Question Number	Scheme	Marks
8 (a)	$[a =]625+625-886=]364$	B1
	$[b =]42^2+42^2+45^2=5553$	M1 A1
		(3)
(b)	$X = L - 3S$	
	$\left[\mathrm{E}(X)=886-3\times265=\right]91$	M1
	$\left[\mathrm{Var}(X)=\right]45^2+3^2\times78^2=56781$	M1 A1
	$\left[\mathrm{P}(X>0)=\right]\mathrm{P}\left(Z>\dfrac{0-91}{\sqrt{56781}}\right)$	M1
	$\left[\mathrm{P}(Z>-0.38)=\right]0.6480$ Cal gives 0.64865… So awrt 0.648 – 0.649	A1
		(5)
(c)	$Y=\dfrac{S_1-S_2}{2}$ $\quad R=S_1-S_2$	M1
	$\left[\mathrm{E}(Y)=\dfrac{265-265}{2}=\right]0$ $\quad \left[\mathrm{E}(R)=265-265=\right]0$	M1
	$\left[\mathrm{Var}(Y)=\right]\dfrac{78^2+78^2}{4}=3042$ $\quad \left[\mathrm{Var}(R)=\right]78^2+78^2=12168$	M1
	$\left[\mathrm{P}(Y>100)=\right]\mathrm{P}\left(Z>\dfrac{100-0}{\sqrt{3042}}\right)$ $\quad \left[\mathrm{P}(R>200)=\right]\mathrm{P}\left(Z>\dfrac{200-0}{\sqrt{12168}}\right)$	M1
	$\left[\mathrm{P}(Z>1.81)=1-0.9649=\right]0.0351$ Cal gives 0.0349 So awrt 0.0349 – 0.0351	A1
		(5)

		Notes	Total 13
(a)	**B1**	Cao	
	M1	For writing or using $2\times\mathrm{Var}(M)+\mathrm{Var}(L)$	
	A1	Cao	
(b)	**M1**	for seeing or using E(X) = 91 or correct expression for mean	
	M1	for writing or using $\mathrm{Var}(L)+3^2\mathrm{Var}(S)$	
	A1	Cao	
	M1	for standardising using their mean and standard deviation (Allow ±)	
	A1	awrt 0.648 – awrt 0.649	
(c)	**M1**	for use of $\frac{S_1-S_2}{2}$ or S_1-S_2	
	M1	for writing or using E(Y) = 0 or E(R) = 0	
	M1	for using Var (Y) = 3042 or Var(R) = 12168	
	M1	for standardising using their mean and standard deviation (Allow ±)	
	A1	awrt 0.0349 – awrt 0.0351	