GCSE

Edexcel GCSE

Mathematics B 1388

Paper 5536/16

Summer 2005

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Mark Scheme (Results)

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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.
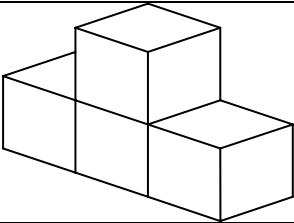
8   Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any 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 an

Paper 5536/16

No		Working	Answer	Mark	Notes
1			Correct shape	2	B2 B1 for any 2 sides correct, or a correct enlargement scale factor $\neq 1$ or 2.
2	(b)		$2y^2$	1	B1 accept $2 \times y^2$ or $2 \times y \times y$
	(c)		$3c+4d$	2	B2 for $3c+4d$ *(accept $3 \times c$ etc)* (B1 for $3c$ or $4d$ or $3c4d$)
3	(a)(i) (ii) (b)		60 eg top triangle is equilateral 150	2 2	B1 cao B1 for reason M1 $\dfrac{(180-"60")}{2}+90$ A1 ft from (a)(i) if $x < 90°$ SC:B1 for answer from "60" + 90 if $x < 90°$

No	Working	Answer	Mark	Notes
4	679 28 5432 13580 19012 or 28 679 252 1960 16800 19012 Lattice grid: top: 6 7 9 left: 1, 9 right: 2, 8 cells: 1/2, 1/4, 1/8; 4/8, 5/6, 7/2 bottom: 0 1 2	190.12	3	M1 for an attempt to multiply the units and tens, or correct partitioning M1 complete correct method (condone one arithmetic error) A1 for 190.12 cao OR M1 for putting the numbers in a grid M1 for multiplying out and addition (condone one error) A1 answer shown with point OR M1 for correct partitioning M1 679×20 and 679×8 calculated oe (condone one error) A1 cao

No	Working	Answer	Mark	Notes
5 (a)		Points plotted	1	B1 $\pm$ 1 full (2mm) square
(b)		positive	1	B1 cao
(c)		Line of best fit	1	B1 must pass through (42.5, 1.45), (42.5, 1.55) AND (67.5, 1.75), (67.5, 1.85)
(d)		approx 1.65	1	B1 ft from single line segment with positive gradient $\pm$ 1 full (2mm) square
6 (a)	eg $50 \times \dfrac{2000}{500}$	200	2	M1 $2000 \div 500$ or 4 seen A1 cao
(b)	eg $400 \times \dfrac{750}{500}$	600	2	M1 $750 \div 500$ or 1.5 seen or $400 + 200$ A1 cao
7		correct drawing	2	B2. Condone hidden detail shown with solid lines, or missing lines on front face. (B1 for : one sketch correct with other sketches incorrect cross-section correct with depth > 1 cube, correct plan and side elevation)
8	$\dfrac{600}{3 \times 10}$ or $\dfrac{640}{3.2 \times 10}$	20 to $21\dfrac{1}{3}$	2	M1 For rounding at least two of the numbers to 1 sf, or for sight of 640, 3.2 or 640, 32 or 600, 32 or 30 seen A1 for 20 to $21\dfrac{1}{3}$ NB: 20.3125 scores M0 A0

Paper 5536/16				
No	**Working**	**Answer**	**Mark**	**Notes**
9 (a)(i)		5^6	1	B1 accept 15125, 5^{4+2}
(ii)		5^3	1	B1 accept 125, 5^{9-6}
(b)	$x + y = 10$ and $x - y = 4$	$x = 7$ $y = 3$	3	M1 for either $x + y = 10$ or $x - y = 4$ A2 for both values correct [(A1 for one value correct) If M0, award B3 for both values correct or B2 for one value correct, otherwise B0] SC B2 for $x = 3$ and $y = 7$
10 (a)	$5 - 3x = 2x + 2$ $5 - 2 = 2x + 3x$	$\dfrac{3}{5}$	3	B1 for $2x + 2$ seen OR $2.5 - 1.5x = x + 1$ M1 for correct rearrangement of 4 terms A1 for $\dfrac{3}{5}$ oe
(b)		$-3, -2, -1, 0, 1, 2$	2	B2 (B1 for 5 correct and not more than one incorrect integers)
11	$\dfrac{2}{3} \times \dfrac{3}{4} = \dfrac{6}{12}$	$\dfrac{1}{2}$	2	M1 for $\dfrac{6}{12}$ or $\dfrac{3}{6}$ or $\dfrac{2 \times 3}{3 \times 4}$ A1 accept 0.5

No		Working	Answer	Mark	Notes
12		$2 \times \frac{1}{2} \times 6 \times 8$ or 48 $8 \times 9 + 6 \times 9 + 10 \times 9$ or $72 + 54 + 90$	264 cm^2	4	M1 attempt to find the area of one face; $\frac{1}{2} \times 6 \times 8$ or (8×9) or (6×9) or (10×9) or 72 or 54 or 90 or 24 M1 all five faces with an intention to add A1 cao numerical answer of 264 B1 (indep) cm^2 with or without numerical answer
13			$\dfrac{\pi a b^3}{3d}$ $3(c+d)^3$ $3\pi b c^2$	3	B3 (B1 for each one correct) Nb –B1 for each of the 4th,5th,6th tick
14	(a)	$x + 0.3 + 0.2 + x = 1$	0.25	2	M1 for $x + 0.3 + 0.2 + x = 1$ oe, or $0.5 \div 2$ A1 oe
	(b)	0.3×200	60	2	M1 0.3×200 A1 cao Accept 60 out of 200 (in words) SC B1 for $\dfrac{60}{200}$
15	(a)		(-12) -4 -2 (0) 8	3	B3 for all correct [(B1 for each one correct)
	(b)		points plotted accurately points joined with smooth curve	2	B1 ± 1 full (2mm) square ft table if at least B1 awarded (all 5 points plotted) B1 ft for any smooth curve if previous B1 gained NB: curve must pass within 1 full square of the points
16			$\frac{1}{4}$ on LH branch $\frac{2}{3}$ & $\frac{1}{3}$ & $\frac{2}{3}$ on RH branches	2	B1 B1

Paper 5536/16				
No	Working	Answer	Mark	Notes
17		$m=3$ $n=5$	2	B1 for 3 B1 for 5 (B2 for $2^3 \times 5$ or $2 \times 2 \times 2 \times 5$) SC: award B1 only if $m=5$, $n=3$ or for 8×5 seen
18	$\dfrac{5 - -1}{-1 - 2} = -2$	$y = -2x + 5$	4	M1 for clear attempt to find gradient eg fraction with -1,5 in numerator, 2,-1 in denominator A1 for -2 B2 ft for $y = "-2"x + 5$ oe (eg $y = \dfrac{-6}{3}x + 5$) (B1 for $y = mx + 5$ or , -2x+5 or $y = "-2"x + c$)
19 (i) (ii)		150	2	B1 accept 150 or 210 B1 for angle at the centre is twice the angle at the circumference