7.3 Minimum Perimeter for a Given Area

Investigation: page 61 in text.

Michael has 36 square stones to arrange as a rectangular patio. He will then buy edging to go around the patio.

- Sketch a few of the different patios that can be created.

- Which patio requires the least amount of edging?

Area	Length	Width Divide area by the length	Perimeter $P = 2\,l + 2\,w$
36	1	$36 \div 1 = 36$	$2(1) + 2(36) = 74$
36	5	7.2	Don't use 5 as we can't have part of a stone.

Minimum perimeter

➡ For rectangles with a fixed area, a square has the minimum perimeter.

- Suppose each stone has a side length of 30 cm.
  What is the least amount of edging needed for the patio?

Ex. 1: For 75 patio stones, what are the dimensions that give the minimum perimeter?

length	width	perimeter

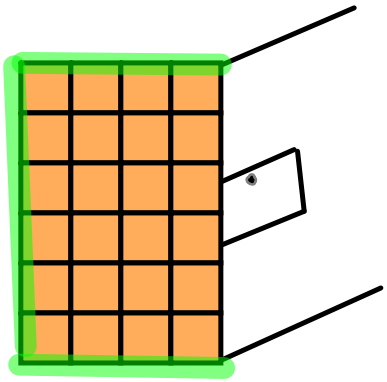
Ex. 2: What is the minimum perimeter of a rectangle having an area of:

a) 121 cm^2

b) 90 cm^2

Ex. 3: A patio is to be built on the side of a house using 24 congruent square stones. It will then be edged on 3 sides. Which arrangement requires the minimum edging?

List pairs of numbers with product 24.
Calculate perimeter using 3 sides only!



length	width	perimeter

HOMEWORK

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