

Question Number	Scheme	Marks
6 (a)	$a + ar^2 = 250$	M1
	$ar + ar^2 = 150$	A1
	$\frac{1+r^2}{r+r^2} = \frac{5}{3}$	
	$2r^2 + 5r - 3 = 0$	M1
	$(2r-1)(r+3) = 0 \quad r = \frac{1}{2}, r = -3$	M1A1 (5)
(b)	$r = \frac{1}{2} \Rightarrow a = \frac{150}{\frac{3}{4}} \text{ or } \frac{250}{1+\frac{1}{4}} = 200$	M1A1
	$\frac{200\left(1 - \left(\frac{1}{2}\right)^n\right)}{\left(1 - \frac{1}{2}\right)} > 399.99 \quad (\text{Accept } =)$	M1A1ft
	$400\left(1 - \left(\frac{1}{2}\right)^n\right) > 399.99 \quad (\text{Accept } =)$	
	$\left(\frac{1}{2}\right)^n < \frac{0.01}{400} \quad n > 15.28... \quad (\text{Accept } =)$	M1
	All terms positive \therefore least $n = 16$	A1 (6)

[11]