- Given is the area $1 \leq a \leq 10^{15}$ of a circular design in cm^2.
- You want to create a square tile with at least $1\,\mathrm{cm}$ margin around the design.
- Calculate the minimum area of the square tile in cm^2.
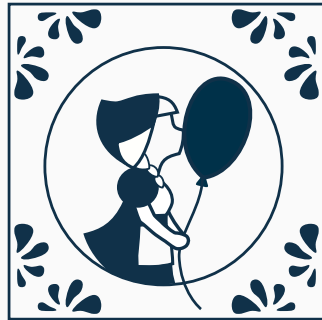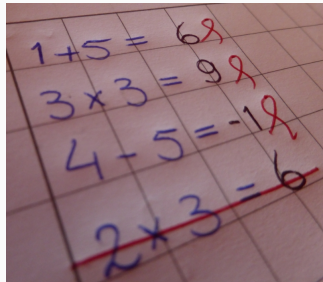

A typical circular design on a square Delft tile.

- Given are $1 \leq n \leq 2\,500$ pairs of integers with $|a|, |b| \leq 10^6$.
- Construct an exam where in each question, the students have to add ('+'), subtract ('-') or multiply ('*') a pair of numbers.
- Make sure that the n correct answers to the exam are all different.
- If this is impossible, output "impossible".

Example exam by Ellen.

$$1 + 5 = 6$$
$$3 \times 3 = 9$$
$$4 - 5 = -1$$
$$-1 - -6 = 5$$

Illustration of Sample Output 1, where all correct answers are different.

C Cheese Comparison

Time limit: 3s   **Problem Author: Ragnar Groot Koerkamp**

- Interactively determine the order of $1 \leq n \leq 100$ cheese wheels from lightest to heaviest.
- You can make 20 000 comparisons of the form "? i j" ($1 \leq i, j \leq n$).
- The interactor will respond with '<', '=', or '>'.
- Finally, print an '!' followed by the order of the cheese wheels.
- If there are multiple valid solutions, you may output any one of them.
- The interactor is not adaptive: the weights of all cheese wheels is determined up-front.

A cheese store in Delft, close to the market.
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