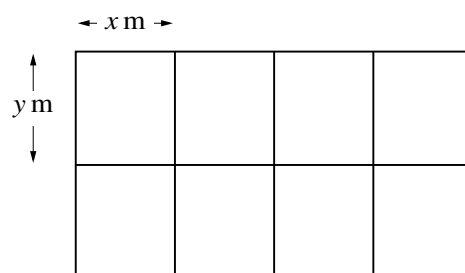


5



A farmer divides a rectangular piece of land into 8 equal-sized rectangular sheep pens as shown in the diagram. Each sheep pen measures $x \text{ m}$ by $y \text{ m}$ and is fully enclosed by metal fencing. The farmer uses 480 m of fencing.

- (i) Show that the total area of land used for the sheep pens, $A \text{ m}^2$, is given by

$$A = 384x - 9.6x^2. \quad [3]$$

- (ii) Given that x and y can vary, find the dimensions of each sheep pen for which the value of A is a maximum. (There is no need to verify that the value of A is a maximum.) [3]