Question Number	Scheme	Marks
6 (a)	A sampling distribution is **all** the **values** of a **statistic** (obtained from a random sample) and the associated **probabilities** **or** the **probability distribution** of the **statistic (**under random sampling).	B1 (1)
(b)	$P(6)=\frac{6}{11}$ $P(7)=\frac{3}{11}$ $P(8)=\frac{2}{11}$	B1
	Totals (T) 12, 13, 14, 15, 16	B1
	(6, 6) (6, 7) (6, 8) (7, 6) (7, 7) (7, 8) (8, 6) (8, 7) (8, 8)	B1
	$[P(T=12)=]\ "\left(\frac{6}{11}\right)"^2=\left[\frac{36}{121}\right]$	
	$[P(T=13)=]2\times "\left(\frac{6}{11}\right)"\times "\left(\frac{3}{11}\right)"=\left[\frac{36}{121}\right]$	M1
	$[P(T=14)=]2\times "\left(\frac{6}{11}\right)"\times "\left(\frac{2}{11}\right)"+"\left(\frac{3}{11}\right)"^2=\left[\frac{33}{121}\right]$	M1
	$[P(T=15)=]2\times "\left(\frac{3}{11}\right)"\times "\left(\frac{2}{11}\right)"=\left[\frac{12}{121}\right]$	M1
	$[P(T=16)=]\ "\left(\frac{2}{11}\right)"^2=\left[\frac{4}{121}\right]$	
	T: 12, 13, 14, 15, 16 $P(T=t)$: $\frac{36}{121}$, $\frac{36}{121}$, $\frac{33}{121}$, $\frac{12}{121}$, $\frac{4}{121}$	A1 (7)
(c)	$E(T)="12"\times"\frac{36}{121}"+"13"\times"\frac{36}{121}"+"14"\times"\frac{33}{121}"+"15"\times"\frac{12}{121}"+"16"\times"\frac{4}{121}"$	M1
	$=\frac{1606}{121}=\frac{146}{11}=13.272...$ awrt 13.3	A1 (2)

	Notes	Total 10
6 (a)	**B1**	A correct explanation with the words in bold
(b)	**B1**	Correct probabilities – may be seen in an equation or implied by a correct probability for $T=14$
	B1	All 5 totals correct with no extras
	B1	All 6 basic combinations correct, either seen or used (may be implied by correct probailities) Allow S for 6, M for 7 and L for 8
	M1	Correct method for one probability ft their P(6), P(7) and P(8) If these are not stated then they must be correct
	M1	Correct method for three of the five probabilities ft their P(6), P(7) and P(8) If these are not stated then they must be correct
	M1	Correct method for all five probabilities ft their P(6), P(7) and P(8) If these are not stated then they must be correct or 5 probabilities that add up to 1
	A1	cao Need not be in a table but probabilities must be attached to the correct total
(c)	**M1**	Use of $\sum tP(T=t)$ two or more products ft their table
	A1	awrt 13.3 (Allow $\frac{146}{11}$ oe)