Question Number	Scheme	Marks
7 (a)	$\frac{k+4}{8}=1 \quad [k=4^*]$	B1*
		(1)
(b)	x: 1 | 2 | 3 | 4 $P(X=x)$: $\frac{1}{13}$ | $\frac{7}{26}-\frac{1}{13}=\frac{5}{26}$ | $\frac{15}{26}-\frac{7}{26}=\frac{4}{13}$ | $1-\frac{15}{26}=\frac{11}{26}$	M1 M1 A1
		(3)
(c)	4	B1ft
		(1)
(d)	$E(X)=1\times\frac{1}{13}+2\times'\frac{5}{26}'+3\times'\frac{4}{13}'+4\times'\frac{11}{26}'\left[=\frac{40}{13}\right]$	M1
	$E(X^2)=1^2\times\frac{1}{13}+2^2\times'\frac{5}{26}'+3^2\times'\frac{4}{13}'+4^2\times'\frac{11}{26}'\left[=\frac{135}{13}\right]$	M1
	$Var(X)='\frac{135}{13}'-'\left(\frac{40}{13}\right)^{2}\left[=\frac{155}{169}\right]$	M1
	$Var(13X-6)=13^2\times'\frac{155}{169}'$	M1
	= 155	A1
		(5)

Y: 7 | 20 | 33 | 46

$P(Y=y)$: $\frac{1}{13}$ | $\frac{5}{26}$ | $\frac{4}{13}$ | $\frac{11}{26}$

$E(Y)=7\times'\frac{1}{13}'+20\times'\frac{5}{26}'+33\times'\frac{4}{13}'+46\times'\frac{11}{26}'[=34]$

$E(Y^2)=7^2\times'\frac{1}{13}'+20^2\times'\frac{5}{26}'+33^2\times'\frac{4}{13}'+46^2\times'\frac{11}{26}'$ $[=1311]$

$Var(13X-6)='1311'-'34'^2$

	Notes	**Total 10**
(a)	**B1***	$\frac{k+4}{8}=1$ oe Allow verification method $\frac{4+4}{8}=1$ provided they conclude $k = 4$
(b)	**M1**	For a correct method to find one probability from $x = 2$, $x = 3$ or $x = 4$ (implied by any one correct probability from $x = 2$, $x = 3$ or $x = 4$)
	M1	For a correct method to find a second probability from $x = 2$, $x = 3$ or $x = 4$ (implied by any two correct probabilities from $x = 2$, $x = 3$ or $x = 4$)
	A1	For a fully correct probability distribution. Need not be in a table, but 1, 2, 3 and 4 must be associated with correct probability
(c)	**B1ft**	Must be consistent with the highest probability in their distribution in part (b). If no distribution is found, then the answer must be 4
(d)	**M1**	For a correct method to find E(X) (implied by awrt 3.08) ft their table use of $\sum xF(x)$ is M0 or for a correct probability distribution for $13X - 6$ ft their probabilities in (b)
	M1	For a correct method to find E(X^2) (implied by awrt 10.4) ft their table use of $\sum x^2F(x)$ is M0 or for a correct method to find E(Y) ft their table
	M1	Use of $E(X^2)-E(X)^2$ ft their E(X^2) and their E(X) or for a correct method to find E(Y^2) ft their table
	M1	Use of $13^2\,Var(X)$ ft their Var(X) or use of $E(Y^2)-E(Y)^2$ ft their E(Y^2) and their E(Y)
	A1	Cao