Qu	Scheme	Marks
2(a)	$S_{tw} = 2304.53 - \frac{297.8 \times 114.8}{15}$ or $S_{ww} = 6089.12 - \frac{297.8^2}{15}$	M1
	$S_{tw} = 25.367...$ **awrt 25.4**	A1
	$S_{ww} = 176.797$ **awrt 177**	A1
		(3)
(b)	$r = \frac{"25.367"}{\sqrt{5.3173 \times "176.797..."}}$	M1
	$= 0.82735\ldots$ **awrt 0.827 or 0.828**	A1
		(2)
(c)	$b = \frac{"25.367..."}{5.3173} [= 4.77065...]$	M1
	$a = \frac{297.8}{15} - \frac{"25.367"}{5.3173} \times \frac{114.8}{15} [= -16.658....]$	M1
	b = 4.771 or better **or** a = –16.66 or better seen **and** $w = -16.7 + 4.77t$ *	A1*cso
		(3)
(d)	[On average,] for each **cm/1 cm** of tail **length/*t*** the **weight/*w* increases** by **4.77 g/grams**	B1
		(1)
(e)	$w = -16.7 + 4.77 \times 2 [= -7.16]$ or $4.77 \times 2 [= 9.54]$ or $[t =] \frac{16.7}{4.77} [= 3.5]$ or sd = awrt 0.6	M1
	$[w =] -7.16$ or 9.54 < 16.7 or 2 < 3.5 which is negative/weight cannot be negative or for sd extrapolation since a 2 cm tail is (approx 9 sd)/(more than 3 sd) from the mean	A1
		(2)
(f)	0.827	B1ft
		(1)
(g)	$2y + 10 = -16.7 + 4.77(x + 6)$ oe	B1ft
		(1)
	Notes	**Total 13**
(a)	M1 for a correct expression for S_{tw} or S_{ww}	
	A1 awrt 25.4	
	A1 awrt 177	
(b)	M1 for a valid attempt at r with their S_{tw} not equal to 2304.53 and S_{ww} not equal to 6089.12	
	A1 (M2 on epen) awrt 0.827 or awrt 0.828	
(c)	1st M1 for a correct method to find the value of b	
	2nd M1 ft their b. For a correct method to find a. Minimum shown a = awrt 19.9 – "their b" × awrt 7.65 $[= -16.658]$	
	A1* Both method marks must be awarded, equation stated (no fractions) **and** sight of (4.771 or better) **or** (−16.66 or better)	
(d)	B1 For a suitable contextual comment that implies that as length increases by 1 cm weight increases by 4.77g. Allow multiples eg each 10 cm increase in tail length weight increases by 47.7g Allow in terms of t and w	
(e)	M1 for a correct method to calculate the value of w (condone if written as a fraction) or $4.77 \times 2 [= 9.54]$ or correct method to find tail length when w = 0 or sd = awrt 0.6	
	A1 Method mark must be awarded. For –7.16 or 9.54 < 16.7 or 2 < 3.5 **with** a relevant explanation stating that weight is negative. If sd = awrt 0.6 is given allow extrapolation since a 2 cm tail is (approx 9 sd)/(more than 3 sd) from the mean.	
(f)	B1ft follow through their answer to (b)	
(g)	B1 ISW no need to be simplified. Allow equivalent eg $y = \frac{-16.7 + 4.77(x + 6)}{2} - 5$ The correct simplified equation is $y = 2.385x + 0.96$ allow awrt 2.39 and 0.96 – 0.98	