Question Number	Scheme	Marks
6 (a)	$M \sim N(80,100)$ $W \sim N(69,25)$ $X = M_1 + M_2 + M_3 + M_4 + M_5 + M_6 + W_1 + W_2 + W_3$	
	$X \sim N(687,675)$	M1 A1
	$P(X > 700) = P\left(Z > \frac{700-687}{\sqrt{675}}\right) = P(Z > 0.500...)$	M1
	$(= 1 - 0.6915) = 0.3085$ (Calculator gives 0.3084)	A1
		(4)
(b)	Let Y = Number of men in the lift	
	$Y \sim N(80x, 100x)$	M1
	$P(Y > 700) = P\left(Z > \frac{700-80x}{10\sqrt{x}}\right) < 0.025$	M1
	$\frac{700-80x}{10\sqrt{x}} > 1.96$	B1
	$80x + 19.6\sqrt{x} - 700[< 0]$ | $6400x^2 - 112384.16x + 490000[> 0]$	M1
	Solving leading to $\sqrt{x} < 2.838...$ | Solving leading to $x < 8.05...$	M1
	So c = 8 (people)	A1
		(6)

	Notes		Total 10
(a)	**B1**	for setting up normal distribution with mean 687	
	B1	for a correct variance (675) or for standard deviation ($15\sqrt{3}$)	
	M1	for standardising with 700, 687 and their standard deviation	
	A1	for answer between 0.308 – 0.309	
(b)	**M1**	for setting up normal distribution with mean 80x and variance 100x (may be implied by use of sd = $10\sqrt{x}$) Allow any letter	
	M1	for standardising with 700, their mean and their standard deviation (if not stated then these must be correct)	
	B1	for an equation or inequality set = to 1.96 (Allow – 1.96)	
	M1	for a correct 3TQ ft their mean and standard deviation	
	M1	for an attempt to solve their 3TQ with either $\sqrt{x} < ...$ or $x < ...$ Allow = instead of < Condone > or $\geqslant$ If the answer is incorrect then we must see use of the quadratic formula/completing the square (Allow one error)	
	A1	cao	