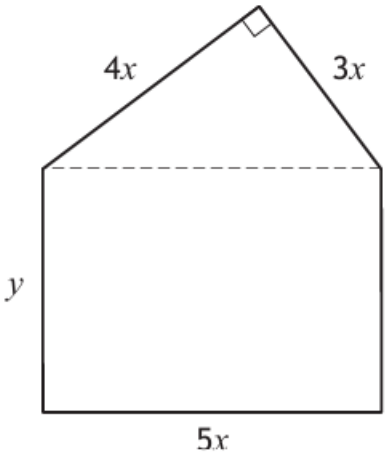
Higher Maths
SQA 2025 Paper 2
Question 10

A hotel owner is designing signs showing the room numbers.

Each sign is a rectangle with a right-angled triangle above it.

The length and breadth of the rectangle are $5x$ centimetres and y centimetres respectively.

The shorter sides of the triangle are $3x$ centimetres and $4x$ centimetres.



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The area of the sign is 150 square centimetres.

(a) Show that the perimeter, P cm, of the sign is given by

$$P = 9.6x + \frac{60}{x}.$$ **3**

Each sign will be lit using a lighting strip placed around its perimeter.

The hotel owner requires the perimeter, P, of the sign to be as small as possible.

(b) Find the minimum value of P. **6**

Answers:

(a) Use the given area to express y in terms of x. Substitute into $P(x, y)$ to obtain $P(x)$.

(b) 48

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