Question Number	Scheme	Marks
6(a)	$\mathrm{P}(V>104.9)=\mathrm{P}\left(Z>\dfrac{104.9-100}{2.5}\right)$	M1
	$=1-0.975$	M1
	$=0.0250$ 0.025 or awrt 0.0250	A1
		(3)
(b)	Expected number $=150\times"0.025"$	M1
	$=3.75$ awrt 3.75	A1
		(2)
(c)	$\left[\mathrm{P}(V>v\,\|\,V<104.9)=\right]\dfrac{[\mathrm{P}(v<V<104.9)]}{\mathrm{P}(V<104.9)}=0.2801$	M1
	$\mathrm{P}(v<V<104.9)=(1-"0.025")-\mathrm{P}(V<v)$	M1
	$\mathrm{P}(V<v)=(1-"0.025")\ -\ (1-"0.025")\times 0.2801$ [=0.7019] oe	dM1
	$\dfrac{v-100}{2.5}=0.53$	M1A1
	v = 101.325 awrt 101.32 or awrt 101.33	A1
		(6)

Notes		**Total 11**
(a)	**M1**	Standardising with 104.9, 100 and 2.5 (allow ±) implied by 1.96 seen
	M1	For use of $1-p$ with $0.9<p<1$ condone answer of 0.0249 for this mark
	A1	Allow 0.025 or awrt 0.0250 (NB calculator answer is 0.02499….) (answer only scores M1M1A1)
(b)	**M1**	For $150\times"$their part $(a)"$
	A1	awrt 3.75 isw after answer of 3.75 seen. If 3.75 not seen, allow 4 if the method mark is awarded.
(c)	**M1**	For writing or using a ratio of probabilities with denominator $\mathrm{P}(V<104.9)$ oe and equating to 0.2801 $\dfrac{p}{\mathrm{P}(V<104.9)}=0.2801$ implied by awrt 0.273 Use of independence is M0 e.g. $\dfrac{x\times\mathrm{P}(V<104.9)}{\mathrm{P}(V<104.9)}=0.2801$
	M1	For writing or using $\mathrm{P}(V>v\cap V<104.9)=\mathrm{P}(V<104.9)-\mathrm{P}(V<v)[=(1-"0.025")-\mathrm{P}(V<v)]$
	ALT	**For first two M marks** $\dfrac{\mathrm{P}(V<v)}{\mathrm{P}(V<104.9)}=1-0.2801$ scores M1M1, then follow scheme.
	dM1	(dep M1) Dependent on previous M1 for rearranging to find $\mathrm{P}(V<v)$ Allow equivalent oe $(1-"\text{their}(a)")(1\ -\ 0.2801)$ NB: [P($V<v$) =] awrt 0.702 implies M1M1M1 or [P($V>v$) =] awrt 0.298 implies M1M1M1
	M1	Standardising with 100, 2.5 and equating to a z-value, $\dfrac{v-100}{2.5}=z$ $0.4<\lvert z\rvert<0.6$ Watch out for $\dfrac{v-100}{2.5}=$probability which is M0
	A1	Correct equation with compatible signs
	A1	awrt 101.33 (allow awrt 101.32 from use of calculator)

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