DarTutors · IGCSE Mathematics 0580-style practice

Paper 2 Non-calculator (Extended) – Mark scheme

(maximum mark 100)

Abbreviations: M method mark · A accuracy mark (depends on the M mark) · B independent mark · FT follow through after an earlier error · oe or equivalent · isw ignore subsequent working. Award full marks for a correct answer unless the question says "show" or asks for working. This is a non-calculator paper: method marks should be awarded for clear written working. Parts of this mark scheme have not yet been reviewed by a teacher: check them before use.

Q	Part	Answer	Mark	Partial marks / guidance
1		97	1	
2		5.92×10^8	2	M1 for $6 \times 10^8 - 8 \times 10^6$ or 592 000 000 or 59.2×10^7 seen
3		16/81	2	B1 for 8/27 or $(2/3)^4$ or 81/16 seen
4		15/4 + 4/3 = 45/12 + 16/12 = 61/12 = 5 1/12	2	M1 for both improper fractions or both fractions over a common denominator of 12; A1 for 61/12 shown before the final answer
5		12	2	M1 for 3/25 × 100 or (25 − 22) ÷ 25 × 100
6		x + 8	2	B1 for $9^4 = 3^8$ seen
7	(a)	Shade the region inside B only (not in A or C) together with the region outside all three circles	1	
	(b)	Shade the two regions B ∩ A and B ∩ C (the overlaps of B with A and with C)	1	
8		201.25	2	M1 for 17.5 × 11.5
9		$x(p - 2q)(p + 2q)$	3	B1 for $x(p^2 - 4q^2)$; B1 for $(p - 2q)(p + 2q)$ seen
10		d = (2wc − 4w)/5	3	M1 for 2wc = 5d + 4w; M1 for 2wc − 4w = 5d. Accept equivalent forms, e.g. 2w(c − 2)/5
11		16	3	M1 for $p = k\sqrt{q}$; A1 for k = 8/5 (= 1.6)
12	(a)	1.5n + 4 (or (3n + 8)/2)	2	B1 for 1.5n + k ($k \neq 4$)
	(b)	154	1	FT their (a)
13		66.7 (66⅔)	3	M1 for $\pi r^2 \times 2r$ (= $2\pi r^3$); M1 for $(4/3\ \pi r^3) \div (2\pi r^3)$ (= 2/3)
14		x = 12, y = −10	3	M1 for 2x + y = 14 and 2x − y = 34; M1 for adding/eliminating correctly; A1 both
15	(a)	$27x^9$	2	B1 for 27 or x^9
	(b)	$25x^4$	2	B1 for 25 or x^4
16		$(x^2 - 5x + 1) / (x(1 - 2x))$	4	B1 for common denominator $x(1 - 2x)$; M1 for $(1 - x)(1 - 2x) - x(2 + x)$; B1 for $1 - 3x + 2x^2$ or $2x + x^2$ correct; A1. Accept denominator $x - 2x^2$
17	(a)	−3	2	B1 for 0.125 = 1/8 or 2^{-3}
	(b)	1.5	2	M1 for 6n = 9
18	(a)	64	2	B1 for f(−2) = 6
	(b)	9	2	M1 for $3x - 5 = 22$ or $h^{-1}(x) = (x + 5)/3$
19	(a)	B drawn inside A: A only = 7, B = 11, outside = 0	2	B1 for correct labelling of A (outer) and B (inner); B1 for 7, 11 and 0

Q	Part	Answer	Mark	Partial marks / guidance
	(b)	Two separate (non-overlapping) circles: A = 18, B = 11, outside = 0	2	B1 for two disjoint circles labelled; B1 for 18, 11, 0
20	(a)	$16\pi r^2$	1	
	(b)	$15\pi r^2$	1	
	(c)	$10\pi r$	2	B1 for $8\pi r$ or $2\pi r$ seen
21	(a)	52°	2	B1 for angle BAC = 38° (angle at centre = 2 × angle at circumference) or angle ACT = 90° (tangent ⊥ radius)
	(b)	322°	2	B1 for angle OCB = 52° (isosceles triangle OBC)
22	(a)	$y = (8 - 3x)/2$ or $y = 4 - 1.5x$	2	M1 for $2y = 8 - 3x$
	(b)	−1.5	1	FT their (a)
	(c)	(0, 4)	1	FT their (a)
23	(a)	4	1	
	(b)(i)	12/36 = 1/3	1	
	(b)(ii)	11/36	1	
	(c)	8/15	1	
24	(a)	Negative	1	
	(b)	Point plotted at (47.3, 30.3)	1	
	(c)(i)	Ruled line of best fit through the mean point, following the trend of the points	1	
	(c)(ii)	30 (accept 27–33, read from their line)	1	FT their line
25	(a)	−10	2	M1 for $-3 = 0.3x$ or $-0.3x = 3$
	(b)	1.5 and 4	3	B2 for $(2x - 3)(x - 4)$ or B1 for factors giving $2x^2 + \ldots$; A1 both answers
26	(a)	2	1	
	(b)	7	1	
	(c)	203	3	M2 for ½ × (9 + 20) × 14, or M1 for any one correct area (49, 126 or 28)
27		$x \geq 0$, $y \geq \frac{1}{2}x$, $x + y \leq 4$	5	B1 for $x \geq 0$; B2 for $y \geq \frac{1}{2}x$ (B1 for $y = \frac{1}{2}x$); B2 for $x + y \leq 4$ (B1 for $x + y = 4$). Accept strict inequalities
28	(a)(i)	3a + c	2	M1 for −a + c + 4a or correct route
	(a)(ii)	(5/2)a + ½c	2	M1 for a + ½(their AB) or c + 4a − ½(their AB)
	(b)	D marked on CB with CD = 3a, i.e. ¾ of the way from C to B	2	B1 for D on CB
29	(a)	$3(2x - y)(2x + y)$	2	B1 for $3(4x^2 - y^2)$ or $(6x - 3y)(2x + y)$ etc.
	(b)(i)	$x^2 - 6x + 9$	2	B1 for three terms correct out of four in $x^2 - 3x - 3x + 9$
	(b)(ii)	p = 3, q = 1	2	B1 for each
		Total	**100**	