Question Number	Scheme		Marks
6(a)	$\frac{5-2}{b-a}=\frac{3}{16}$ oe or $1-\left(\frac{2-a}{b-a}+\frac{b-5}{b-a}\right)=\frac{3}{16}$ oe	$\frac{5-a}{b-a}=\frac{3}{16}$ oe	M1
	$\frac{a+b}{2}=6$ oe		M1
	$a=-2$ and $b=14$	$a=4.4$ and $b=7.6$	A1
			(3)
(b)	$\left[cE(X)+1=3\Rightarrow\right]6c+1=3$		M1
	$c=\frac{1}{3}$		A1
			(2)
(c)	$\left[\text{Var}X=\frac{(b-a)^2}{12}=\right]\frac{64}{3}$ oe	$\left[\text{Var}X=\frac{(b-a)^2}{12}=\right]\frac{64}{75}$ oe	B1ft
			(1)
(d)	$E(X^2)="\left(\frac{64}{3}\right)"+6^2=\frac{172}{3}$ or	$E(X^2)="\left(\frac{64}{75}\right)"+6^2=\frac{2764}{75}$	M1A1
			(2)
(e)	$P\left(\frac{3}{2}X-b>a\right)\Rightarrow P(X>8)=\frac{3}{8}$	$P\left(\frac{3}{2}X-b>a\right)\Rightarrow P(X>8)=0$	M1A1
			(2)

		Notes	**Total 10**
(a)	**M1**	for using P($2 < X < 5$) = $\frac{3}{16}$ **or** P($a < X < 5$) = $\frac{3}{16}$ to form a correct equation in a and b May be implied by $b - a = 16$	
	M1	for using E(X) = 6 to form a correct equation in a and b May be implied by $a + b = 12$	
	A1	for $a=-2$ and $b=14$ or a = 4.4 and b = 7.6	
(b)	**M1**	for use of $cE(X)+1=3$ or fully correct integration seen e.g. $c\int_{"-2"}^{"14"}\frac{1}{"16"}x\,dx+1[=3]$ May be implied by $c=\frac{1}{3}$	
	A1	Cao	
(c)	**B1ft**	ft their a and b Allow decimal answers correct to 3sf e.g 21.3	
(d)	**M1**	for use of Var(X) + E(X)^2 ft their Var(X) or a fully correct integration seen e.g. $\int_{"-2"}^{"14"}\frac{1}{"16"}x^2\,dx\left[=\frac{172}{3}\right]$ or $\int_{"4.4"}^{"7.6"}"\frac{5}{16}"x^2\,dx\left[=\frac{2764}{75}\right]$ ft their a and b	
	A1	for $\frac{172}{3}$ oe or awrt 57.3 or $\frac{2764}{75}$ or awrt 36.9 oe **NB** Answer must match the method used	
(e)	**M1**	for P(X > 8) or $P\left(X>\frac{2("a"+"b")}{3}\right)$ ft their a and b May be implied by a correct answer	
	A1	for $\frac{3}{8}$ oe or 0 Answer must match the method used	