Question Number	Scheme	Marks
1(a)	$\left[S_{xy} =\right]$ $= \underline{\mathbf{1818}}$	B1 **(1)**
(b)	$b = \dfrac{"1818"}{1754}$ [=1.036 or $\frac{909}{877}$] **ALT**	M1
	$c = -"1.036..." \times \dfrac{5}{8}$ or $\bar{f} = 80 \times \dfrac{5}{8} + 3500$	M1
	$= -0.6478$ [or $\frac{4545}{7016}$] or $\bar{h} = 4500$ and $\bar{f} = 3550$	A1
	$y = 1.04x - "0.6478..."$ or eqn of form $h = \ldots + 1.04f$	A1ft
	$\dfrac{h-4500}{80} = "1.036" \times \dfrac{f-3500}{80} - 0.6479...$ or $4500 - "1.04" \times 3550 = (820.467..)$	dM1
	$h = 820 + 1.04f$	A1 **(6)**
(c)	On average for every increase in area of 1 (m^2) the annual heating bill increases by approximately (\$) 1.04	B1ft
	The cost of heating is (\$) 820 even if there is no floor space (no building) or the "standing charge" / "base rate" etc is (\$) 820	B1ft **(2)**
(d)	"820.46..." + "1.036..." $\times 4600$	M1
	= (\$) 5588.31… ans in range (**5560-5610**)	A1 **(2)**
		Total 11

	Notes
(b)	1st M1 for use of $\frac{S_{xy}}{S_{xx}}$ ft their S_{xy} (allow correct use of S_{fh} etc)
	2nd M1 for $c = -(\text{their } b) \times \dfrac{5}{8}$ or **ALT** for a correct expression for $\bar{f}$
	1st A1 awrt –0.648 or **ALT** for correct values for both $\bar{h}$ and $\bar{f}$
	2nd A1ft for equ'n in the form $y = c + bx$ with their c and b = awrt 1.04 (dep on 1st M1 only) or **ALT** for $h = \ldots +$ (awrt 1.04)f [ignore any intercept]
	3rd dM1 (dep on 2nd M1) for substituting $\frac{h-4500}{80}$ and $\frac{f-3500}{80}$ into their regression line of y on x or **ALT** for correct method for intercept in h, f equation – ft their 1.04
	3rd A1 for $h =$ awrt $820 +$ awrt $1.04f$ [Do **not** allow fractions for this final mark]
(c)	**Must see correct words used, not just letters *f* and *h***
(i)	B1ft for correct interpretation need: "increase of area by 1" and "increase in bill by "1.04"" Can be other words giving same idea but must see their 1.04 (can ignore units)
(ii)	B1ft for a suitable explanation e.g. "cost if area is zero" Must see "their 820" (which must be > 0) but can ignore units. Accept reasonable alternatives to "standing charge"
(d)	M1 for substituting 4600 into their regress' line of h on f (or use of x = 13.75 in y, x equation) A1 allow answers in range 5580 - 5610