



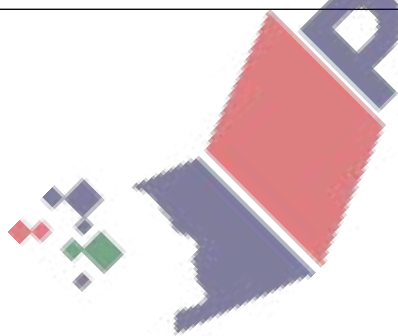
Topical Worksheets for Cambridge O LEVEL Mathematics D (4024)

[Mark Scheme](#)

1st edition, for examination until 2025

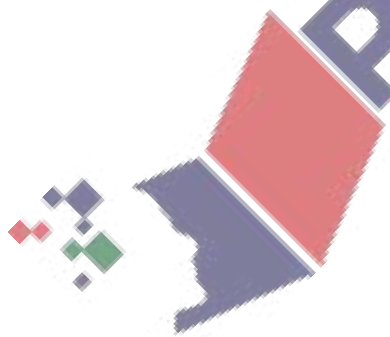
Question	Answer	Marks	AO Element	Notes	Guidance
1	$7n + 5$ oe final answer	2		B1 for $7n + a$ or $bn + 5$ $b \neq 0$	
2	52	1			
3	7	3		M2 for $166 + 2x = 180$ or better or M1 for $97 - 3x + 69 + 5x = 180$ oe	
4	$x^2 - 12x + 35$	2		B1 for any three of x^2 , $-5x$, $-7x$, $+35$	
5	$4p^7 q^{-1}$	2		B1 for $4p^7 q^a$ or $4p^b q^{-1}$ or $\frac{4p^b}{q}$	
6	$7a(3a + 4b)$ final answer	2		B1 for partial factorisation $7(3a^2 + 4ab)$ or $a(21a + 28b)$	
7	M2 for $x + x + 8 + 2x - 3 = 117$ or better M1 for $4x + 5 = 117$ oe or better A1 for 28	4		or B1 for $x + 8$ or $2x - 3$ If 0 scored, SC1 for the correct answer with no algebra	

Question	Answer	Marks	AO Element	Notes	Guidance
8	28, -34	4		Trial and improvement OR B1 for $x + y = -6$ oe B1 for $x - y = 62$ oe B1 for 28 or -34	
9	$2t^4$	2		B1 for $2t^n$ or kt^4 ($n, k \neq 0$)	
10(a)	p^6	1			
10(b)	m^{10}	1			
10(c)	k^{15}	1			
11	$11h - 2w$ final answer	2		M1 for $11h + kw$ or $kh - 2w$	
12	$[y =] 5x - 4$	1			

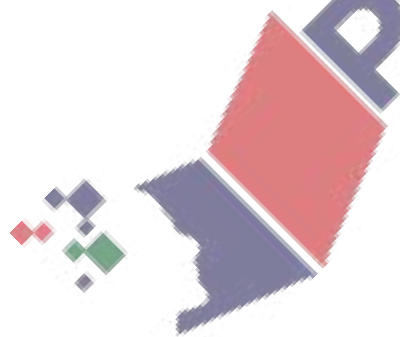


Question	Answer	Marks	AO Element	Notes	Guidance
13	1.8 or $1\frac{4}{5}$	3		<p>M2 for $m = \frac{k}{(p-1)^2}$</p> <p>or M1 for $m = \frac{\text{their } k}{(6-1)^2}$</p> <p>OR</p> <p>M2 for $5(4-1)^2 = m(6-1)^2$</p> <p>oe</p>	
14	5(2x + 3y)(2x - 3y) final answer	3		<p>B2 for</p> <p>(2x + 3y)(2x - 3y)</p> <p>or (10x + 15y)(2x - 3y)</p> <p>or (2x + 3y)(10x - 15y)</p> <p>or B1 for $5(4x^2 - 9y^2)$</p>	
15	990	3		<p>M2 for correct complete area statement</p> <p>e.g.</p> <p>$\frac{1}{2} \times 30 \times (6 + 12) + 60 \times 12$</p> <p>oe</p> <p>or M1 for one area calculation</p>	

