1 Problem

Yes, there ~~are~~ is a two-digit number that is divisble by 5 other two-digit numbers.

Example for this is:

60, 10, 20, 30, 15 and 12

60 : 10, 60 : 15

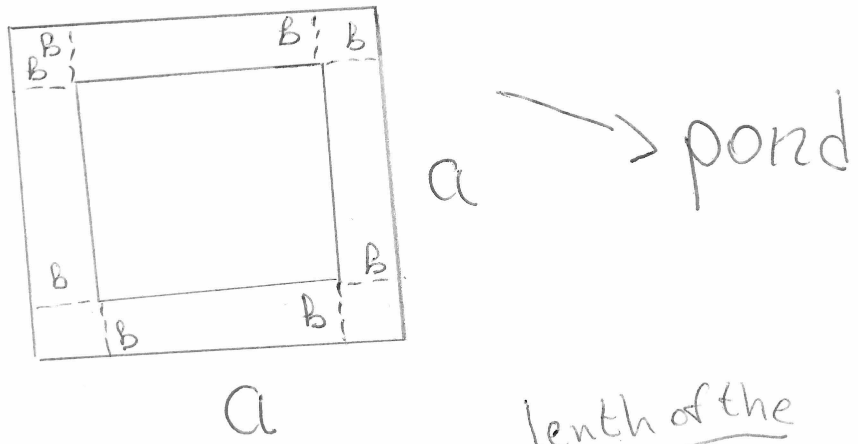
60 : 12

60 : 20,

60 : 30, so the answer is "yes".

Answer: Yes, it can.

2 Problem



Let's „a" is the lenth of the side of the pond.
After the first day the ice is from the edge „b" meters. $b < 11$ from the condition.
$100\% - 19\% = 81\%$ is the area of the open water after the first day.

The first day the open water (with no ice) decreased by 19%. This is possible when the ice covered 10 meters away from the edge. The second day the ice can cover 20 metres from the edge.
Then the percent decrease by $19\% \cdot 2 =$
$= 38\%$ The third day $\to 38\% \cdot 2 = 76\%$.
The forth day $\to 76\% \cdot 2 > 100\%$
$\Rightarrow$ The entire pond will be covered after 4 days. That is possible if we have 10m, 20m, 30m and 40m for the 4 days.

Answer: 4 days

3 Problem.

$10.10 = 100$ squares 1×1 we have.
If there aren't any cuts the sum of the perimetres of the 1×1 squares is:

$P_{1\times1} = 1.4 = 4$

$P_{all} = 100.4 = 400$

But $400 = 398+2$ and $400 > 398$
So after the cut we must have 2 sides less. We can do that only if after the cuts we have 1 rectangle 1×2 ( ) and 98 squares 1×1 ( ).

To calculate the ways we can do that we count how many are there in 10×10 square. We have
$2.(9.10) = 180$ ways. That is because on one of the side of the 10×10 squares there are 9 ways for the ~~one side of the~~ . We have 2 sides, so we have $2.90 = 180$ ways
" $90 = 9.10$

Answer: 180 ways

4. Problem.

The smallest number of strips is when we have the most ~~...~~ biggest possible value of 1×7 strips.

The area of the 11×12 rectangle is 132. If we have „a" strips 1×6 and „b" strips 1×7:

$6a+7b=132$

$6/6a$ and $6/132$

$\Rightarrow 6/7b \Rightarrow 6/b$

$\Rightarrow$ „b" is divisble by 6.

