Edexcel GCSE

Mathematics A 1387
Paper 5525/05

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

No.	Working	Ans.	Mark	Notes
1(a)	$\dfrac{9}{12} + \dfrac{8}{12} = \dfrac{17}{12} = 1\dfrac{5}{12}$	$6\dfrac{5}{12}$	3	M1 for using a common denominator M1 for either 9/12 or 8/12 or 33/12 or 44/12 or 17/12 oe A1 for $\dfrac{77}{12}$ or $6\dfrac{5}{12}$ **Alternative** M1 for converting 3/4 and 2/3 to decimals M1 for 0.75 + 0.66 or better A1 for $6.41\dot{6}$ oe
(b)	$\dfrac{1}{2} = 0.5, \dfrac{1}{3} = 0.\dot{3}, \dfrac{1}{4} = 0.25,$ $\dfrac{1}{5} = 0.2$	$\dfrac{1}{3}$	2	B1 for 1/3 oe B1 (dep) for valid reason e.g. it does not terminate, 1/3 = 0.333(3...), 3 does not divide exactly into 1
2(a)		90 + 0.5*m*	2	B1 for 0.5 *m* B1 for 90 + '0.5*m*' (NB: ignore any £ signs)
(b)	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

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3(a)		8	2	M1 for attempt at prime factors of 24 and 64 A1 for 8 or 2^3 or 2×2×2
(b)		192	2	M1 for attempting at least one multiple of 24 and 64 or for two prime factors of 24 and 64 A1 for 192 or $2^6 \times 3$ oe (SC B1 for 384 or $2^5 \times 3$ or $2^7 \times 3$)
4	Rotation 90º clockwise centre (–2, 3)		3	B1 for rotation B1 for 90 clockwise or -90 or +270 or 270 anticlockwise or quarter clockwise or three quarters anticlockwise B1 for (–2, 3) (B0 for a combination of transformations)
5	60 ÷ 5 = 12 12 × 2 =	24	3	M1 for 60 ÷ 5 M1 (dep) for '12' × 2 A1 for 24 cao
6(a)	Continue sequence by +5	47	2	M1 for difference of 5 or for any term in the sequence or for $5n + a$ A1 for 47
(b)(i)		$3n - 7$	3	B1 for $3n - 7$
(ii)		2, 17. …		B2 for 2 and 17 (or for any two of 2, 17, 32, 47, 62, …) (B1 for one)

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No.	Working	Ans.	Mark	Notes
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7			3	M1 for arcs construction of 60º M1 for arcs bisector of '60º' (not 90º) A1 (dep on both M marks) for 30º within guidelines **Alternative** M1 for arc construction of 90º M1 for arcs construction of 60º based on perpendicular A1 (dep on both M marks) for 30º within guidelines
8 (a)	−3,…, 1,…, …., 7	−3, 1, 7	2	B2 for all values correct (B1 for 2 values correct)
(b)			2	B2 for correct 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 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 y = 1.5 and $x = 2$)
9(a)		$3a(a −2)$	2	B2 for $3a(a −2)$ (B1 for $3(a^2 −2a)$ or $a(3a−6)$ or 3a(linear expression in terms of a))
(b)		½ $(P − 10)$	2	M1 for correctly isolating 2q or -2q correctly dividing both sides by 2 or for a correct second step which may follow an incorrect first step A1 for ½ $(P − 10)$ oe

No.	Working	Ans.	Mark	Notes
(c)	$y^2 + 3y - 4y - 12$	$y^2 - y - 12$	2	B2 for $y^2 - y - 12$ (B1 for 3 out of 4 terms in $y^2 + 3y - 4y - 12$)
(d)		$(2p + 3q)(2p - 3q)$	2	M1 for $(2p \pm 3q)(2p \pm 3q)$ or $(2p)^2 - (3q)^2$ A1 for $(2p + 3q)(2p - 3q)$
10(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 $\left(10^3 \div 10^{-5} = \right)10^8$ or 4000/0.00008 or 5×10^x where $x \neq 7$ A1 for 5×10^7 cao
11(i) (ii)	 $80 - 65$	73 15	3	B1 for 72 - 74 M1 for identifying 30 and 90 (check lines on diagram) A1 for $14 - 17$
12(a)	$\dfrac{PQ}{2} = \dfrac{12}{3}$ $PQ = \dfrac{12 \times 2}{3}$	8	2	M1 for $\dfrac{12}{3}$ or $\dfrac{3}{12}$ or $\dfrac{1}{4}$ or 4 or 0.25 or $\dfrac{2}{3}$ or $\dfrac{3}{2}$ A1 for 8
(b)	$\dfrac{BC}{3} = \dfrac{10}{12}$ $BC = \dfrac{10 \times 3}{12} = 2.5$	12.5	3	M1 for $\dfrac{10}{12}$ or $\dfrac{12}{10}$ or $\dfrac{10}{4}$ or $\dfrac{4}{10}$ or 0.4 A1 for 2.5 A1 ft for '2.5' + 10 (dep on M1 awarded)

