9

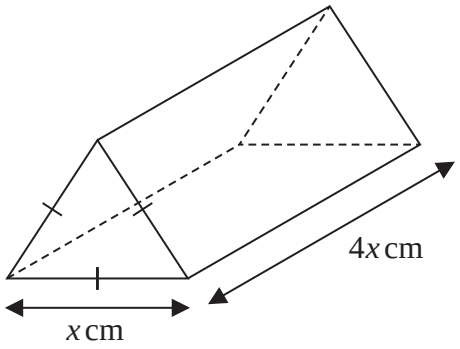

Diagram **NOT** accurately drawn

Figure 3

Figure 3 shows a metal solid S.

The solid is a right triangular prism.

The cross section of S is an equilateral triangle with sides of length x cm.
The length of S is $4x$ cm.

The prism is being heated so that the cross sectional area is increasing at a constant rate of $0.03\,\text{cm}^2/\text{s}$.

(a) Find, giving your answer to 3 significant figures, $\frac{\mathrm{d}x}{\mathrm{d}t}$ when $x = 2$

(5)

(b) Find the rate of increase, in cm^3/s, of the volume of S when $x = 2$

(3)

Question 9 continued

Question 9 continued

Question 9 continued

(Total for Question 9 is 8 marks)