Question Number	Scheme	Marks
6(a)	(1, 1), (1, 5)[x2] (5, 5), (1, 10)[x2], (5, 10)[x2], (10, 10)	B1B1
		(2)
(b)	[For M = 1, (1, 1)] $q \times q = \frac{1}{25}$ so $q = \frac{1}{5}$	M1A1
	[For M = 5, (1, 5), (5, 1), (5, 5)] $qr + rq + r^2 = \frac{13}{80}$	M1
	$r^2 + 2(\frac{1}{5})r - \frac{13}{80} = 0 \rightarrow r = \frac{-\frac{2}{5} + \sqrt{(\frac{2}{5})^2 - 4(-\frac{13}{80})}}{2}$ so $r = \frac{1}{4}$	M1A1
	[For M = 10, (1, 10), (10, 1), (5, 10), (10, 5), (10, 10)] $2qs + 2rs + s^2 = \frac{319}{400}$ or $q + r + s = 1$ so $s = \frac{11}{20}$	M1A1
		(7)

	Notes		Total 9
(a)	**B1**	For at least 4 correct pairs	
	B1	For all 6 correct pairs	
(b)	**M1**	For a correct equation to find q May be implied by a correct answer for q	
	A1	$\frac{1}{5}$ oe If more than one answer given then it must be rejected	
	M1	For a correct equation in terms of r and q (ft their q) May be implied by a correct answer for r	
	M1	Attempt to solve 3TQ If the equation is incorrect then working must be shown May be implied by a correct answer for r	
	A1	$r = \frac{1}{4}$ oe If more than one answer given then it must be rejected	
	M1	For a correct equation in terms of s (ft their q and their r) or use of sum of probabilities =1 May be implied by a correct answer for s	
	A1	$s = \frac{11}{20}$ oe If more than one answer given then it must be rejected	
Special Case			
(b)	**M1**	$\frac{q}{q+r+s} \times \frac{q}{q+r+s} = \frac{1}{25}$	
	A0	$q = 4$	
	M1	$\frac{qr}{(q+r+s)^2} + \frac{qr}{(q+r+s)^2} + \left(\frac{r}{q+r+s}\right)^2 = \frac{13}{80}$	
	M1	Let $y = \frac{r}{q+r+s}$ so $y^2 + 2(\frac{1}{5})y - \frac{13}{80} = 0 \rightarrow y = \frac{-\frac{2}{5} + \sqrt{(\frac{2}{5})^2 - 4(-\frac{13}{80})}}{2}$ May be implied by $y = \frac{1}{4}$	
	A0	$r = 5$	

	M1	$\frac{2qs}{(q+r+s)^2}+\frac{2rs}{(q+r+s)^2}+\left(\frac{s}{q+r+s}\right)^2=\frac{319}{400}$
	A0	$s=11$