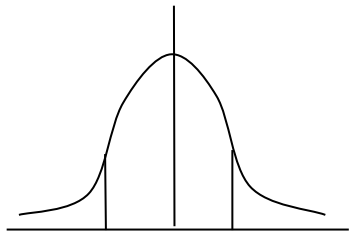
Question	Scheme	Marks	AOs
Q3(a)			
	P ($L > 50.98$) = 0.025	B1cao	3.4
	$\therefore \ \frac{50.98-\mu}{0.5} = 1.96$	M1	1.1b
	$\therefore \quad \mu = 50$	A1cao	1.1b
	P($49 < L < 50.75$)	M1	3.4
	$= 0.9104\ldots$ awrt **<u>0.910</u>**	A1ft	1.1b
		(5)	
(b)	S = number of strips that cannot be used so $S \sim B(10, 0.090)$	M1	3.3
	$= P(S \leqslant 3) = 0.991166\ldots$ awrt 0.991	A1	1.1b
		(2)	
(c)	$H_0 : \mu = 50.1$ $H_1 : \mu > 50.1$	B1	2.5
	$\bar{X} \sim N\left(50.1, \frac{0.6^2}{15}\right)$ and $\bar{X} > 50.4$	M1	3.3
	$P(\bar{X} > 50.4) = 0.0264$	A1	3.4
	$p = 0.0264 > 0.01$ <u>or</u> $z = 1.936\ldots < 2.3263$ and not significant	A1	1.1b
	There is insufficient evidence that the **<u>mean length</u>** of strips is **<u>greater than 50.1</u>**	A1	2.2b
		(5)	
			(12 marks)

Question 3 continued

Notes:

(a)

1st M1: for standardizing with μ and 0.5 and setting equal to a z value ($|z| > 1$)

2nd M1: for attempting the correct probability for strips that can be used

2nd A1ft: awrt 0.910 (allow ft of their μ)

(b)

M1: for identifying a suitable binomial distribution

A1: awrt 0.991 (from calculator)

(c)

B1: hypotheses stated correctly

M1: for selecting a correct model (stated or implied)

1st A1: for use of the correct model to find p = awrt 0.0264 (allow z = awrt 1.94)

2nd A1: for a correct calculation, comparison and correct statement

3rd A1: for a correct conclusion in context mentioning "mean length" and 50.1