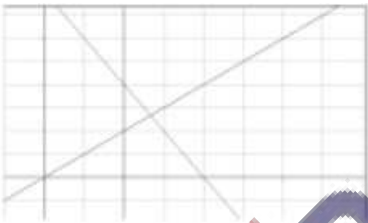
Question	Answer	Marks	AO Element	Notes	Guidance
16	$\frac{3x + 1}{5}$	3		<p>M2 for $x = \frac{3y + 1}{5}$, $5y = 3x + 1$ or $y - \frac{1}{5} = \frac{3x}{5}$</p> <p>M1 for $x = \frac{5y - 1}{3}$, $3y = 5x - 1$ or $y + \frac{1}{3} = \frac{5x}{3}$</p>	
17	$3x^3 - 7x^2 - 43x + 15$	3		<p>B2 for correct expansion and simplification of two of the brackets</p> <p>or B1 for correct expansion of two brackets with at least 3 terms correct</p>	
18	$[p =] - 13$	2		<p>M1 for $4(5x - 4) + 3$ or better</p>	



Question	Answer	Marks	AO Element	Notes	Guidance
19	$x + y < 4$ $y \geq 1.5$ $y \leq 2x + 1$	4		<p>B3 for any two correct OR B1 for $y \geq 1.5$ B2 for $x + y < 4$ or $y \leq 2x + 1$ or $x + y = 4$ and $y = 2x + 1$ or with incorrect inequality signs or B1 for $x + y = 4$ or $y = 2x + 1$ or SC3 for $>$ instead of \geq etc.</p>	
20	4	2		<p>M1 for $y^{\frac{2}{3}} = x^{\frac{1}{6}}$ or $y^2 = \sqrt{x}$ or $y^4 = x$</p>	
21	-2	2		<p>M1 for $(-3)(-2) + (-8)$</p>	



Question	Answer	Marks	AO Element	Notes	Guidance
22	$\frac{2x - 5}{a - 2b}$ final answer	5		<p>B2 for $(2x - 5)(x + 3)$ or B1 for $(2x + p)(x + q)$ where $pq = -15$ or $p + 2q = 1$</p> <p>B2 for $(x + 3)(a - 2b)$ or B1 for $x(a - 2b) + 3(a - 2b)$ or $a(x + 3) - 2b(x + 3)$</p>	
23(a)	$125x^{12}$	2		B1 for $125x^k$ or kx^{12}	
23(b)	$8x^{96}$	2		B1 for $8x^k$ or kx^{96}	
24	$[\pm] \sqrt{\frac{h^2 - x^2}{2}}$	3		<p>M1 for correct rearrangement for y or y² term</p> <p>M1 for correct square root</p> <p>M1 for correct division by 2 or $\sqrt{2}$</p>	
25	-14	2		<p>M1 for $1 - x = 3 \times 5$ or better</p> <p>or $\frac{x}{3} = 5 - \frac{1}{3}$ or better</p>	

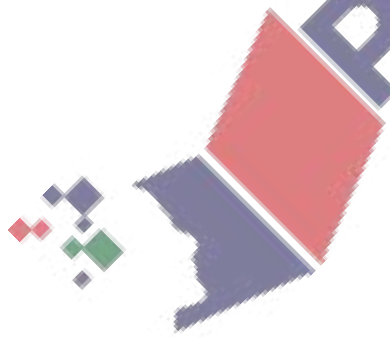
Question	Answer	Marks	AO Element	Notes	Guidance
26	$\frac{2p^2}{t}$	2		B1 for correct unsimplified answer	
27	16	3		M1 for $p = k(q + 2)^2$ M1 for $p = (\text{their } k)(10 + 2)^2$ OR M2 for $\frac{p}{(10 + 2)^2} = \frac{1}{(1 + 2)^2}$ oe	
28(a)	Correct lines and correct region clear 	5		B2 for $2x + y = 8$ correctly ruled or B1 for ruled line with negative gradient B1 for $y = x$ correctly ruled B1 for $x = 2$ correctly ruled	
28(b)	6	1			
29(a)	0.3 oe	1			

