

Question	Scheme	Marks	AOs
4(a)	$X \sim B(6, \frac{1}{6})$	M1	3.3
(i)	$[P(X = 3) =]$ 0.053583... awrt 0.0536	A1	1.1b
(ii)	$[P(X \geq 3) = 1 - 0.93771... =]$ 0.062285... awrt 0.0623	A1	1.1b
		(3)	
(b)	$H_0 : p = 0.0623$ $H_1 : p > 0.0623$ (allow $H_0 : p = \frac{1}{6}$ $H_1 : p > \frac{1}{6}$)	B1ft	2.5
	[If $Y =$ number who score] $Y \sim B(5, 0.0623)$	M1	3.3
	$P(Y \geq 2) = 1 - P(Y \leq 1)$ $1 - 0.96581... = 0.03418...$ awrt 0.0342	A1	3.4
	[$0.0342 < 0.05$, reject H_0] There is evidence to support Ali's claim	A1	2.2b
		(4)	

(7 marks)

Notes:

(a)(i) **M1:** correct model selected, seen or implied

A1: awrt 0.0536

(ii) **A1:** awrt 0.0623

(b) **B1ft:** hypotheses must be in terms of p (or π). Allow $\frac{1}{6}$ or ft their (a)(ii)

M1: correct distribution seen or implied

A1: awrt 0.0342

A1: correct conclusion in context, must mention **Ali's claim** or **dice**