Question	Scheme	Marks
4(a)	$\frac{10}{50}\times\frac{9}{49}\left[=\frac{9}{245}*\right]$	B1cso
		(1)
(b)	number of counters numbered 4 = 10 numbered 7 = 15 numbered 10 = 25	M1
	M = 4, 5.5, 7, 8.5, 10	B1
	$\mathrm{P}(M=5.5)=2\times\frac{10}{50}\times\frac{15}{49}\left[=\frac{6}{49}\right]$	M1
	$\mathrm{P}(M=7)=2\times\frac{10}{50}\times\frac{25}{49}+\frac{15}{50}\times\frac{14}{49}\left[=\frac{71}{245}\right]$	M1
	$\mathrm{P}(M=8.5)=2\times\frac{15}{50}\times\frac{25}{49}\left[=\frac{15}{49}\right]$	M1
	$\mathrm{P}(M=10)=\frac{25}{50}\times\frac{24}{49}\left[=\frac{12}{49}\right]$	
	m | 4 | 5.5 | 7 | 8.5 | 10 $\mathrm{P}(M=m)$ | $\frac{9}{245}$ (awrt 0.037) | $\frac{6}{49}$ (awrt 0.122) | $\frac{71}{245}$ (awrt 0.290) | $\frac{15}{49}$ (awrt 0.306) | $\frac{12}{49}$ (awrt 0.245)	A1
		(6)
(c)	$\left(1-\frac{9}{245}\right)^{n}<0.15$	M1
	n = 50.689… or n = 50 is 0.1539… or n = 51 is 0.148… or $[n>]\frac{\log 0.15}{\log(1-\frac{9}{245})}$	M1
	n = 51	A1
		(3)

	Notes	Total 10
(a)	**B1**	A correct equivalent expression
(b)	**M1**	For 10, 15 and 25 - may be seen in (a) or may be seen in probability expressions
	B1	all means correct with no incorrect extra unless they have a probability of 0
	M1	One correct probability (not including 9/245)
	M1	Two correct probabilities (not including 9/245)
	M1	Three correct probabilities (not including 9/245)
	A1	fully correct. need not be in a table but must have correct probability associated with correct mean
	SC	**With replacement** using probabilities $\frac{10}{50},\frac{15}{50},\frac{25}{50}$ gives $\frac{3}{25},\frac{29}{100},\frac{3}{10},\frac{1}{4}$ can score maximum M1B1M1(two correct)M1(four correct)M0A0
(c)	**M1**	Setting up a correct inequality (allow any inequality or equal sign here)
	M1	for a value n = awrt 50.7 or awrt 0.154 or awrt 0.148 or correct log expression for n
	A1	51 cao do not allow n…51