

6

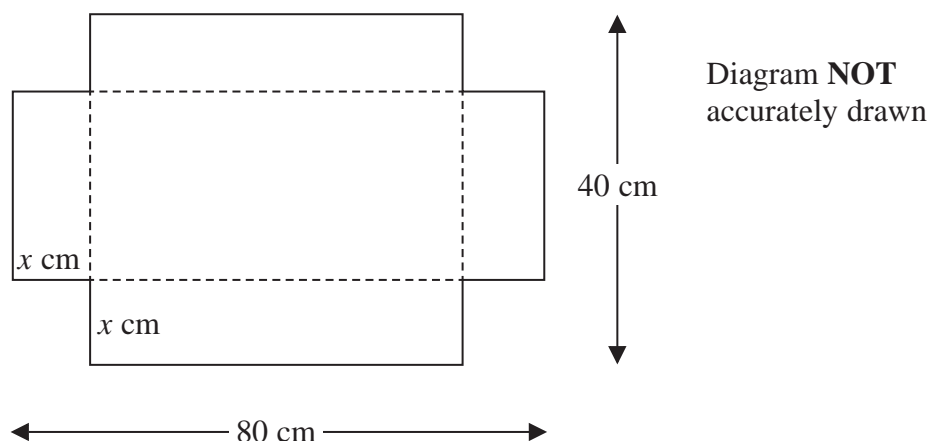


Figure 2

A rectangular sheet of card measures 80 cm by 40 cm. A square of side x cm is cut away from each corner of the card as shown in Figure 2. The card is then folded along the dotted lines to form an open box.

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

- (a) Show that $V = 3200x - 240x^2 + 4x^3$ (3)
- (b) Find, to 3 significant figures, the value of x for which V is a maximum, justifying that this value of x gives a maximum value of V . (6)
- (c) Find, to 3 significant figures, the maximum value of V . (2)



Question 6 continued



(Total for Question 6 is 11 marks)

