Question Number	Scheme	Marks
5. (a)	$y = 6.066 + 0.136\times 80$ $= 16.946$ (so annual rent is) **$ 16 946**	M1 A1 (2)
(b)	$S_{yy} = 3434 - \frac{183^2}{10}$ or $S_{xx} = 84\,818 - \frac{900^2}{10}$ $S_{yy} =$ **85.1** $S_{xx} =$ **3818**	M1 A1 A1 (3)
(c)	Need S_{xy} so use b so $S_{xy} = b\times S_{xx} = 0.136\times 3818$ or 519.248 $[r =] \frac{0.136\times "3818"}{\sqrt{"3818"\times "85.1"}}$ $= 0.9109448\ldots$ awrt **0.911**	M1; A1 M1 A1 (4)
(d)	Since (new $x = 90$ and [original or] new $\bar{x} = 90$) the term $(x - \bar{x})$ will be 0 Therefore (the 11th shop makes no change) S_{xy} stays the same	M1 A1 (2)
(e)	S_{xx} will be the same so b will be the same New $\bar{y} = \frac{183+15}{11} = 18$ (or a is reduced by 0.3) Equation is ***y* = 5.766 + 0.136*x***	M1 M1 A1 (3)
(f)	$x = 300$ is outside the range $300 \gg 90$ [$300 \gg 90 + 3\sigma = 90 + 3\times 18.63.. \approx 146$] So not suitable (since involves extrapolation) (o.e.)	B1 (1) **[15]**

	Notes
(a)	M1 for substituting $x = 80$ into the given equation A1 for awrt \$ 16 900 (or better)(allow "16.9 thousand dollars"). Must have some units. Condone $y =$
(b)	M1 for a correct expression for either (can be implied by sight of either correct answer) 1st A1 for 85.1 2nd A1 for 3818 or accept 3820
(c)	1st M1 for an attempt to use gradient of regression line to find S_{xy} 1st A1 for awrt 519 2nd M1 for a correct expression using their values (M0 if $S_{xy} = 900\times 183 = 164700$) 2nd A1 for awrt 0.911
(d)	M1 for stating or showing [old or] new $\bar{x}$ =90 (new $x = 90$ implied) or stating that $(x - \bar{x})$ term = 0 A1 for a fully correct argument mentioning new $x = \bar{x} = 90$ and that extra $(x - \bar{x})$ term = 0 Condone using $\bar{y} = 18.3$ instead of 18
(e)	1st M1 for a correct statement about S_{xx} or b (may be implied by 0.136 used correctly) 2nd M1 for a correct value for new $\bar{y}$ (calculation may be seen in (d) scores here when 18 is used) A1 for $y = 5.766$ (or awrt 5.77 or awrt 5.76) + $0.136x$ (correct equation scores 3/3)
(f)	B1 for suitable comparison (must see 300 vs 90 or 3000 vs 900) that says or implies that 300 will be outside the range and therefore not suitable. Not sufficient to just say "larger"