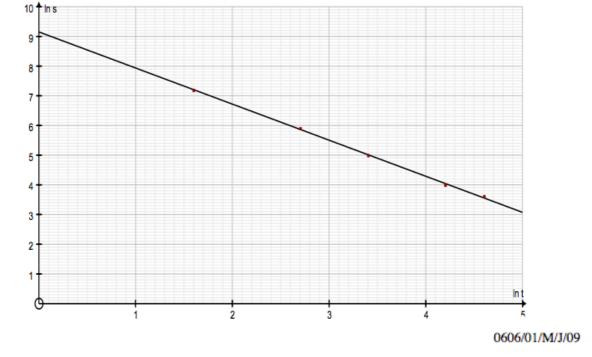
1)

11 (i) $\ln s = n \ln t + \ln k$ $\ln t$	M1, A1 M1 A1	M1 for attempt to take logs A1 for correct form M1 for attempt to plot correct graph A1 for a reasonable straight line
(ii) grad $n = -1.2$ (-1.4 to -1.0) Intercept = $\ln k$, leading to $k = 7900 - 10000$	[4] M1, A1 M1, A1 [4]	M1 for use of grad = n M1 for use of intercept = $\ln k$
(iii) when $t = 50$, $\ln t = 4.4$ leading to $s = 80 (72 - 92)$	M1 A1 [2]	M1 for attempt to obtain s
Alternative method (i) $\lg s = n \lg t + \lg k$		
lg t 0.7 1.2 1.5 1.8 2 lg s 3.1 2.5 2.2 1.7 1.6		Same scheme applies



2)

(i) plot xy against 1/x with linear scales M1 xy 4.5 3.24 2.82 2.64

0.125

A2, 1, 0

(ii) attempt at gradient using plotted points DM1 5 ± 0.2 A1 intercept 2 ± 0.1 B1 (or A1 if calculated from y = mx + c) use Y = mX + c in correct way M1 $y = \frac{5}{x^2} + \frac{2}{x}$ or $y = \frac{5+2x}{x^2}$ or $y = \frac{1}{x} \left(\frac{5}{x} + 2 \right)$ A1 $\sqrt{ }$

0.17

0.25

1/x

0.5

(iii) read from graph or substitute in formula to find x M1 $x=2.5\pm0.2$ A1 $y=1.6\pm0.1$ A1 0606/02/O/N/08

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3)

4 (i)	gradient = 2, equation of line of form $Y = mX + c$, where $c = 0.6$ $\therefore e^y = 0.6$	M1 A1	[2]	M1 for attempt to get equation of straight line
(ii	$e^{y} = 2x^{2} + 0.6$	A1		A1 for correct form (allow if seen in (i))
	$\therefore y = \ln(2x^2 + 0.6)$	M1 A1		M1 for attempt to take ln
			[3]	0606/01/M/J/08

4)

9 (i)								
y	14.4	10.8	6 11.2 67	12.6	14.4	M1 A1		Knows what to do. Mark from graph – 5 points are in line
Xy X²	29 4	43 16	36	101 64	144 100		[2]	Mark from graph – 5 points are in line
(ii) Gradient 1.2 (±0.1) 'y' intercept (±2)					B1 B1		co co	
$\to y = 1.2x + \frac{24}{x}$					M1 A1	[4]	xy = (their grad)x + (their intercept)	
(iii) From graph $xy = 83 \rightarrow x^2 = 49$ Valid method to obtain y y = 11.6 - 12.2				49	M1 M1 A1	[3]	Reads on vertical axis at 83 Valid method to obtain y co 0606/01/O/N/0	

5)

M1	Knows what to do.
A2,1,0 [3]	Accuracy.
B1 B1	Within given range – graph needed
M1	Uses $Y = mX + c$
A1√ [4]	Correct form with his m and c .
M1	Uses $1/y$ and $1/x$ correctly – or solves equation from part (ii).
A1 [2]	co within range. 0606/01/M/J/07
	A2,1,0 [3] B1 B1 M1 A1√ [4] M1 A1

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6)					
,	11	(i)	plot xy against $1/x$ with linear scales	M1	
			xy 4.5 3.24 2.82 2.64		
			1/x 0.5 0.25 0.17 0.125	A2, 1, 0	
		(ii)	attempt at gradient using plotted points	DM1	
			A1		
			intercept 2 ±0.1	B1	
			(or A1 if calculated from $y = mx + c$)		
			use $Y = mX + c$ in correct way	M1	
			$y = \frac{5}{x^2} + \frac{2}{x}$ or $y = \frac{5+2x}{x^2}$ or $y = \frac{1}{x} \left(\frac{5}{x} + 2 \right)$	A1√	
		(iii)	read from graph or substitute in formula to find x	M1	
		(111)	$x = 2.5 \pm 0.2$	Al	
			$y = 1.6 \pm 0.1$	Al	[11]
			y 1.0 ±0.1	711	[**]

0606/02/SP/11