

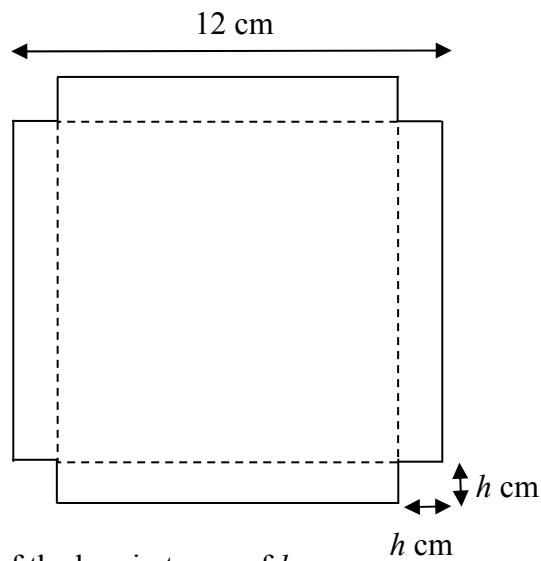
Question 8

(40 marks)

- (a) The length of the side of a square sheet of cardboard is 12 cm. Find the area of the sheet.



- (b) The diagram below shows a square sheet of cardboard of side length 12 cm, from which four small squares, each of side length h , have been removed. The sheet can be folded to form an open rectangular box of height h .



Write the length and the width of the box in terms of h .

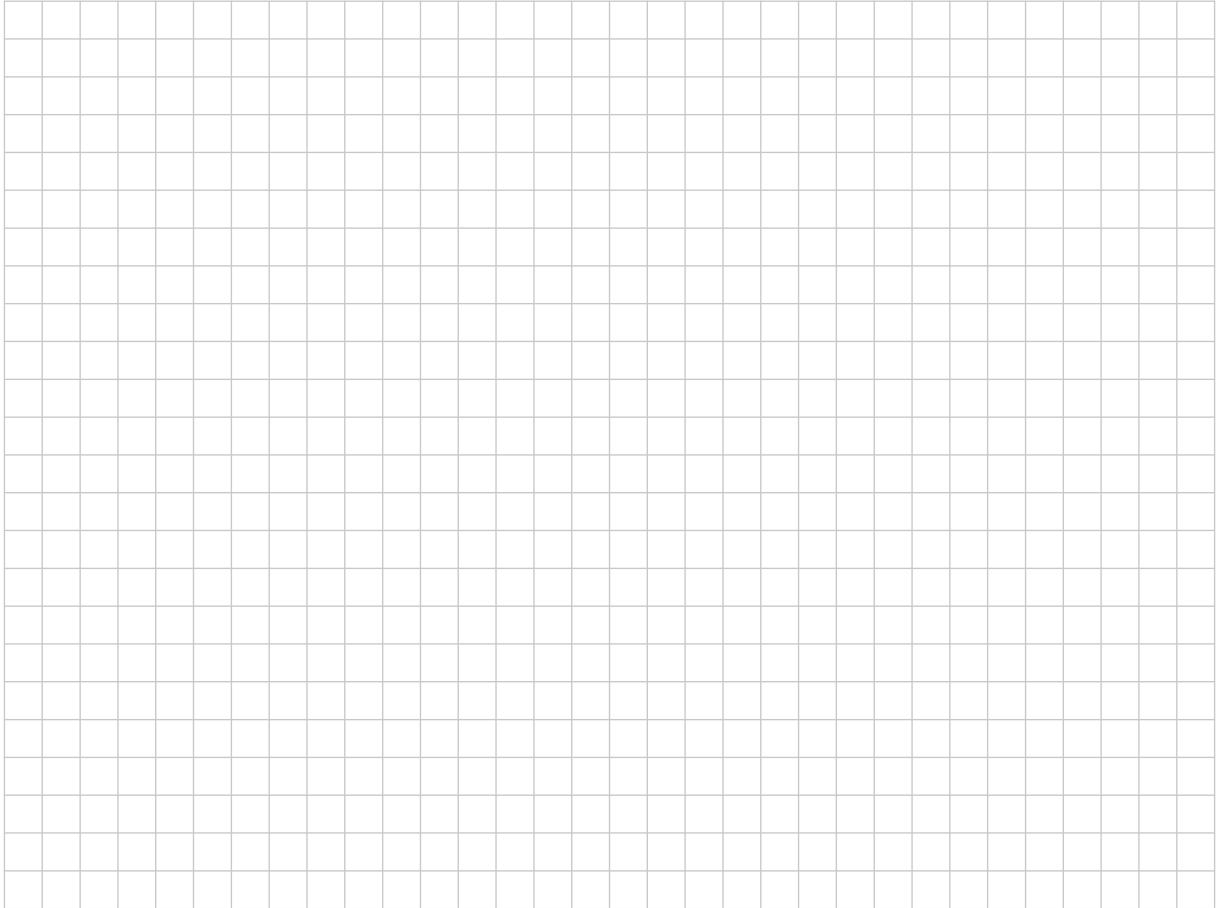
Length of box = _____

Width of box = _____

- (c) Show that the volume of the box, in terms of h , is $4h^3 - 48h^2 + 144h$.



(d) Find the value of h which gives the maximum volume of the box.



(e) Find the maximum volume of the box.



page	running
------	---------