edexcel
advancing learning, changing lives

GCSE

Edexcel GCSE

Mathematics B 1388

Summer 2006

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

Paper 5538_19				
No	**Working**	**Answer**	**Mark**	**Notes**
1	$36 \div 9$ 1 part = 4 8 : 12 : 16	A 8 B 12 C 16	3	M1 for $36 \div (2+3+4)$ M1 (dep) 2×" 4" or 3×"4" or 4×"4" A1 cao
2	No because when $n = 6$ $6n - 1$ is not prime		2	B2 for correctly showing that when $n = 6$ 35 is obtained and identified oe. (B1 for correctly evaluating $6n - 1$ for at least 3 different whole number values of n or for 35oe with no working)
3 (a)(i)		x^9	1	B1 cao
(ii)		p^5	1	B1 cao
(iii)		$12\,s^6\,t^5$	2	B2 cao (B1 for two of 12, s^6, t^5 in a product)
(iv)		q^{12}	1	B1 cao
(b)		$2d^2 + 6d$	2	B2 cao (B1 for $2d^2$ or $6d$)
4 (a)	$\frac{\sqrt{3.39...}}{1.985} = \frac{1.84...}{1.985}$	0.9287…	2	B2 for 0.9287(397….) (B1 for sight of 3.39(….) **or** 1.84(….) **or** 1.985)
(b)		0.93	1	B1ft(indep)for writing "0.9287… "correct to 2, 3 or 4 sig figs
5	8×50^2	20 000cm²	2	M1 for 50^2 seen A1 for 20 000cm² or 2 m²
6		volume length area	3	B1 cao B1 cao B1 cao
7		$6n + 1$ oe	2	B2 (B1 for $6n + k$, where $k \neq 1$)
8	$m = \frac{-4}{4} = -1$ $c = 3$	$y = -x + 3$	4	M1 for clear attempt to find gradient of AB A1 for $m = -1$ B1 for $c = 3$ in $y = mx + c$ A1 for $y = -x + 3$ [SC: B2 for $y = x + 3$ seen ; B3 for –x + 3]

Paper 5538_19				
No	**Working**	**Answer**	**Mark**	**Notes**
9	$\sin 40^\circ = \frac{x}{10}$ $x = 10 \times \sin 40$	6.43		M1 for $\sin 40 = \frac{x}{10}$ M1 for $10 \times \sin 40$ A1 for 6.427 – 6.43 [SC: 7.45….. or 5.87…seen gets M1M1A0]
10	$6x^2 - 4x + 15x - 10$	$6x^2 + 11x - 10$	2	B2 for fully correct (B1 for 3 out of 4 terms correct in working, including signs or 4 terms correct, incorrect signs)
11	$AB^2 = 7^2 + 10^2 - 2(7)(10)\cos 73°$ $= 149 - 140\ (0.29237\ldots)$ $= 108.0679\ldots$	10.4	3	M1 for correct substitution M1 for correct order of operations(=108) [SC :15.87…or 9.55 …seen gets M1M1AO] A1 for 10.39 – 10.41
12 (a)		$\frac{1}{4}$ $\frac{2}{3}\quad\frac{1}{3}\quad\frac{2}{3}$	2	B1 for $\frac{1}{4}$ correct on tennis B1 for $\frac{2}{3}, \frac{1}{3}, \frac{2}{3}$ correct on snooker
(b)	$\frac{3}{4} \times \frac{1}{3}$	$\frac{1}{4}$ oe	2	M1 for $\frac{3}{4} \times \frac{1}{3}$ A1 for $\frac{1}{4}$ oe
(c)	$\frac{3}{4} \times \frac{2}{3} + \frac{1}{4} \times \frac{1}{3}$ $\frac{1}{2} + \frac{1}{12}$	$\frac{7}{12}$ oe	3	M1 for $\frac{3}{4} \times \frac{"2"}{3}$ **or** $\frac{"1"}{4} \times \frac{"1"}{3}$ M1 $\frac{3}{4} \times \frac{"2"}{3} + \frac{"1"}{4} \times \frac{"1"}{3}$ A1 for $\frac{7}{12}$ oe

Paper 5538_19				
No	**Working**	**Answer**	**Mark**	**Notes**
13 (a)(i)		6.75	1	B1 cao
(ii)		6.65	1	B1 cao
(b)(i)	$26.95 \div 6.65$	4.05263	3	M1 for "26.95" ÷ "6.65" where $26.9 <$ "26.95" ≤ 26.95 and $6.65 \leq$ "6.65" < 6.7 A1 for 4.05263 (….) If M1 not earned in (i), then M1 for "26.85"÷"6.75" where $26.85 \leq$ "26.85" < 26.9 and $6.7 <$ "6.75" ≤ 6.75
(ii)	$26.85 \div 6.75$	3.97778		A1 for 3.9777 (…..)
(c)	bounds agree to 1sf	4	1	B1 cao
14	Area Sector $= \pi(10.4)^2 \div 3 = 113.26488$ Area Triangle $= \frac{1}{2}(10.4)(10.4)\sin 120^\circ$ $= 46.8346$ Area segment = 66.43 ….	66.4	4	M1 for $\pi\,(10.4)^2 \div 3$ or $\pi(10.4)^2 \times \frac{120}{360}$ oe M1 for $\frac{1}{2}(10.4)(10.4)\sin 120^\circ$ or any other valid method for area triangle OAC M1 (dep on at least 1 of the previous Ms) for area of sector – area of triangle OAC A1 66.35 – 66.5
15	$x \div 461 \times 80$ 21.86, 14.22, 34.88, 9.02	22 14 35 9	3	M1 for $\frac{x}{461} \times 80$ where x = 126, 82, 201 or 52 A2 for all 4 correct (A1 for 3 correct or all 4 as decimals rounded or truncated)

Paper 5538_19				
No	**Working**	**Answer**	**Mark**	**Notes**
16	$\frac{\sin ADB}{25}=\frac{\sin 28}{DB}$ $DB=\frac{25\times\sin 28}{\sin 26}$ $DB=42.58$ $DC=26.77\times\sin 54$	21.7	5	M1 for $\frac{\sin"26"}{25}=\frac{\sin 28}{DB}$ oe M1 for $DB=\frac{25\times\sin 28}{"\sin 26"}$ A1 for 26.7 – 26.8 M1 for $DC="26.7"\times\sin 54$ A1 for 21.65 – 21.7 or better **OR** M1 for $\frac{\sin"26"}{25}=\frac{\sin 126^\circ}{AD}$ oe M1 for $AD=\frac{25\times\sin 126^\circ}{\sin"26"}$ A1 for AD = 46.1 – 46.2 M1 for DC = "AD" $\times\sin 28^\circ$ A1 for 21.65 – 21.7
17	Draw circle centre (0,0) radius 4 Draw a line through (1,2) Show two intersections	Fully correct explanation	3	M1 circle or semi-circle centre (0, 0) drawn or plotted with at least 8 points A1 correct circle drawn or stated A1 straight line drawn through (1, 2) and cutting the circle at 2 distinct points or for stating that any straight line through (1, 2) will cut the circle in 2 places as (1, 2) is inside the circle.