Question	Working	Answer	Mark	Notes
23	$V = \frac{1}{3}\pi \times 6^2 \times 15 (= 180\pi = 565.48...)$		5	M1 a correct expression for volume of large cone
	$\frac{6}{15} = \frac{x}{\text{height}}$ or height $= \frac{15}{6}x = \frac{5}{2}x$ oe used or (vol sml cone =) $\left(\frac{x}{6}\right)^3 V$ or $\left(\frac{x}{6}\right)^3 \times 180\pi$ or (vol sml cone ="180π"$-\frac{4212}{25}\pi \left(= \frac{288}{25}\pi = 11.52\pi = 36.19...\right)$			M1 working with the scale factor (where V = vol of large cone) **or** formula for volume of sml cone, (ft their vol of large cone dep on a correct method) (NB: $\frac{4212}{25} = 168.48$, $\frac{4212}{25}\pi = 529.29...$)
	eg $\frac{1}{3}\pi \times x^2 \times \frac{5}{2}x$ $\left(= \frac{5}{6}\pi x^3\right)$ oe or linear SF = $\sqrt[3]{\frac{180\pi}{\frac{288}{25}\pi}} (= 2.5)$ oe or $\sqrt[3]{\frac{288/25}{180}} (= 0.4)$ oe ***2.5 and 0.4 must be from correct working seen to award the mark (not from height/radius)***			M1 dep on previous M1 correct formula for volume of small cone in terms of x only, could be seen as part of an equation and π could be cancelled out **or** Correct calculation for linear SF of v to V
	eg $\frac{1}{3} \times \pi \times 6^2 \times 15 - \frac{1}{3} \times \pi \times x^2 \times \frac{5}{2}x = \frac{4212}{25}\pi$ **or** $180 - \frac{5}{6}x^3 = \frac{4212}{25}$ oe **or** $\left[1 - \left(\frac{x}{6}\right)^3\right] 180\pi = \frac{4212}{25}\pi$ oe **or** $x = \frac{6}{2.5}$ **or** $h = \frac{15}{2.5} = 6$ **and** $\frac{1}{3}\pi x^2 6 = \frac{288}{25}\pi (= 11.52\pi)$			M1 dep on M3 A correct equation in x (if using 2.5 this must come from a correct method)
	Working required	2.4		A1oe dep on M3
				Total 5 marks