5.	Objective function is maximised at $C(9, 22)$ and minimised at $A(6, 8)$	B1
	Let $P = \lambda(4x + 4.5y)$	M1
	$540 = \lambda(4(9) + 4.5(22)) \Rightarrow \lambda = \ldots$	M1
	$P_{\min} = '\lambda'(4(6) + 4.5(8))$	dM1
	$P_{\min} = 240$	A1 **(5)**
		5 marks
	Notes for Question 5	
1B1	Recognises that the objective function is maximised at C and minimised at A (possibly implied by later working). Award if correct coordinates (9, 22) and (6, 8) used in their calculations. Sight of $9a + 22b = 540$ and $6a + 8b = k$ earns this mark.	
1M1	Setting up an objective function of the form $\lambda(4x + 4.5y)$ or $\lambda(4.5x + 4y)$ Allow consideration of $4x + 4.5y$ or any multiple Considers the gradient of the objective function $-\frac{8}{9}$ Considers ratio between a and b (e.g. $4b = 4.5a$)	
2M1	A correct **approach** to find the objective function. $(P =)\ 16x + 18y$ earns this mark (if no incorrect working seen). This may be implied by consideration of e.g. 540/135 Candidates may adopt alternative algebraic approaches using $9a + 22b$ and forming simultaneous equations. Any algebraic approach leading to the correct answer with no incorrect working is acceptable. e.g. Setting up an equation in their λ using correct point C and their expression for P and solving for their λ(if correct $\lambda = 4$)	
3M1	Dependent on previous M mark – using point A and their objective function (of the form $\lambda(4x + 4.5y)$ where $\lambda \neq 1$) to get a value for $P_{\min}$	
1A1	CAO ($k = 240$)	