22	$\frac{4}{3}\times\pi\times R^3-\frac{4}{3}\times\pi\times1.2^3$ or $\frac{4}{3}\times\pi\times(1.2+t)^3-\frac{4}{3}\times\pi\times1.2^3$	3.9	5	M1	for an expression for the volume of the inner sphere
	$\left(\frac{4\pi}{3}R^3-\frac{4}{3}\times\pi\times1.2^3\right)\times2700=1980$			M1	
	$\frac{4\pi}{3}R^3=\frac{4}{3}\times\pi\times1.2^3+\frac{1980}{2700}$ = 7.238229474 + 0.7333333 = 7.97(1562807)			M1	for a correct expression **or** sight of 7.23(8229474) + 0.73(33333) **or** sight of 7.97(1562807)
	$R=\sqrt[3]{\left(\frac{3}{4\pi}\times(\frac{4}{3}\times\pi\times1.2^3+\frac{1980}{2700})\right)}$ =1.2392… 1.2392 − 1.2 = 0.0392			M1	for a correct expression **or** sight of $\sqrt[3]{1.90(3070437)}$ **or** sight of 1.23(9229151) **or** sight of 0.0392(29151)
				A1	for 3.9 – 3.92
					Total 5 marks

23	(First term = 3 and last term = 999) or a = 3 and d = 3	166 833	4	M1	
	999 ÷ 3 (= 333)			M1	for finding the number of terms Allow 1000÷3 = 333.3 = 333
	Sum = $\frac{333}{2}(3+999)$ or Sum = $\frac{333}{2}(2\times3+(333-1)3)$			M1	for using a correct method to find the sum
				A1	
					Total 4 marks