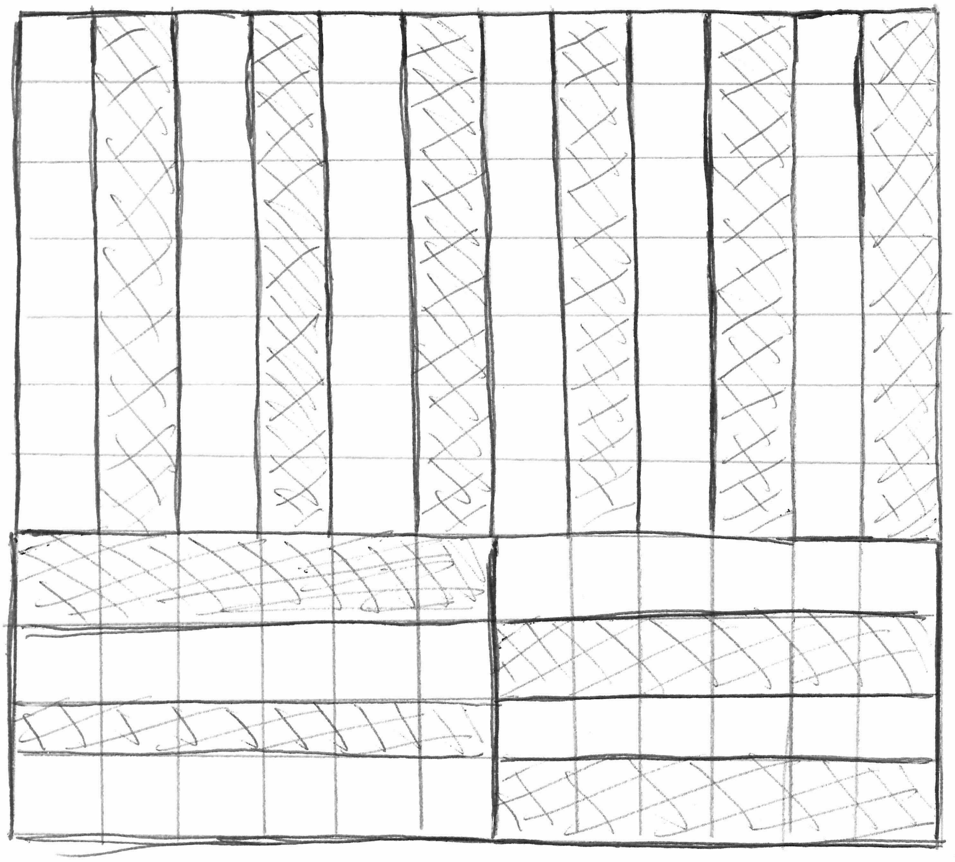
$132:(1\cdot7)=132:7=18$ remainder 6

So we have maximal 18 strips 1×7.
Then we have 1 strip 1×6.
There are at least $1+18=19$ strips.

I can't make an example with 19 strips, but I can make with 20 strips: 8 strips 1×6 and 12 strips 1×7. The example is on another paper.

4. problem (Continued)

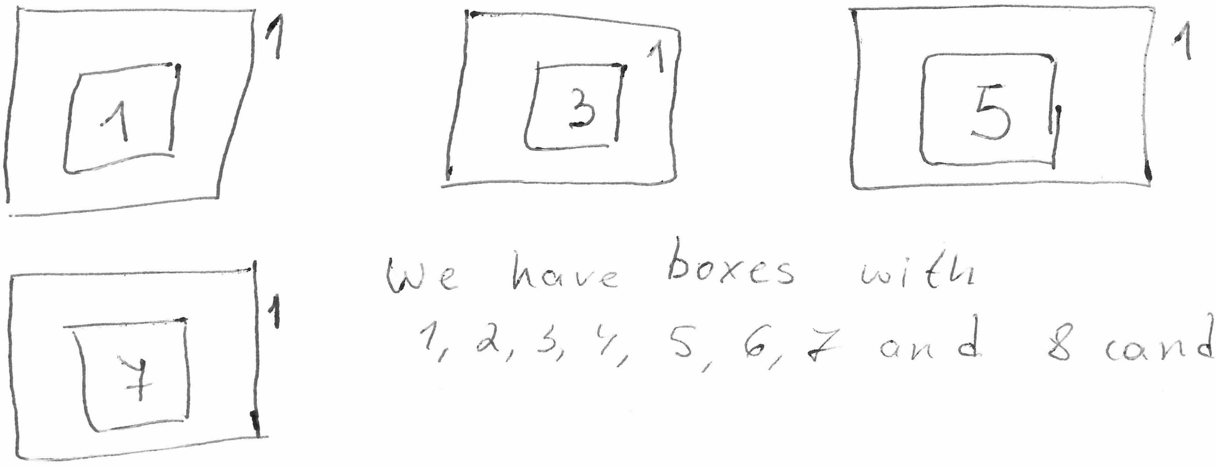
Example with 20 strips:



I can't make an example with 19 strips, but maybe it's possible to make an example. So my answer is 19 strips.

5. Problem.

In the best case for us we have:
In the diagram each box is rectangle. If there is an other rectangle in the rectangle we have a box in a box. In each box is a number - the number of candies. If there is a box in a box the number of the candies in the ~~inner~~ outer box is next to the box.



We have boxes with 1, 2, 3, 4, 5, 6, 7 and 8 candies.

We have $(1+1)+(3+1)+(5+1)+(7+1)=20$

So That's possible. Here we have $2.4=8$ boxes.

$\Rightarrow$ There are maximal 8 boxes.

Answer: 8 boxes.