Question	Scheme	Marks
4 (a)	$S_{dg} = 141978.84 - \frac{1456.8 \times 713.2}{8}$ or $S_{gg} = 72675.98 - \frac{713.2^2}{8}$	M1
	$S_{dg} = 12105.12$	A1
	$S_{gg} = 9094.2$	A1
		(3)
(b)	$r = \frac{"12105.12"}{\sqrt{16769.78 \times "9094.2"}}$	M1
	$= 0.9802\ldots.$ awrt **0.98**	A1
		(2)
(c)	$b = \frac{"12105.12"}{16769.78} [= 0.7218...]$	M1
	$a = \frac{713.2}{8} - "0.7218..." \times \frac{1456.8}{8} [= -42.297....]$	M1
	$g = -42.3 + 0.722d$ *	A1*cso
		(3)
(d)	for each 1 [cm] increase in length/d the girth/g increases by "0.722…"	B1
		(1)
(e)(i)	138.2 awrt **138**	B1
(ii)	[unreliable] as get a negative girth	B1
		(2)
(f)	$0.722x = 17.3$	M1
	$x = 23.96...$ awrt **24**	A1
		(2)
	Notes	**Total 13**

(a)	**M1**	for a correct expression for S_{dg} or S_{gg}
	A1	for 12105.12 Allow $\frac{302628}{25}$
	A1	for 9094.2 Allow $\frac{45471}{5}$
		If exact answers are not seen then SC award M1A0A1 for both awrt 12100 and awrt 9090 if correct methods are seen If exact answers are not seen then SC award M1A0A0 for both awrt 12100 and awrt 9090 if no working seen
(b)	**M1**	for a valid attempt at r with their S_{dg} not equal to 141978.84
	A1	awrt 0.98
(c)	**M1**	for a correct method to find the value of b May be implied by 0.7218 or better
	M1	for a correct method to find a ft their b May be implied by –42.29 or better
	A1*	both method marks must be awarded with sight of 0.7218 or better **or** –42.29 or better
(d)	**B1**	for a suitable contextual comment that mentions 0.722 (or better) If units are stated they must be correct.
(e)(i)	**B1**	awrt 138 Allow 1.38m
(ii)	**B1**	For a correct reason eg sd = 45.8 cm so girth is nearly 3sd below mean so likely outlier Allow substitution of 50 leading to g = –6.2 and suitable reason e.g. this is not possible/this is negative Do not allow substitution of 0.5 to imply the girth is negative
(f)	**M1**	for a correct equation. implied by awrt 24
	A1	awrt 24