

8	(a)		$H_0 : p = 0.81$ and $H_1 : p < 0.81$ p is the probability that a young adult (selected at random in England) has never donated blood	B1 B1 [2]	3.3 2.5	$H_0 : \textit{probability} = 0.81$ $H_1 : \textit{probability} < 0.81$ Or proportion NOT number or how many young adults has never donated blood	
8	(b)		0.05	B1 [1]	1.2	Accept 5%, 1/20 oe	

Question			Answer	Marks	AO	Guidance	
8	(c)		324	B1 [1]	1.1	$400 \times 0.81 = 324$	
8	(d)		$0.026 - 0.026125$ BC	B1 [1]	1.1	Percentages acceptable	
8	(e)		$P(X \leq 310) = 0.0448 - 0.045$ [< 0.05] $P(X \leq 311) = 0.0576 - 0.058$ [> 0.05] hence CR is $[0 \leq] x \leq 310$	*M1 *M1 DA1 [3]	2.1 1.1 2.2a	Additional calculations not penalised Accept $x < 311$	SC If no marks scored and state $x \leq 310$ or $x < 311$ B1,
8	(f)		314 is not in critical region accept H_0 there is insufficient evidence at the 5% level to suggest that the percentage of young adults (in England who have never given blood) is less than 81% oe	M1 A1 A1 [3]	1.1 2.2a 2.2b	FT Comparison of 314 with <i>their</i> CR FT consistent with M mark allow “not significant” / “reject H_1 ” Not a definite statement, not prove Oe. Not enough evidence to suggest that the campaign has made more young people donate blood.	or $P(X \leq 314) = 0.114 > 0.05$ SC If prob incorrect but correct comparison and consistent conclusion M1A0A0 If incorrect CR then could get M1A1A0