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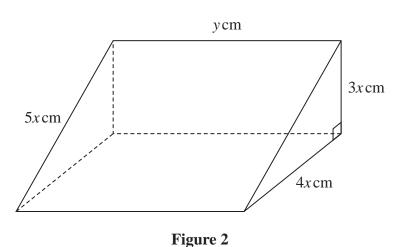


Diagram **NOT** accurately drawn

Figure 2 shows a block of wood in the shape of a right triangular prism.

The cross section of the prism is a right-angled triangle with sides of length 3x cm, 4x cm and 5x cm.

The length of the prism is ycm.

The total surface area of the five faces of the prism is 144 cm<sup>2</sup>

The volume of the prism is  $V \text{cm}^3$ 

(a) Show that

$$V = 72x - 6x^3$$

(5)

Given that x can vary,

(b) use calculus to find the value of x for which V is a maximum, justifying that this value gives a maximum value of V

(4)

(c) Find the maximum value of V

**(2)** 


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Question 7 continued	

