



OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

MATHEMATICS A

A501/02

Unit A (Higher)

Specimen Mark Scheme

The maximum mark for this paper is **60**.

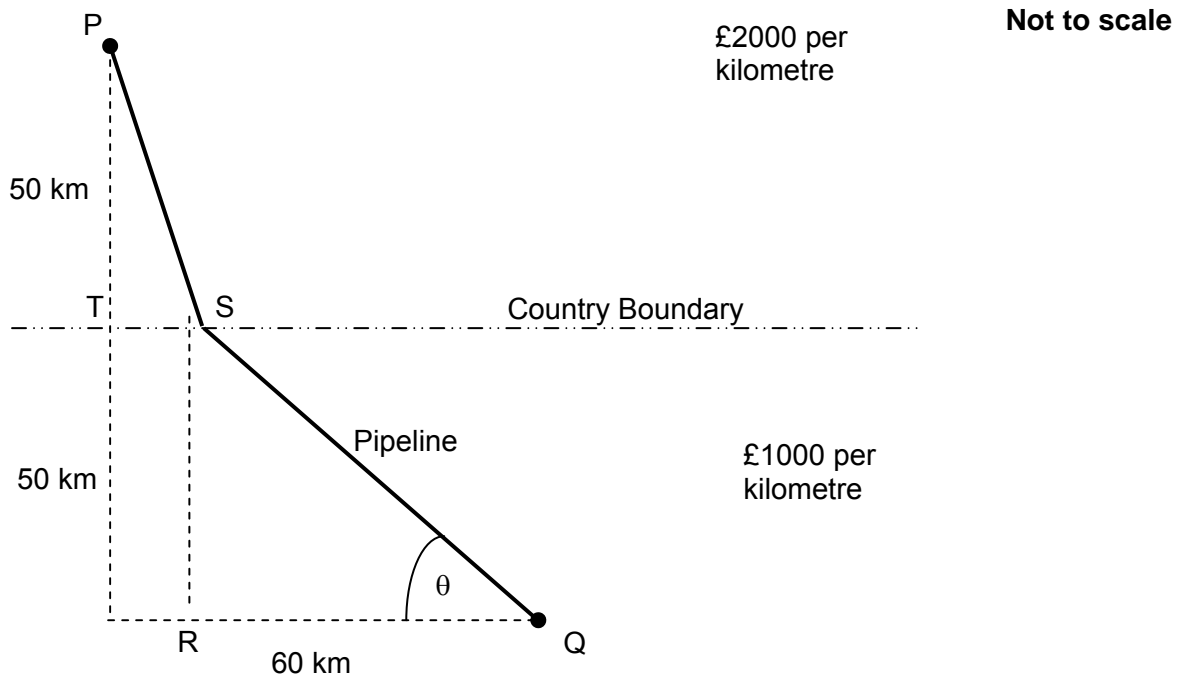
This document consists of **8** printed pages.

1	(a)	(i) 100	1	
		(ii) 7	3	Or M2 for $3y = 21$ Or M1 for $3y$ or 21
		(iii) $-17/7$ oe	4	Or M3 for $7x = -17$ Or M2 for both $8x - 12$, $15x + 3$ and some attempt to simplify Or M1 for either $8x - 12$ or $15x + 3$
	(b)	$\frac{t+v}{2}$	2	Or M1 for $t + v$
2	(a)	32 128	2	Allow M1 for $160/5$
	(b)	4800	3	Or M2 for $600/2 \times 16$ Or M1 for anything $\times 16$
3	(a)	Perpendicular bisector drawn with arcs ($\pm 2^\circ$, $\pm 2\text{mm}$). At least one correct point indicated	3	Or M1A1 for bisector only Or M1 if outside tolerance but arcs clear Or SC1 if no construction and at least one correct position indicated
	(b)	Correct area indicated, scale correct	3	Or B1 for (at least) one semicircular arc radius 4cm And B1 for 2 straight lines at least 6cm long, 4cm from the sprinkler and parallel
4	(a)	0.625 or $5/8$	1	
	(b)	3.27	3	Or M2 for $3.274(\dots)$ or 3.2 Or M1 for 10.72 Or SC1 for a clear rounding to 2dp

