

Problem 1

x - amount of food the second crow ate

we know that:

$$(100g - 2x) \cdot 3 = 200g - x$$

$$\Rightarrow 300g - 6x = 200g - x$$

$$\Rightarrow 5x = 100g$$

$$x = 20g$$

The 5th crow ate $100g - 2x + 200g - x = 240g$

answer: 240g

Работа 4

Problem 2

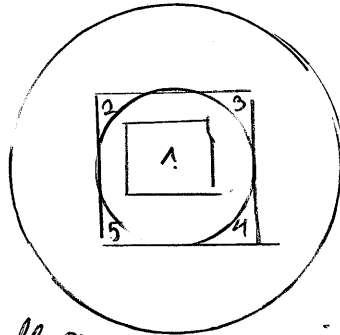
Parasoma 4

1. If the size of the rings is the same ~~we can~~ we can have a maximum of 3 holes

because in order to have a hole we have to count the numbers of places where the squares overlap and add 2 to it (the amount of holes in the rings before the operation). These squares can only overlap once so the maximum number is 3. If the rings are the same and are put over one another then we have only one hole

* or one of them is smaller but is bigger than the square of the other one.

2. If one of the ring's square is bigger than the other ring* the maximum is five because if we put the smaller ring in the square of the other ring and circle of the smaller ring touch the sides of the square:



The circle divides the square into 4 parts because it has 4 sides and we get another hole from the smaller hole for a total of 5 holes

If the smaller ring is anywhere else there is no difference between case 1 and ~~case 2~~

* the circle can overlap with the bigger one as long as it divides the square into four pieces, ~~there~~

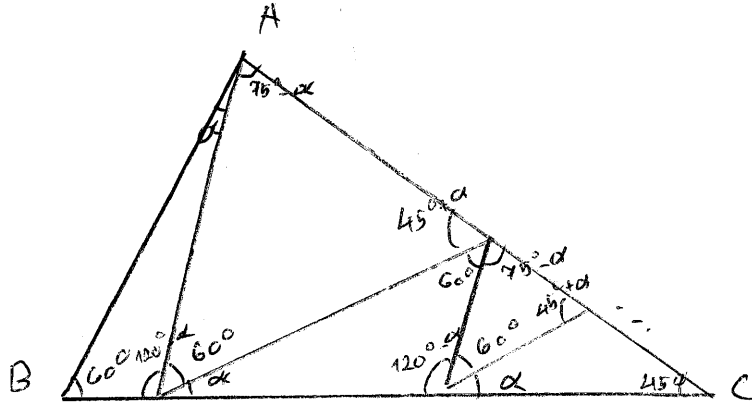
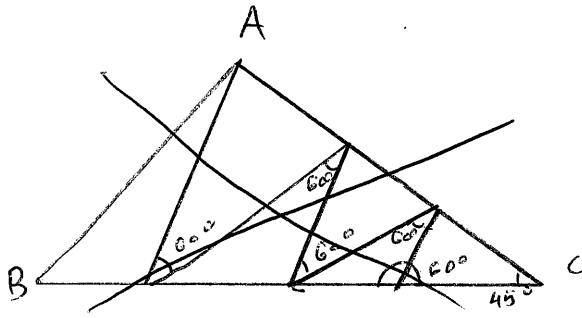
There is no such way to arrange the rings.

Answer: no

Problem 3

Patoma4

~~Eventually the fly will reach point C where it would form a triangle:~~



when the ~~fly~~^{bee} reaches C who see that
 $75^\circ - \alpha = 45^\circ + \alpha$

$\Rightarrow \alpha = 15^\circ$

\Rightarrow every triangle on AC is equilateral^{real}

\Rightarrow the fly flies $5.2 = 10\text{m} > 9.9\text{m}$

\Rightarrow yes

answer: yes

Problem 4

The six digit number is equal to:

Задача 4

$$10000a^2 + 100b^2 + c^2$$

a - the square root of the first number

b - the square root of the second number

c - the square root of the third number

Is 1. $10000a^2 + 100b^2 + c^2 = (100a + c)^2$

then $b^2 = 2 \cdot (a + c)$

$\Rightarrow b/2 \Rightarrow b^2 = 16, 36, 64$

$\Rightarrow a + c = 8, 18, 32$

~~1.~~ $a + c = 8$

$\Rightarrow a = 4$ and $c = 4$ because $4 \leq a, b, c \leq 9 \Rightarrow 161616$ is a possible value

2. $a + c = 18$

$\Rightarrow a = 9$ and $c = 9 \Rightarrow 813681$ is a possible value

Is 2. $10000a^2 + 100b^2 + c^2 = (10b + c)^2$

$\Rightarrow 500a = b + c$ which is impossible ($a, b, c < 10$)

Is 3. $10000a^2 + 100b + c^2 = (100a + 10b)^2$

then $c^2 = 1000(a + c)$ which is impossible (a, b, c)

answers: 161616 and 813681

Problem 5

Paromita

answer: no

statement	divisor	remainder
1	2	0
2	3	1
...
...
...
2018	2019	2018

There is a number that in which all of the propositions are correct. Half of the ^{proposition} propositions state that x is divisible by 2. If it's not then half of the propositions are correct.

answer: yes