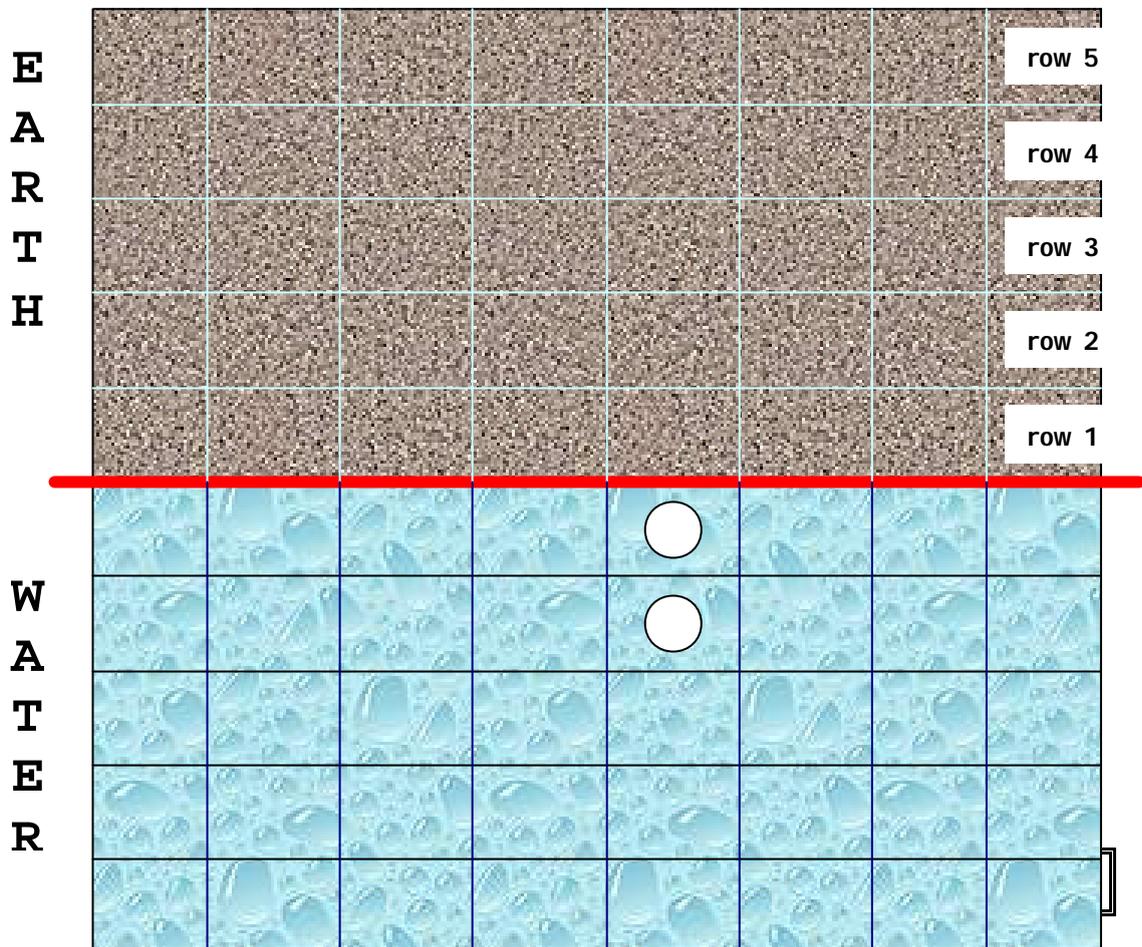


## THE JUMP OF THE FROG

The game consists of placing properly in the area of **water** the minimum number of counters that will allow you, moving them according to a certain rule, to reach with a counter the 1st, 2nd, 3rd or 4th row of the area of **earth**.

The counters are moved by jumps, in a similar way as in checkers: a counter can jump on another that is at its side whenever the square at which it arrives is empty. The counter on which you jump over is rejected. You can jump horizontal or vertically, but it is not possible to jump in diagonal.

Thus, it is enough to place two counters in the area of **water**, as it is shown in the figure, to reach with one of them the first row of **earth**: We get it by making the lower counter jump on the upper one (that is rejected



from the board).

It is not so easy to manage to place a counter in the second row of **earth** from counters placed in the area of **water**, and things are a bit more complicated when trying to reach the third row of **earth**, and even more to reach the fourth row of **earth** with a counter.

If you want that the resolution of this game not to be only the result of persistence and perhaps of a little luck, but rather the fruit of reasoning and the mathematical way of performance, you have to bear in mind the ideas (strategies) stated next.

~~✍~~ In the first place, I will start by thinking about how to reach the first row of **earth**; then I will consider how to reach the second, then the third and, finally, how to reach the fourth one. ***Starting with the easy thing makes the difficult thing easy.***

~~✍~~ What do I have to get in the end?. For that, what do I have to get before?, and before?, ... ***To assume the solved problem and to go all over it backwards is often the best principle.***

~~✍~~ I have already solved this before, so I will take advantage of it. ***To move forward, leaning in the previous thing, saves efforts and difficulties.***

**Which** is minimum number of counters necessary to place in the area of **water** and its initial position, so that you can reach with a counter the third row of **earth**?

If you haven't found it very difficult, try to solve the problem of reaching the 4th row of **earth**. (The 5th is impossible, so do not try it).

YOU WILL NEED:

A game board and a pile of counters (some 30).