Question Number	Scheme	Marks
2(a)	H_0: There is no association between gender and favourite activity (independent) H_1 : There is an association between gender and favourite activity (dependent)	B1
		M1
	Expd | **Water sports** | **Bushcraft** | **Mountain activities** | **Total** **Boys** | 147.6 | 83.17… | 97.228… | (328) **Girls** | 104.4 | 58.828… | 68.771… | (232) **Total** | (252) | (142) | (166) | (560)	A1
	Observed | Expected | $\frac{(O-E)^2}{E}$ | $\frac{O^2}{E}$ 142 | 147.6 | 0.212… | 136.612… 110 | 104.4 | 0.3003... | 115.9003… 96 | 83.17 | 1.978… | 110.807… 46 | 58.83 | 2.797… | 35.968… 90 | 97.23 | 0.537… | 83.308… 76 | 68.77 | 0.759… | 83.988… Totals | 6.5863… | 566.5862613	dM1
	$\chi^2 = \sum \frac{(O-E)^2}{E}$ or $\sum \frac{O^2}{E} - 560$;	dM1
	$= \text{awrt } 6.6$	A1
	$\nu = (2-1)(3-1) = 2$	B1
	$\chi^2_2(0.05) = 5.991 \Rightarrow$ CR: $\chi^2 \geq 5.991$	B1
	[in the CR/significant/Reject H_0]	
	conclude that there is evidence of an **association**(o.e.) between **gender** and favourite **activity**	A1
		(9)
(b)	Bushcraft as these contribute the most to the χ^2 value	B1
		(1)
		Total 10

		Notes
(a)	**B1**	For both hypotheses. Must mention "gender" ***and*** "activity" o.e. at least once. Use of "relationship" or "correlation" or "connection" is B0.
	M1	Some attempt at $\frac{\text{(Row Total)(Column Total)}}{\text{(Grand Total)}}$, can be implied by at least one correct E_i to 1dp
	A1	All expected frequencies are correct to awrt 1dp.
	dM1	At least 2 correct terms for $\frac{(O-E)^2}{E}$ or $\frac{O^2}{E}$ or correct expressions with their E_i .
	dM1	Dep on previous M being awarded. For applying either $\sum \frac{(O-E)^2}{E}$ or $\sum \frac{O^2}{E} - 560$
	A1	awrt **<u>6.6</u>**
	B1	$\nu = 2$ (This mark can be implied by a correct critical value of 5.991)
	B1	5.991 condone 5.99 or p value 0.037…
	A1	Dependent upon 3rd M1 and 3rd B1, correct contextualised conclusion rejecting H_0 Condone "relationship" or "connection" here but **not** "correlation".
(b)	**B1**	Bushcraft and reason – allow comparisons of **proportions**