edexcel

Edexcel GCSE

Mathematics A 1387

Paper 5523/03

November 2006

advancing learning, changing lives

Mark Scheme (Results)

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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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

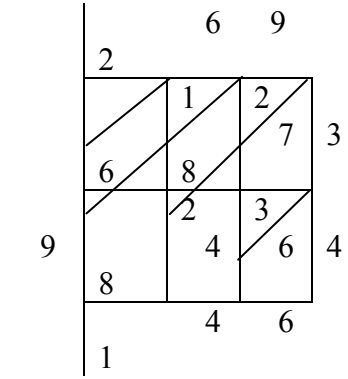
8 Linear equations

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

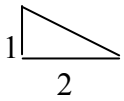
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

Paper 5523/03					
No		Working	Answer	Mark	Notes
1	(a)	16+32	48	2	B2 cao (B1 for 16 or 32 seen)
	(b)		4	1	B1 cao
2	(a)		10 **12** **15** 37 **9** 17 **7** **33** 19 **29** 22 70	3	B3 all correct (B2 for 4 or 5 entries correct) (B1 for 2 or 3 entries correct)
	(b)		$\frac{19}{70}$	2	B2 for $\frac{19}{70}$, accept 0.27 (….) (B1 for $\frac{k}{70}$ with $0<k<70$ or for the correct probability incorrectly expressed, eg '19 out of 70')
3	(a)		6	1	B1 cao
	(b)		20	1	B1 cao
	(c)		24	1	B1 cao
4		$(40 \div 10) \times (60 \div 20) \times (100 \div 10)$	120	3	M1 attempt one division (eg $40 \div 10$) , may be implied by marks or number on one edge of diagram or by two of 4,3 and 10 seen M1 (dep) for ("$40 \div 10$") × ("$60 \div 20$") × ("$100 \div 10$") A1 cao OR M1 for $10 \times 20 \times 10$ or $40 \times 60 \times 100$ M1 (dep) for "240000" ÷ "2000" A1 cao

Paper 5523/03					
No		Working	Answer	Mark	Notes
5	(a)	1076 807x 9146  200 60 9 6000 1800 270 30 800 240 36 4 6000+1800 +270+800+240+36=9146	91.46	3	M1 for a complete method with relative place value correct, condone 1 multiplication error, addition not necessary A1 for 9146 A1 (dep on M1) for correct conversion of their total into £s OR M1 for a completed grid with not more then 1 multiplication error, addition not necessary A1 for 9146 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 9146 A1 (dep on M1) for correct conversion of their total into £s
	(b)	2.5 × 1000 or 2500	5	3	B1 for 2.5 × 1000 or 2500 M1 for weight ÷ 500 A1 cao
6	(a)		(0)76	1	B1 for (0)76° (± 2°)
	(b)			2	B1 for a pt marked on a bearing of 155° (± 2°) from *B* or a line on a bearing of 155° ± 2° B1 for a point 5 cm (± 2 mm) from *B* or a line of length 5 cm (± 2 mm) from *B*

Paper 5523/03				
No	**Working**	**Answer**	**Mark**	**Notes**
7		900 18 720 135	3	B3 all correct (B2 for 2 or 3 correct) (B1 for 1 correct).
8	$2 \times 3 = 6$	e.g. $2 \times 3 = 6$	2	B2 for a correct example (B1 for correctly multiplying any two prime numbers together or for $2 \times$ prime number not evaluated)
9			2	B2 for fully correct with 5 or more additional kites (B1 for a tessellation of 4 kites, 2 of which must be inverted, ignore remainder of diagram)
10 (a)		31	1	B1 for 31, accept 23,27, 31
(b)		$4n - 1$		B2 for $4n - 1$ oe (B1 for $4n + k$, k any integer)
11 (a)	$r + 2r+5 + 2r +4r-3$	$9r + 2$	2	M1 for intent to add the 4 terms, can be implied by sight of $9r$ A1 cao
(b)	$9r + 2 = 65$	7	2	M1 ft for "$9r + 2$" = 65 or for correct inverse operations A1 cao NB: algebra seen in (b) can attract marks in (a) if (a) left blank
12 (a)		negative	1	B1 cao
(b)		line of best fit	1	B1 straight line passing between ((4, 15) and (4, 20) and between (1, 40) and (1, 45)
(c)(i)		~22	2	B1 ft from single line segment with negative gradient ± 1 full (2mm) square
(ii)		~2.8		B1 ft from single line segment with negative gradient ± 1 full (2mm) square

Paper 5523/03					
No		Working	Answer	Mark	Notes
13		$12 \times 10 \div 2 = 60$ $5 \times 3 = 15$ $60 - 15 = 45$	45	3	M1 for $12 \times 10 \div 2$ or 60 seen M1 for 5×3 or 15 seen A1 cao SC: B2 for answer of 105
14	(a)	eg 10% + 5% + 2.5% = £2 + £1 + £0.50 £20 + £3.50	23.50	3	M1 for £2 , £1 and £0.50 or £3.50 seen or $\frac{17.5}{100} \times 20$ oe M1 (dep) for "£3.50" + £20 A1 for 23.5 (0)
	(b)	$75 \div (3+1+1) = 15$ $15 \times 3 = 45$	45	3	M1 for $75 \div (3+1+1)$ M1(dep) for "15" $\times 3$ A1 cao
	(c)	0.8×200	160	2	M1 for 0.8×200 A1 for 160, accept 160 out of 200 SC: B1 for $\frac{160}{200}$ or 160 in 200
15			386 – 420	3	M1 for 2 of 20, 4, 0.2 A1 for $\frac{80}{0.2}$ or $\frac{84}{0.2}$ or 100×4 or 105×4 or 20×20 or 21×20 A1 for answer in range 386 – 420
16	(a)	2.3×20	46	2	M1 for 2.3×20 A1 cao
	(b)	$480 \div 400$	1.2	2	M1 for $480 \div 400$ A1 for 1.2 or equivalent reduced fraction
17	(a)		20	1	B1 cao
	(b)		$x(x + 4)$	1	B1 cao
	(c)(i)		m^7	2	B1 cao
	(ii)		t^4		B1 cao
	(d)	$x^2 + 5x + 3x + 15$	$x^2 + 8x + 15$	2	M1 for 3 of 4 terms $x^2 + 5x + 3x + 15$, signs not needed A1 for $x^2 + 8x + 15$

Paper 5523/03				
No	**Working**	**Answer**	**Mark**	**Notes**
18		Area Length None of these	3	B1 for Area only B1 for Length only B1 for None of these only
19 (a)		reflection line $y = x$	2	B1 for reflection B1 for line $y = x$ (if B0 then B1 for line $y=x$ drawn on diagram)
(b)	Triangle with vertices at (-1, 3), (-3, 3) and (-3,4)		2	M1 for correct orientation or for a rotation of 90° clockwise about (-1,1) A1 cao 
20 (a)		-3,-2,-1,0,1	2	B2 cao (-1 each error or omission)
(b)	$3x < -6$	$x < -2$	2	M1 for subtracting $2x$ from both sides, condone sign error in 6 and use of =,>, ≤, ≥ A1 for $x< -2$, accept $x< -\frac{6}{3}$