Question Number	Scheme	Marks
6.(a)	$4y \le 7x + 8$ $4y \ge x + 8$ $3x + 4y \le 24$	B1 B1 **(2)**
(b)	Min value of P is $8 \Rightarrow 2b = 8 \ \therefore b = 4$	B1
	Solve $4y = 7x + 8$ and $3x + 4y = 24$ simultaneously (to give $\mathrm{B}\left(\frac{8}{5}, \frac{24}{5}\right)$)	M1
	$\mathrm{C}(4,3) \Rightarrow P = 4a + 12, \mathrm{B}\left(\frac{8}{5}, \frac{24}{5}\right) \Rightarrow P = \frac{8}{5}a + \frac{96}{5}$	M1
	$4a + 12 > \frac{8}{5}a + \frac{96}{5} \Rightarrow a > \ldots$	M1
	$a > 3$	A1 **(5)**
		7 marks

Notes for Question 6

a1B1: One correct inequality (allow strict inequality)
a2B1: All three inequalities correct (allow any equivalent forms)
b1B1: $b = 4$ (only)
b1M1: Solve correct pair of simultaneous equations to find B – this mark can be implied by correct coordinates of B stated
b2M1: Either linear expression in terms of a only (using their value of b) for either the correct C or their B (their B must be correct or a method for solving the correct simultaneous equations to find B must be seen)
b3M1: Their linear expression in a only for C compared to their linear expression in a only for B (allow any inequality or equals) and attempting to solve for a – this mark is dependent on one correct expression in a
b1A1: CAO ($a > 3$ only)

Alternative approach for (b)

b1B1: $b = 4$ (only)

b1M1: Finding the gradient of $3x + 4y = 24$ e.g. $y = -\frac{3}{4}x + 6 \Rightarrow m = -\frac{3}{4}$ the gradient must either be stated explicitly or used later

b2M1: Gradient of the objective function stated as $-\frac{a}{b}$ (or used later) in terms of a only (so must have substituted their value of b)
b3M1: Their gradient of $3x + 4y = 24$ compared to their gradient of the objective function (in terms of a only) – allow any inequality or equals and attempting to solve for a – this mark is dependent on one correct gradient (if correct then should be $-\frac{a}{4} < -\frac{3}{4}$)
b1A1: CAO ($a > 3$ only)

Correct answer with no working please send to review