7

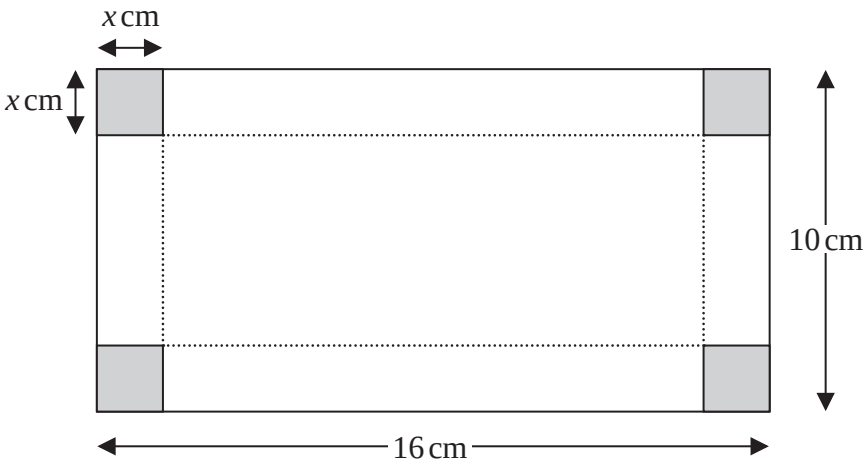

Diagram **NOT** accurately drawn

Figure 3

Figure 3 shows a rectangular sheet of metal 10 cm by 16 cm. A square of side x cm is cut away from each corner of the sheet. The sheet is then folded along the dotted lines to form an open box.

The volume of the box is V cm^3

(a) Show that $V = 4x^3 - 52x^2 + 160x$

(3)

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

(5)

(c) Find the maximum value of V.

(2)

Question 7 continued

Question 7 continued

Question 7 continued

(Total for Question 7 is 10 marks)