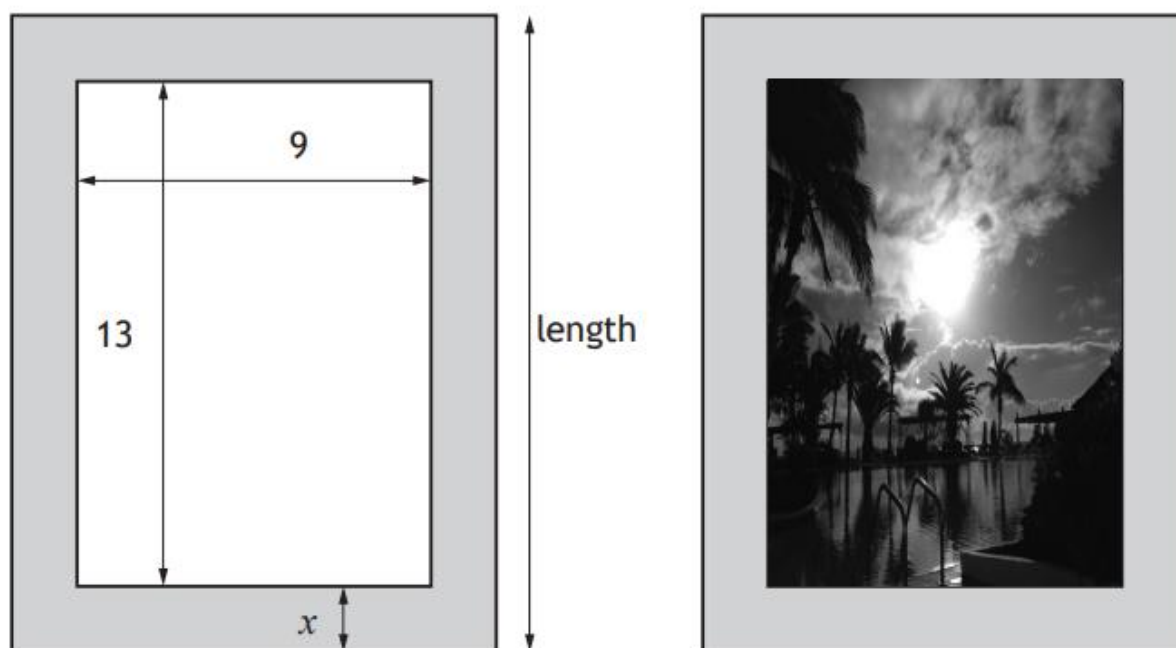A rectangular picture measuring 9 centimetres by 13 centimetres is placed on a rectangular piece of card.

The area of the card is 270 square centimetres.

There is a border x centimetres wide on all sides of the picture.

(a)   (i)   Write down an expression for the length of the card in terms of x.   1

(ii)   Hence show that $4x^2 + 44x - 153 = 0$.   2

(b)   Calculate x, the width of the border.

Give your answer correct to one decimal place.   4

Answers:

(a) (i) $2x + 13$

(ii)   Use "area = length × width" to obtain the required equation.

(b)   2.8 cm