

2) a) There are 33 coins.

b) There are several possible ways to calculate the number of coins.

Here's one of them:

4 lineups with n coins each: $4 \cdot n$

coins in the corner are counted twice: -4

2 diagonals with $n-2$ coins each: $2 \cdot (n-2)$

coin in the center is counted twice: -1

Overall result: $a = 4 \cdot n - 4 + 2 \cdot (n-2) - 1$

Of course you can simplify this formula by eliminating brackets and pooling similar terms (for more details see the corresponding pages of the tutorial):

$$a = 6n - 9$$

c) No. The reasoning above doesn't hold, because in the case of even numbers the two diagonals don't have a coin in common.

But it isn't difficult to give the correct formula:

$$a = 4 \cdot n - 4 + 2 \cdot (n-2) \cancel{-1} = 6n - 8$$