac{11}{12}$ oe OR Attempt to use decimals, must use at least 2dp M1 for 0.75 + 0.16 (or 0.17) A1 for 0.916 (recurring)

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No.	**Working**	**Ans.**	**Mark**	**Notes**
(c)(i)	$\frac{1}{2} = 0.5, \frac{1}{3} = 0.\dot{3}, \frac{1}{4} = 0.25,$	$\frac{1}{3}$	2	B1 for 1/3 or equivalent
(ii)	$\frac{1}{5} = 0.2$			B1 (dep)for valid reason e.g. it does not terminate, $\frac{1}{3} = 0.\dot{3}$, 3 doesn't divide into 1 exactly
3(a)(i)	180 – 70	110	2	B1 for 110 cao
(ii)				B1 (indep)for (angles on a straight) line (add to 180º)
(b)(i)	180 – 70 – 70	40	3	M1 for 180 – 70 –70 oe
(ii)				A1 for 40 cao B1 (indep) for 2 equal (or base) angles (in an isosceles triangle) or (angles in a) triangle add to 180 or exterior angle is equal to sum of opposite interior angles. (B0 if any incorrect reasoning given e.g parallel, equilateral)
4(a)		9	1	B1 cao
(b)		5 **9** **7** 21 **4** 7 **8** **19** 9 16 **15** 40	3	B3 for all correct (B2 for 4 or 5 correct) (B1 for 1 or 2 or 3 correct)
(c)	$\frac{16}{40}$	$\frac{2}{5}$	1	B1 for 2/5 oe

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No.	**Working**	**Ans.**	**Mark**	**Notes**
5(a)		8.90	1	B1 for 8.80 to 9.00 inclusive
(b)		15.60	1	B1 for 15.51 to 15.99
(c)		900	2	M1 for a complete method (reading from graph and multiplication) A1 for 880 - 960
6(a)	360 ÷ 10	36	2	M1 for 360 ÷ 10 A1 for 36
(b)		72	1	B1 ft for 72 or twice (a) if (a) is less than 90
7	360 ÷ 40	9	2	M1 for attempting to find how many 40s in 360 (usually 360÷40) A1 for 9
8(a)	4 5 6 7 8 5 6 7 8 9 6 7 8 9 10		2	B2 if fully correct (B1 for 1 row or 2 columns correct)
(b)	(1,4); (2,3); (3,2); (4,1)		2	B2 if fully correct (B1 for either (2,3) or (3,2), ignore extras)
(c)	(2,6);(3,5);(3,6);(4,4);(4,5); (4,6)		2	B2 if fully correct (order within brackets need not be consistent) (B1 for 3 pairs correct, ignore extras)

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No.	**Working**	**Ans.**	**Mark**	**Notes**
9(a)			2	B2 fully correct (B1 for reflection of **A** in mirror line other than *y* axis)
(b)			2	B1 for 3 right B1 for 2 down
10(a)	90 + 80 × 0.50 90 + 40	£130	2	M1 for 90 + 80 × 0.50 or 9000 + 80 × 50 or 90 + 80 × 50 A1 for 130 SC: B1 for 94 or 490 or 4090 or 13000 seen
(b)		90 + 0.5*m*	2	B1 for 0.5 *m* B1 for 90 + "0.5*m*" NB: Ignore any £ signs
(c)	240 =90 + 0.5*m* 150= 0.5*m*	300	3	M1 for 240 = "90 + 0.5*m*" M1 for "0.5*m*"= 150 A1 for 300 **Alternative** M1 for 240 – 90 or 150 seen M1 for "150" × 2 oe A1 for 300
11(a)(i) (ii)	Angle *x* = 63 (Corresponding angles)	63 and reason	2	B1 for 63 B1 for corresponding (or alternate) mentioned, accept F angles (or Z angles) (B0 if any incorrect reasoning given)
(b)	Angle *y* = 117	117	1	B1 for 117

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No.	**Working**	**Ans.**	**Mark**	**Notes**
12(a)	Continue sequence by +5	47	2	M1 for difference of 5, may be implied by use of 5*n* or answer of any term in sequence A1 for 47
(b)(i)		$3n - 7$	3	B2 for $3n - 7$ (B1 for $3n + k$, $k \neq -7$ or for $n = 3n - 7$) (B0 for $n = 3n + k$, $k \neq -7$)
(ii)		2, 17		B1 for 2 and 17 (or any two of 2, 17, 32, 47, 62, …..)
13(a)	$\frac{3}{2+3+5}$	$\frac{3}{10}$	2	M1 for 3/(2+3+5) A1 for $\frac{3}{10}$ oe
(b)	60 ÷ 5 = 12 12 × 2 = Alternative: Total sum = 60 × 2 = 120 Lillian = $\frac{2}{10}$ of 120 = 120 × 2 ÷ 10	24	3	M1 for 60 ÷ 5 M1 for "12" × 2 A1 for 24 cao Alternative: M1 for 60 × 2 = 120 seen M1 for 120 × 2 ÷ 10 A1 cao SC: B2 for 24, 36 and 60 SC: B1 for 36 on answer line

