

Question	Scheme	Marks	AOs
1(a)(i) (ii)	$X \sim \text{Bin}(11, 0.4)$	M1	3.3
	$P(X = 2) = 0.088683\dots$ awrt 0.0887	A1	1.1b
	$P(X \geq 5) = 1 - P(X \leq 4) =$	M1	1.1b
	$1 - 0.53277\dots = 0.4672\dots$ awrt 0.467	A1	1.1b
		(4)	
(b)(i) (ii)	$\mu = np = 300 \times 0.4$ or $\sigma^2 = npq = 300 \times 0.4 \times 0.6$ $\mu = 120$ and $\sigma^2 = 72$ or $N(120, 72)$	M1 A1	3.3 1.1b
		(2)	
	$(N(120, 72))$		
	$P(X > 134.5) =$	M1	3.4
	0.04374... awrt 0.0437	A1	1.1b
		(2)	

(8 marks)

Notes:

(a)
(i)
M1: Use of binomial seen or implied
A1: awrt 0.0887
(ii)
M1 a correct probability statement seen or implied
A1 awrt 0.467

(b)(i)
M1: Correct expression for mean or variance
A1: Both values correct
(ii)
M1: use of a continuity correction (134.5 or 135.5)
A1: awrt 0.0437
 Note exact binomial gives 0.044346... which is M0A0