5	(a)	Potatoes in this class must be greater than 100	1	
	(b)	(i) 0.12×100 (or area) = 12	1	
		(ii) 90	2	M1 for $12 + 20 + 34 + 24$ (at least 2 correct)
	(c)			<p>KE(0 small), MP(12/90 small), D(0 small) Mean 255, 236.6, 303 Mode 2-300, 2-300, 3-400 (or 330) Median 2-300, 2-300, 325</p> <p>2 Consideration of small potatoes B2, 1, 0 4 Calculation of averages B4, 3, 2, 1, 0 (means using mid-interval and attempts to estimate a value for median within class can score up to 4 marks, medians up to 3, modes up to 2) 1 Comparison of at least 2 averages (same type) B1 2 Interpretation of results B2, 1, 0</p>
6	(a)	15, 24	2	1 each
	(b)	$4n + 2$	2	Or M1 for $4n$ seen
7	(a)	$6.6(3\dots)$	3	Or M2 for $\sqrt{12^2 - 10^2}$ Or M1 for 12^2 and 10^2 seen
	(b)	5.4 or $5.3(8\dots)$	2	Or M1 for $\sqrt{2^2 + 3^2 + 4^2}$
8		A correct cost for a route plus a comment	7	<p>See angles, lengths and costs on back page M1 Attempt to calculate any length using trig And M1 for calc of length QS And M1 for calc of length QR And M1 for calc of length TS And M1 for calc of length PS And M1 for calc of total cost And B1 for comment interpreting <i>their</i> result</p>

9	(a)	(i) $2 \times 2 \times 3 \times 5$	2	Or M1 for factor tree or evidence of repeated division
		(ii) 30	2	Or M1 for writing 210 as prime factors or for at least two factors of both 60 and 210 listed (not incl. 1 itself)
	(b)	2205	2	Or M1 for 12×17 or for at least two multiples of both 12 and 17 listed (not incl. 1 itself)

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Theta	Rads	QS	Cost of QS	RQ	TS	PS	Cost of PS	Total cost
40	0.698132	77.78619	77786.19134	59.58768	0.41232	50.0017	100003.4	177789.6
41	0.715585	76.21265	76212.65434	57.51842	2.48158	50.06154	100123.1	176335.7
42	0.733038	74.72383	74723.82749	55.53063	4.469374	50.19936	100398.7	175122.5
43	0.750492	73.31396	73313.95928	53.61844	6.381564	50.4056	100811.2	174125.2
44	0.767945	71.97783	71977.82698	51.77652	8.223484	50.67174	101343.5	173321.3
45	0.785398	70.71068	70710.67812	50	10	50.9902	101980.4	172691.1
46	0.802851	69.50818	69508.17955	48.28444	11.71556	51.35421	102708.4	172216.6
47	0.820305	68.36637	68366.37305	46.62575	13.37425	51.75781	103515.6	171882
48	0.837758	67.28164	67281.63648	45.0202	14.9798	52.19573	104391.5	171673.1
49	0.855211	66.25065	66250.64967	43.46434	16.53566	52.66335	105326.7	171577.3
50	0.872665	65.27036	65270.36447	41.95498	18.04502	53.15659	106313.2	171583.5
51	0.890118	64.33798	64337.97829	40.4892	19.5108	53.67189	107343.8	171681.7
52	0.907571	63.45091	63450.91075	39.06428	20.93572	54.20613	108412.3	171863.2
53	0.925025	62.60678	62606.78291	37.6777	22.3223	54.7566	109513.2	172120
54	0.942478	61.8034	61803.39887	36.32713	23.67287	55.32093	110641.9	172445.3
55	0.959931	61.03873	61038.72944	35.01038	24.98962	55.89706	111794.1	172832.8
60	1.047198	57.73503	57735.02692	28.86751	31.13249	58.90018	117800.4	175535.4

Assessment Objectives and Functional Elements Grid

GCSE MATHEMATICS A

A501/02: Unit A (Higher)

Qn	Topic	AO1	AO2	AO3	Functional
1	Solve, rearrange	10			
2	Ratio	2	3		
3	Loci		6		3
4	Using a calculator	4			
5	Statistics		8	5	8
6	Sequences	4			
7	Pythagoras	5			
8	Trigonometry		2	5	7
9	Prime factors, HCF, LCM	4	2		
	TOTAL	29	21	10	18

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