Question Number	Scheme	Marks
5. (a)	$F(3) = 0 \rightarrow \frac{1}{16}\left(3^2 - 6(3) + a\right) = 0$	M1
	$a = 9$	A1
	$F(10) = 1 \rightarrow \frac{1}{12}\left(100(10) - (5)10^2 + c\right) = 1$	M1
	$c = -488$	A1 (4)
(b)	$\frac{1}{16}\left(5^2 - 6(5) + "9"\right) = \frac{1}{12}\left(5 + b\right) \quad \left| \quad \frac{1}{12}(9+b) = \frac{1}{12}\left(100(9) - 5(9^2) + "-488"\right)\right.$	M1
	$b = -2$	A1 (2)
(c)	$P(6 < Y \leqslant 9) = F(9) - F(6)$	M1
	$= \frac{1}{12}\left(9 + "-2"\right) - \frac{1}{12}\left(6 + "-2"\right)$	M1
	$= \frac{1}{4}$	A1 (3)
(d)	$f(y) = \frac{1}{12}$	B1 (1)
(e)	$E(6Y - 5) = [26.5+]\int_5^9 (6y - 5)"\frac{1}{12}"dy$	M1
	$= [26.5+]\frac{1}{12}[(3y^2 - 5y)]_5^9$	dM1
	$= 26.5 + \frac{1}{12}[(3(9^2) - 5(9)) - (3(5^2) - 5(5))]$	dM1
	$= \frac{233}{6}$	A1 (4)
		[Total 14]

	Notes
(a)	1st M1 writing or use of F(3) = 0 1st A1 $a = 9$ cao 2nd M1 writing or use of F(10) = 1 2nd A1 $c = -488$ cao
(b)	M1 use of F(5) = F(5) [$= \frac{1}{4}$] or F(9) = F(9) [$= \frac{7}{12}$] ft their values from (a) A1 $b = -2$ cao
(c)	1st M1 writing or using F(9) – F(6) (may be implied by 2nd M1) 2nd M1 substituting 9 and 6 into F(x) with their value of b allow $\frac{1}{12}\left(100(9) + 5(9^2) + "-488"\right) - \frac{1}{12}\left(6 + "-2"\right)$ with their value of b and their value of c A1 $\frac{1}{4}$ oe
(d)	B1 $\frac{1}{12}$
(e)	1st M1 use of $\int_5^9 (6y - 5)"\frac{1}{12}"dy$ (ignore limits) 2nd M1 (dep on 1st M1) attempt to integrate $(6y - 5)"\frac{1}{12}"$ with at least one $y^n \rightarrow y^{n+1}$ 3rd M1 (dep on 1st M1) $26.5 + \int_5^9 (6y - 5)"\frac{1}{12}"dy$ A1 awrt 38.8
SC:	Answer only or correct answer not using given information scores M0M1M1A1