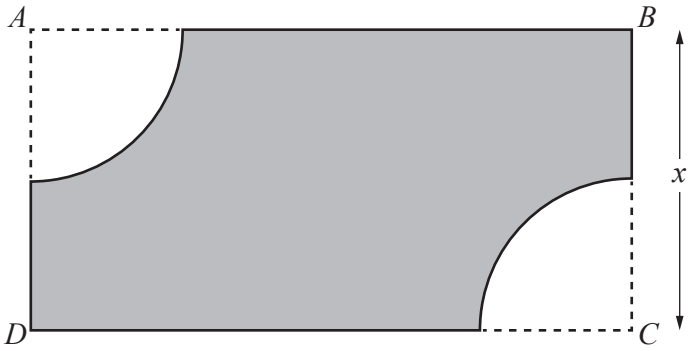
11 In this question all lengths are in centimetres.



The diagram shows a rectangle $ABCD$ with $BC = x$.
The area of the rectangle is $400\ \text{cm}^2$.

Two identical quarter-circles of radius $\frac{x}{2}$, with centres A and C, are removed from the rectangle to make the shaded shape.

Given that x can vary, find the value of x that gives the minimum value of the perimeter of the shaded shape and hence find this minimum value. [7]

© UCLES 2024

Continuation of working space for Question 11.