Question Number	Scheme	Marks
6 (a)	$\left[\mathrm{P}\left(X+2<3X-4\right)=\right]\mathrm{P}\left(X>3\right)=\frac{2}{5}$	M1 A1
		(2)
(b)	$\mathrm{E}\left(X^2\right)=\frac{1}{5}\left(1^2+2^2+3^2+4^2+5^2\right)=11$	M1 A1
		(2)
(c)	$\mathrm{E}\left(X\right)=3$	B1
	$\mathrm{Var}\left(X\right)='11'-('3')^2[=2]$ or $\frac{25-1}{12}$ or $\frac{(5+1)(5-1)}{12}$	M1
	$\mathrm{E}\left(aX+5\right)=6\Rightarrow '3'a+5=6$	M1
	$a=\frac{1}{3}$	A1
	$\mathrm{Var}\left(3-aX\right)\Rightarrow\left('\frac{1}{3}'\right)^2\times '2'$	M1
	$=\frac{2}{9}$	A1
		(6)

	Notes	Total 10
(a)	**M1**	For rearranging to $\mathrm{P}\left(X>3\right)$ Allow P(3 < X) or x > 3 or identifying that P(X = 4) and P(X = 5) are needed e.g 6 < 8 and 7 < 11 identified
	A1	For $\frac{2}{5}$ oe **NB** $\frac{2}{5}$ with no incorrect working seen scores M1A1 Watch out for P(X < 3) = $\frac{2}{5}$ which scores M0A0
(b)	**M1**	For a correct method to find $\mathrm{E}\left(X^2\right)$ May be implied by E(X^2) = 11
	A1	Cao
(c)	**B1**	For $\mathrm{E}\left(X\right)=3$ May be seen in an expression for Var(X) or implied by a correct value for Var(X) ft their E(X^2) or implied by a = $\frac{1}{3}$ Allow if seen in part (b)
	M1	For a correct method to find Var (X) ft their E(X^2) and their E(X)
	M1	For writing or using $a\mathrm{E}(X)+5=6$ ft their E(X) May be implied by a = $\frac{1}{3}$
	A1	For $\frac{1}{3}$ oe Allow 0.333
	M1	Use of $\mathrm{Var}\left(3-aX\right)=a^2\mathrm{Var}(X)$ ft their a and their Var (X) May be implied by $\mathrm{Var}\left(3-aX\right)=\frac{2}{9}$
	A1	For $\frac{2}{9}$ oe allow awrt 0.222