



## Problem of the Week

### Problem B and Solution

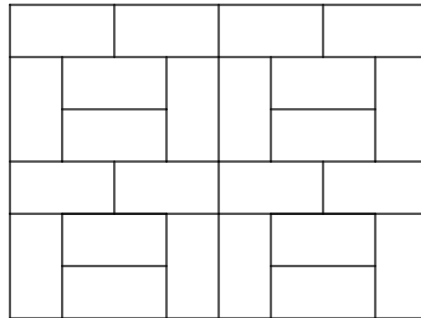
#### A Stoney Problem

#### Problem

Sela is doing some landscaping, and needs to pave a rectangular space with an area of  $53.5 \text{ m}^2$ . She plans to use paving stones which are  $10 \text{ cm}$  by  $20 \text{ cm}$ , and so each has an area of  $200 \text{ cm}^2$  each. Note that only whole paving stones will be used.

At the Home Shop, Sela learns that these pavers are sold on pallets of 1000 stones, and she must buy complete pallets at \$499 each.

- (a) How many stones will she need to cover the  $53.5 \text{ m}^2$  area?
- (b) How many pallets will she need to buy?
- (c) How many stones will be left on the last pallet Sela uses?
- (d) If Sela is able to buy partial pallets, how much would she save if she only bought the paving stones she needed?



#### Solution

- (a) One square metre is equivalent to  $100 \times 100 = 10\,000 \text{ cm}^2$ , the area Sela needs to pave has area  $53.5 \times 10\,000 = 535\,000 \text{ cm}^2$ . Since each paving stone has area  $200 \text{ cm}^2$ , Sela will need  $535\,000 \div 200 = 2675$  stones.
- (b) Since each pallet has 1000 paving stones, Sela needs  $2675 \div 1000 = 2.675$  pallets. However, she must buy complete pallets, so Sela will need to buy 3 pallets, or 3000 paving stones.
- (c) On the last pallet Sela uses, there will be  $3000 - 2675 = 325$  paving stones.
- (d) Sela would not need to buy the extra 325 paving stones. The 325 paving stones as a fraction of a pallet is  $\frac{325}{1000} = 0.325$ . Thus, she would save  $0.325 \times \$499 \approx \$162.18$ .