

**Edexcel International
London Examinations
IGCSE**

IGCSE Mathematics (4400)

Mark Schemes for May 2004 examination session

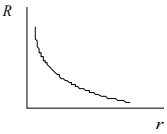
Paper 3H (Higher Tier)

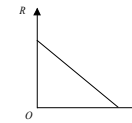
No	Working	Answer	Mark	Notes
1	$\frac{2}{100} \times 69$ or 1.38 69 + "1.38"	70.38	3	M1 M1 dep on 1 st M1 A1 Accept 70.4 Condone 70 380 000, 70 400 000 or M2 for 69×1.02
2	a b c d	$6t + 3$ $x^2 - 3x + 5x - 15$ $x^2 + 2x - 15$ $5(2p - 3q)$ $n(n + 4)$	1 2 1 1	B1 cao M1 for 4 terms ignoring signs or 3 terms with correct signs A1 B1 B1
3	a b	$\pi \times 4.7^2$ 69.4 44	2 4	M1 A1 for 69.4 or better (69.39778...) M1 M1 for area of at least one rectangle M1 for area of triangle or trapezium A1 cao
4	ai ii b	$1 - (0.35 + 0.16 + 0.27)$ 0.22 0.62 12	4 2	M1 A1 oe M1 A1 oe M1 A1 cao

No	Working	Answer	Mark	Notes
5	a	prime factors 2 & 5 seen	2	M1 A1
	b	$2 \times 2 \times 2 \times 3 \times 5 \times 5$ 600	2	M1 for $2 \times 2 \times 2 \times 3 \times 5 \times 5$ or for lists of multiples with at least 3 correct in each list A1 cao
6	a	(5, 3)	2	B2 B1 for each coordinate
	b	$8 - 2 = 6$ & $5 - 1 = 4$ $6^2 + 4^2$ or $36 + 16$ or 52 $\sqrt{6^2 + 4^2}$ or $\sqrt{52}$ (7.2110...) 7.21	4	B1 M1 for squaring & adding M1 (dep on 1st M1) for square root A1 for 7.21 or better Either 6 or 4 must be correct for award of M marks
7	i	1, 3	3	B1 Condone repetition
	ii	1, 2, 3, 4, 5		B1 Condone repetition
	iii	“is a member of” oe		B1
8	i	$3x > -6$	4	M1 SC if M0, award B1 for -2 A1
	ii	$x > -2$ line to right of - 2 indicated open circle at - 2		B1 ft from (i) line must either have arrow or reach 4 B1 ft from (i)

No	Working	Answer	Mark	Notes
9	a	$\frac{16+8}{150}$ or $\frac{24}{150}$ or 0.16	2	M1
	b	16	4	A1 cao M1 finds products $f \times x$ consistently within intervals (inc end points) and sums them M1 use of midpoints M1 (dep on 1st M1) for division by 150
		11.1		A1 Accept 11 if $\frac{1665}{150}$ seen
	c	34, 82, 108, 126, 142, 150	1	B1 cao
	d	Points Curve	2	B1 $\pm \frac{1}{2}$ square ft from sensible table B1 or line segments (dep on 5 pts correct or ft correctly or 5 ordinates from (c) plotted correctly and consistently within intervals but not above end points)
e	cf of 75 (or $75\frac{1}{2}$) used	~ 9	2	M1 A1 ft from sensible graph
10	$\pi \times 12$ or 37.6991... $\div 4$ $+ 2 \times 6$ or +12	21.4	4	M1 M1 (dep) SC B2 for 3π or 9.4247... seen B1 (indep) A1 for 21.4 or better (21.4247...)

No		Working	Answer	Mark	Notes
11	a		1.5×10^8	1	B1 cao
	b		4.5×10^9	2	M1 4.5×10^n for integer $n > 0$ A1 for $n = 9$ SC B1 for 4.5^{09}
12	a	$4y = 3x - 15$ $y = \frac{3}{4}x - \frac{15}{4}$	$\frac{3}{4}$	3	M1 M1 for $\frac{"3x - 15"}{4}$ A1 ft from $\frac{"3x - 15"}{4}$
	b	Eqn (A) $\times 3$ or Eqn(B) $\times 2$ eg or Eqn(A) $\times 5$ or Eqn(B) $\times 3$ Eqn (A) $\times 3$ + Eqn(B) $\times 2$ eg or Eqn(A) $\times 5$ - Eqn(B) $\times 3$ eg $x = 3$	$(3, -1\frac{1}{2})$	4	M1 for clear attempt at first step in correct process to eliminate either x or y M1 Completes correct process to eliminate either x or y (Condone one error) A1 cao for non-eliminated one A1 cao
13	a		$3t^2 + 8t - 5$	2	B2 (B1 for 2 terms correct)
	b	$6t + 8$	20	2	M1 for $6t + 8$ or $d(a)/dt$ if at least B1 scored A1 ft
14	ai		bar correct	3	B1 $28 \pm \frac{1}{2}$ sq
	ii		130, 120	2	B2 B1 cao for each value
	b	$\Sigma f = 480, \quad \frac{3}{4} \times 480 = 360$	2500		M1 A1 ft from "480" ie Σf

No		Working	Answer	Mark	Notes
15	a	6.805×4	27.22	2	M1 A1 cao
	b	$6.815 \times 4 = 27.26$	27	2	M1 A1 cao
16		$(2x + 5)(x - 4)$ $(x + 4)(x - 4)$	$\frac{2x + 5}{x + 4}$	3	M1 M1 A1 cao
17	ai	$R = \frac{k}{r^2}$	$R = \frac{3.6}{r^2}$	4	M1
	ii				A1
	b		0.4	1	B1 fit from k



No		Working	Answer	Mark	Notes
18	a	$3.6 \times 2.8 = 2.4 \times BE$ $\frac{3.6 \times 2.8}{2.4}$	4.2	3	M1 Accept $AE \times CE = BE \times ED$ M1
	b	$\frac{3.6^2 + 2.4^2 - 4.9^2}{2 \times 3.6 \times 2.4}$ $- 0.3061$		3	A1 cao M1 A1 at least 3 sf A1 for 108 or better (107.826...)
19	ai	eg $\times 2 \rightarrow -1$ or attempt to make x the $\div 3 \leftarrow +1$ subject of $y = 2x - 1$	5	2	B1 cao
	ii		0		B1 cao
	b			2	M1
	ci		$\frac{x+1}{2}$ oe	2	A1
	ii	$\frac{3}{2x-1}$ $\frac{1}{2}$			B1

No	Working	Answer	Mark	Notes
20	$\angle RST = 108^\circ$ opposite angles of a cyclic quadrilateral $\angle SRT = 28^\circ$ angle between chord & tangent = angle in alternate segment	28	5	B1 B1 or exterior angle = opposite interior angle Accept <i>cyclic quadrilateral</i> B1 B1 Accept <i>alternate segment</i> or <i>chord</i> & <i>tangent</i> B1
	or $\angle RST = 108^\circ$ opposite angles of a cyclic quadrilateral $\angle PTR = 108^\circ$ angle between chord & tangent = angle in alternate segment		5	B1 B1 or exterior angle = opposite interior angle Accept <i>cyclic quadrilateral</i> B1 B1 Accept <i>alternate segment</i> or <i>chord</i> & <i>tangent</i> B1
	or $\angle UTR = 72^\circ$ angle between chord & tangent = angle in alternate segment		5	B2 B1 Accept <i>alternate segment</i> or <i>chord</i> & <i>tangent</i> B2 B1 for 72 – 44