Question	Answer	Marks	AO Element	Notes	Guidance
29(b)	3060	3		M2 for $\frac{1}{2} (300 + 210) \times 12$ oe or M1 for one correct part area	
30	[y =] 1	3		M1 for $y = k \times \sqrt[3]{x+3}$ M1 for $y = \text{their } k \times \sqrt[3]{24+3}$ OR M2 for $\frac{y}{\sqrt[3]{24+3}} = \frac{2}{3} \times \frac{1}{\sqrt[3]{5+3}}$ oe	
31(a)	$(x - 9)^2 - 108$	2		B1 for $(x + h)^2 - 108$ or $(x - 9)^2 + h$ or $k = -9$	
31(b)	19.4 or 19.39... - 1.39 or - 1.392...	2		M1FT for $x - \text{their } 9 = \pm \sqrt{\text{their } 108}$ A1 for $9 \pm \sqrt{108}$ or $9 \pm 6\sqrt{3}$	
32(a)	4 7 4	2		B1 for one correct	

Question	Answer	Marks	AO Element	Notes	Guidance
32(b)	Correct curve	4		B3FT for 6 or 7 points correct or B2FT for 4 or 5 points correct or B1FT for 2 or 3 points correct	
32(c)	$x = 1$ oe	1			
32(d)	-1.9 to -1.7 and 3.7 to 3.9	2		B1 for each	
33	$[x =] 2.5$	2		M1 for $12x = 23 + 7$ or $x - \frac{7}{12} = \frac{23}{12}$	
34	8	2		M1 for correct attempt e.g. $12 + 14 + 16 \dots$	
35	$[h =] 8.4$	3		B2 for $38.64 = 4.6h$ or $77.28 = 9.2h$ or $\frac{2 \times 38.64}{5.5 + 3.7}$ or B1 for $38.64 = \frac{(5.5 + 3.7)h}{2}$ or M1 for $[h =] \frac{2A}{a + b}$	

Question	Answer	Marks	AO Element	Notes	Guidance
36	$27 - 9x$	1			
37	$2c - 3d$ final answer	2		B1 for $2c$ or $-3d$	
38(a)	$3x = 5y$ oe $2y = x + 4$ oe	2		B1 for each	
38(b)	$[x =] 20$ $[y =] 12$	3		M1 for correctly eliminating one variable B1 for one correct	
39	$5x(1 - 4x)$ final answer	2		B1 for $5(x - 4x^2)$ or $x(5 - 20x)$	
40(a)	25, 87, 329 circled	1			
40(b)	7	1			
40(c)	8	2		M1 for $\frac{349}{39}$ or B1 for at least four of 39, 78, 117, 156, 195, 234, 273, 312	
40(d)(i)	$2n - 1$ oe	2		B1 for $2n + c$ or $kn - 1$, $k \neq 0$	

Question	Answer	Marks	AO Element	Notes	Guidance
40(d)(ii)	79	1		FT <i>their</i> (d)(i) if linear	
40(d)(iii)	175	2		M1 for <i>their</i> $(2n - 1) = 349$ or $\frac{348}{2} + 1$ or $\frac{350}{2}$	
40(e)(i)	$350 - 2n$ oe	2		B1 for $-2n + c$ or $kn + 350, k \neq 0$	
40(e)(ii)	174 $n \geq 175$ gives house numbers that are zero/negative	2		B1 for each If 0 scored, SC1 for 175	
					[Total: 128]



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