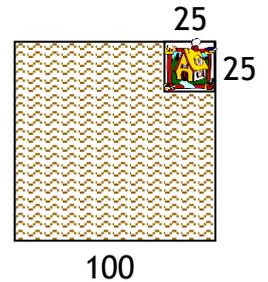


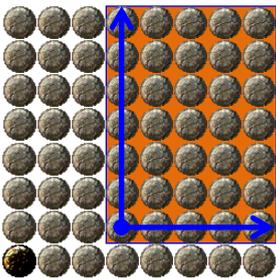
Intermediate Circle 1, Problem Set 25

May 8th 2017

1. Three brothers inherited a 100×100 -yard field. A 25×25 -yard corner of the field is taken up by a house. How should the brothers divide the rest of the field into three smaller fields so each of them gets a piece of the same size and shape?



2. The game «Woosh!» is played on a square board with the tokens placed as shown on the picture. On her turn, a player chooses a token and removes *it and all tokens that are to the right of and above it*. The left bottom token is cursed – the player who gets it, loses. Which player has a winning strategy? (On the picture, after a token, marked with blue dot is selected, all tokens with orange background are removed.)



3. Tim the Troll paid Gavin the Goblin 6 gold coins for his work. Gavin found out that Tim cheated: out of the 6 coins, two are fake and weigh less than the proper ones. Help Gavin figure out which 2 coins out of the six he got are fake by using a balance scale no more than three times.



4. Marcia and Darcia have two boxes of candy. The first box contains 5 pieces, and the second box contains 8 pieces of candy. The girls decided to play a game. During one turn, a player can choose a box and eat 1 or 2 candy from it. The girl who eats the last candy wins. Should Marcia go first or second to win?



5. All roads in the country of HillSide lead either uphill or downhill. A bus goes with the speed of 30 mph when it climbs uphill and with the speed of 60 mph when it goes downhill. The bus makes a roundtrip between the villages of Meadows and Hilltop in 6 hours. What is the distance between the villages?

