7.(a)(i)	Let the point of intersection of $-x + 5y = 10$ and the unknown line be $A(a_1, a_2)$ Let the point of intersection of $4x + 8y = 65$ and the unknown line be $B(b_1, b_2)$	
	$a_1 + 3a_2 = 10$ **or** $b_1 + 3b_2 = 24$ $-a_1 + 5a_2 = 10$ $4b_1 + 8b_2 = 65$	M1 A1
	$A\left(\frac{5}{2}, \frac{5}{2}\right)$ **or** $B\left(\frac{3}{4}, \frac{31}{4}\right)$	A1
	$a_1 + 3a_2 = 10$ **and** $b_1 + 3b_2 = 24$ $-a_1 + 5a_2 = 10$ $4b_1 + 8b_2 = 65$	depM1
	$A\left(\frac{5}{2}, \frac{5}{2}\right)$ **and** $B\left(\frac{3}{4}, \frac{31}{4}\right)$	A1
(ii)	$y - \frac{5}{2} = \frac{\frac{31}{4} - \frac{5}{2}}{\frac{3}{4} - \frac{5}{2}}\left(x - \frac{5}{2}\right)$ $(y = -3x + 10)$	ddM1
	$3x + y \geqslant 10$	A1
	$-x + 5y \geqslant 10, 4x + 8y \leqslant 65$	B1 **(8)**
(b)	$k = \frac{15/4}{35/4} = \frac{3}{7}$	M1 A1 **(2)**
		10 marks

Notes for Question 7

ai1M1: Form simultaneous equations to find one of the points of intersection of the unknown line with one of the given lines – allow sign slips only
ai1A1: One correct pair of simultaneous equations (allow any choice of letters for their coordinates)
ai2A1: One correct point (need not be stated as coordinates so $x = \ldots$, $y = \ldots$ is fine)
ai2dM1: Forming both pairs of simultaneous equations (dependent on previous M mark) – allow sign slips only
ai3A1: Both correct points (need not be stated explicitly as coordinates)
aii3ddM1: Find the correct equation of the third line for **their** A and B (dependent on both previous M marks). Allow unsimplified but must be the correct equation for the line passing through their two points. Condone any inequality sign instead of equals
aii4A1: cao (for the third line) – must be three terms but accept any equivalent form e.g. $6x + 2y - 20 \ldots 0$
aii1B1: cao (for the other two given lines) – must be three terms only but accept any equivalent forms

b1M1: Attempt to find the gradient of the line through O and $\left(\frac{35}{4}, \frac{15}{4}\right)$ (condone reciprocal) – ignore use of inequalities or k for this mark e.g. seeing $\frac{15/4}{35/4}$ **or** $\frac{15}{35}$ **or** $\frac{35}{15}$ etc. scores M1

b1A1: cao – need not be simplified e.g. $k = \frac{15}{35}$ scores both marks. Allow $y \ldots \frac{3}{7}x$, or just $\frac{3}{7}$ but not $k \leqslant \frac{3}{7}$ only. If more than one value of k implied then A0

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