		See General guidance – but no power of *x* is to decrease.
	M1	For substituting in their values correctly **AND** subtract the two integrals. Explicit substitution must be seen if the final area is incorrect, or the limits are incorrect. A final correct area which follows correct integration is adequate evidence.
	A1	For the correct area

Question	Scheme	Marks
6	$\dfrac{\mathrm{d}V}{\mathrm{d}t} = 12$	B1
	$\dfrac{\mathrm{d}V}{\mathrm{d}h} = 9h^2$	B1
	$1536 = 3h^3 \Rightarrow h = \sqrt[3]{\dfrac{1536}{3}} = 8$	M1A1
	$\dfrac{\mathrm{d}h}{\mathrm{d}t} = \dfrac{\mathrm{d}V}{\mathrm{d}t} \times \dfrac{1}{\dfrac{\mathrm{d}V}{\mathrm{d}h}} = 12 \times \dfrac{1}{9h^2} = 12 \times \dfrac{1}{9 \times 8^2} = \dfrac{1}{48}$ (cm/s) oe	M1dM1A1 [7]
		Total 7 marks

Mark	Notes
B1	For stating $\dfrac{\mathrm{d}V}{\mathrm{d}t} = 12$ This must be clearly labelled $\dfrac{\mathrm{d}V}{\mathrm{d}t}$
B1	For differentiating the **given** expression for the volume. This must be clearly labelled $\dfrac{\mathrm{d}V}{\mathrm{d}h}$ **It must be correct for this mark.**
M1	For using the given formula, rearranged correctly to find the height of oil when the volume = 1536 That is, unless you see $h = 8$, you must see this expression. $h = \sqrt[3]{\dfrac{1536}{3}}$
A1	For the correct value of $h = 8$ Sight of $h = 8$ without working is M1A1
M1	For sight of a **correct** chain rule involving $\dfrac{\mathrm{d}h}{\mathrm{d}t}, \dfrac{\mathrm{d}V}{\mathrm{d}h}$ and $\dfrac{\mathrm{d}V}{\mathrm{d}t}$ only. Accept in any order. For example, accept $\dfrac{\mathrm{d}h}{\mathrm{d}t} \times \dfrac{\mathrm{d}V}{\mathrm{d}h} = \dfrac{\mathrm{d}V}{\mathrm{d}t}$ that is, $\dfrac{\mathrm{d}h}{\mathrm{d}t}$ does not need to be the subject. This mark can be implied by a correct next step.
dM1	For substituting in their values/expressions with their value of *h* into a correct chain rule. Note, this mark is dependent on the previous M mark.
A1	For the correct rate of increase. This question asks for an exact value. Do not accept a decimal estimate or accept $0.0208\dot{3}$ unless you see a recurring sign.