

Problem of the Week

Problem C and Solution

Contain the Memory

Problem

As part of a woodworking project, you chose to build a picture frame to contain a sketch which you had drawn in an art class.

The frame was made using four strips of wood, each strip 30 cm long and 3 cm wide. The frame is illustrated above.

Determine the area of the region inside the wooden frame.

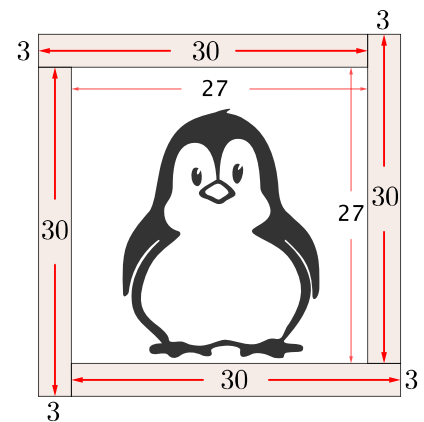
Solution

Solution 1

The inner square has side length $30 - 3 = 27$ cm.

Area = Length \times Width = $27 \times 27 = 729$ cm².

Therefore, the area of the sketch inside the frame is 729 cm².



Solution 2

Each rectangle has area $30 \times 3 = 90$ cm².

The outer square has a side length equal to $30 + 3 = 33$ cm.

The area of the outer square is therefore $33 \times 33 = 1089$ cm².

The area of the inner square is equal to the area of the outer square minus the areas of the four rectangles.

Therefore, the area of the sketch inside the frame is $1089 - 4 \times 90 = 729$ cm².

