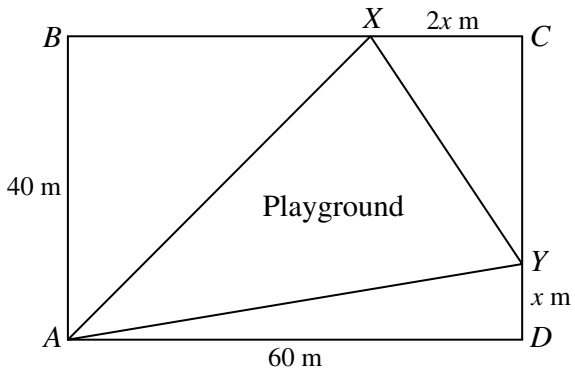
3



The diagram shows a plan for a rectangular park $ABCD$, in which $AB = 40$ m and $AD = 60$ m. Points X and Y lie on BC and CD respectively and AX, XY and YA are paths that surround a triangular playground. The length of DY is x m and the length of XC is $2x$ m.

(i) Show that the area, A m^2, of the playground is given by

$$A = x^2 - 30x + 1200.$$ [2]

(ii) Given that x can vary, find the minimum area of the playground. [3]