No.	Working	Ans.	Mark	Notes
13(a)			2	B1 for appropriate question, e.g. which of these vegetables do you eat?, tick the boxes of the vegetables you eat B1 (dep) for response boxes or a list of vegetables (condone one vegetable missing and ignore additions)
(b)	$800 \times 30/50$	480	2	M1 for $800 \times 30/50$ or 800×0.6 or '800/50' $\times$ 30 or $2400 \div 5$ or 60% of 800 A1 for 480 cao (SC B1 for 480/800)
14	$-3 \leq y < 2.5$	$-3, -2, -1, 0, 1, 2$	3	M1 for dividing a list of integers by 2 or for $y \geq -3$ and/or $y < 5/2$ seen or implied A2 for all integers correct (A1 for 5 correct with no more than one extra)
15	$3^2 + 4^2 + 12^2 = 169$ $\sqrt{169}$	13	3	M1 for $3^2 + 4^2$ or $3^2 + 12^2$ or $4^2 + 12^2$ or $a^2 + 12^2$ (where a is the length of their base diagonal) M1 for $3^2 + 4^2 + 12^2$ A1 for 13 cao
16(a)		a^8	1	B1 for a^8 or $a^{2 \times 4}$
(b)	$2^{30} \div (2^3)^9 = 2^{30-27}$	3	2	M1 for $(2^3)^9$ or 2^{27} or 2^3 or 8^{10} A1 for 3 cao

No.	Working	Ans.	Mark	Notes
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17(a)		R	1	B1 for *R* or *y=x+5*
(b)		S	1	B1 for *S* or *y=-1/2x+6*
(c)(i) (ii)		(0, 5) (−2.5, 0)	2	B1 cao B1 for (−2.5, 0) oe
18	$n + (n+1)+(n+2)+(n+3) =$ $4n + 6$ $(n+3)(n+2) - (n+1)n =$ $n^2+5n+6-n^2 - n = 4n + 6$		4	M1 for adding $n + (n + 1) + (n + 2) + (n + 3)$ M1 for writing $(n+3)(n+2) - (n+1)n$ M1 for 4 correct terms from $n^2+5n+6-n^2 - n$ ignoring signs A1 for establishing equality between LHS and RHS
19(a)		8, 6	2	B1 cao B1 cao
(b)		Bars of ht 4cm, 5cm	2	B1 for height $= 4 \pm 1$ mm B1 for height $= 5 \pm 1$ mm
20a(i)		5**p**	4	B1 for 5**p** or $\begin{pmatrix} 5p \\ 0 \end{pmatrix}$ or $\begin{pmatrix} 0 \\ 5p \end{pmatrix}$
(ii)		2**q**		B1 for 2**q** or $\begin{pmatrix} 0 \\ 2q \end{pmatrix}$ or $\begin{pmatrix} 2q \\ 0 \end{pmatrix}$
(iii)		4**p** − **q**		B2 for 4**p** − **q** or $\begin{pmatrix} 4p \\ -q \end{pmatrix}$ or $\begin{pmatrix} -q \\ 4p \end{pmatrix}$ (B1 for 4**p+q** or -4**p–q** or PM + MQ or PM - QM)

No.	Working	Ans.	Mark	Notes
(b)	$\overrightarrow{RT} = \overrightarrow{RP} + \overrightarrow{PT}$ $= -5\mathbf{p} + 2\,(\overrightarrow{PQ})$ $= -5\mathbf{p} + 2(4\mathbf{p} - \mathbf{q})$ $= -5\mathbf{p} + 8\mathbf{p} - 2\mathbf{q}$	$3\mathbf{p} - 2\mathbf{q}$	4	B1 for PT=2PQ or PQ=QT seen or implied M1 for a valid vector journey, e.g. RP+PT or RM+MQ+QT seen or implied M1 for $-5\mathbf{p} + 2 \times$ '$4\mathbf{p} - \mathbf{q}$' or $-\mathbf{p}$-$\mathbf{q}$+'$4\mathbf{p}$-$\mathbf{q}$' A1 for $-5\mathbf{p} + 2 \times 4\mathbf{p} - \mathbf{q}$ or $-\mathbf{p}$-$\mathbf{q}$+$4\mathbf{p}$-$\mathbf{q}$ or better
21	Volume 27 : 125 Length 3 : 5 Area 9 : 25	100	3	M1 for recognising need for cube root of 27 or 125 M1 for recognising need to square their scale factor A1 for 100
22	$3(x{-}3){-}4(x{+}3) = 5x$ $3x - 9 - 4x - 12 = 5x$ $-x - 21 = 5x$ $6x = -21$	-3.5	4	M1 for $\dfrac{3}{x+3} \times (x+3)(x-3) - \dfrac{4}{x-3} \times (x+3)(x-3)$ or $\dfrac{3(x-3)-4(x+4)}{(x+3)(x-3)}$ or $\dfrac{3}{x+3} \times \dfrac{x-3}{x-3} - \dfrac{4}{x+3} \times \dfrac{x+3}{x+3}$ or $\dfrac{5x}{x^2-9} \times (x+3)(x-3)$ M1 (dep) for $3(x-3)-4(x+3)$ or $5x$ M1 for $3x-9-4x\pm12 = 5x$ A1 for -3.5
23	$\dfrac{50}{500} \times 50$	5	2	M1 for $\dfrac{50}{500} \times 50$ oe A1 for 5

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No.	**Working**	**Ans.**	**Mark**	**Notes**
24		C D A F B E	4	B4 for all 6 correct (B3 for 4 or 5 correct) (B2 for 2 or 3 correct) (B1 for 1 correct)