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No.	**Working**	**Ans.**	**Mark**	**Notes**
14(a)	–3,…, 1,…., …., 7	–3, 1, 7	2	B2 for all values correct (B1 for 2 values correct)
(b)			2	B2 cao for line between $x = -1$ and $x = 4$ (B1 ft for 4 points plotted ± one 2mm sq or for a line with gradient 2 or for a line passing through (0, -1))
(c)		$x = 1.5$ $y = 2$	2	B1 ft for x value = 1.5 ± one 2mm sq B1 ft for y value = 2 ± one 2mm sq SC: B1 for x and y transposed
15(a)			2	B2 for trapezium with base 5 cm, ht 2 cm and top 3 cm (B1 for a trapezium with exactly 2 right angles)
(b)			2	B2 for rectangle with length 5 cm and width 2 cm and line at 3 cm from one edge (B1 for a rectangle of length 5 cm or width 2 cm, do not accept a square, or for a rectangle with an interior line parallel to the shorter sides) NB: orientation must be correct in (a) but not in (b) Do not accept extra lines in (a) or (b)
16	Rotation 90º clockwise centre (–2, 3)		3	B1 for rotation B1 for 90º clockwise or 270º anticlockwise or -90º or 270º or $\frac{1}{4}$ turn clockwise or $\frac{3}{4}$ turn anticlockwise B1 for (–2, 3) NB: a combination of transformations gets B0

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No.	**Working**	**Ans.**	**Mark**	**Notes**
17(a)		$x(x - 5)$	2	B2 for $x(x - 5)$ (B1 for x(linear expression in x))
(b)		$3a(a - 2)$	2	B2 for $3a(a - 2)$ (B1 for $3(a^2 - 2a)$ or $a(3a - 6)$ or $3a$(linear expression in a))
(c)	$2q = P - 10$	$\frac{1}{2}(P - 10)$	2	M1 for correctly isolating $2q$ or $-2q$ or for correctly dividing both sides by 2 or for a correct step which may follow an incorrect first step A1 for $\frac{1}{2}(P - 10)$ oe
(d)		$y^2 - y - 12$	2	B2 for $y^2 - y - 12$ (B1 for 3 out of 4 terms in $y^2 + 3y - 4y - 12$)
18(a)	$35/56 \times 100$	62.5%	2	M1 for $35/56 \times 100$ A1 for 62.5% oe
(b)	$40/100 \times 35 = 14$ $14/56$	$\frac{1}{4}$	4	M1 for $40/100 \times 35$ A1 for 14 M1 ft for "14"/56 oe A1 cao for $\frac{1}{4}$

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No.	**Working**	**Ans.**	**Mark**	**Notes**
19(a)(i) (ii)		7.9×10^{3} 3.5×10^{-4}	2	B1 cao B1 cao
(b)	$4 \div 8 = 0.5$ $10^{3} \div 10^{-5} = 10^{8}$	5×10^{7}	2	M1 for $4 \div 8 = 0.5$ or $10^{3} \div 10^{-5} = 10^{8}$ or $\frac{4000}{0.00008}$ or 5×10^{n}, $n \neq 7$ A1 for 5×10^{7} cao
20(i)		73	3	B1 for 72 – 74 inclusive
(ii)	80 – 65	15		M1 for identifying 30 and 90 (check lines on diagram) A1 for 14 - 17
21(a)	$\frac{PQ}{2} = \frac{12}{3}$ $PQ = \frac{12\times2}{3}$	8	2	M1 for $\frac{12}{3}$ or $\frac{3}{12}$ or 4 or $\frac{1}{4}$ or 0.25 A1 for 8
(b)	$\frac{BC}{3} = \frac{10}{12}$ $BC = \frac{10\times3}{12} = 2.5$	12.5	3	M1 for $\frac{10}{4}$ or $\frac{4}{10}$ or 0.4 A1 for 2.5 A1 ft for “2.5” + 10 (dep on M1 awarded)