

















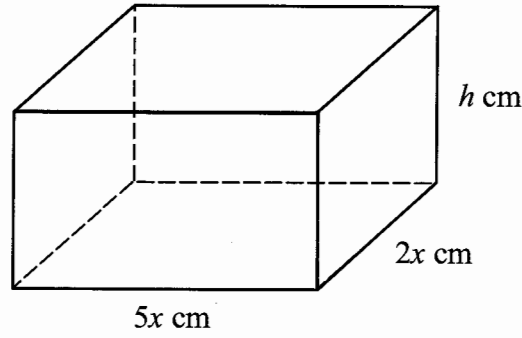








7.



**Figure 2**

Figure 2 shows a solid cuboid of height  $h$  cm. The width of the cuboid is  $2x$  cm and the length of the cuboid is  $5x$  cm. The total surface area of the cuboid is  $A$  cm<sup>2</sup>.

- (a) Write down an expression, in terms of  $x$  and  $h$ , for  $A$ . (1)

The volume of the cuboid is  $500$  cm<sup>3</sup>.

- (b) Show that  $A = 20x^2 + \frac{700}{x}$ . (3)

- (c) Find, to 3 significant figures, the minimum value of  $A$ . (5)

- (d) Verify that your answer for part (c) is the minimum value of  $A$ . (2)

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8. The first three terms of a geometric series are  $(15x+6)$ ,  $(6x-3)$  and  $(x+4)$  respectively.

(a) Find the possible values of  $x$ . (4)

(b) Find the possible values of the common ratio of the series. (3)

Given that the series is convergent, find

(c) the sum to infinity of the series, (3)

(d) the percentage error when the sum of the first  $n$  terms is taken as an approximation for the sum to infinity. (3)

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