1. Suppose $(x_0;y_0)$ is the solution of the equation system $\begin{cases} y+\sqrt{16-x^2}=0, \\ y+1=|x+5|. \end{cases}$ You should write all the possible values of y_0-x_0.

2. There is trapezium *KMPT*, where *MP* and *KT* are parallel. Trapezium's diagonals intersect in *C*. Area of triangle *MCP* is 4, $KT=2MP$. You should find the area of trapezium.

3. You should find any five positive integers not greater than 100, for any two of each difference modulus is equal to the greatest common divisor of these two numbers.

4. Suppose *BM* and *CH* are altitudes of triangle *ABC*, *I* is the center of triangle's inscribed circle. $BC=24$, $MH=12$. You should find the radius of circumscribed circle for triangle *BCI*.

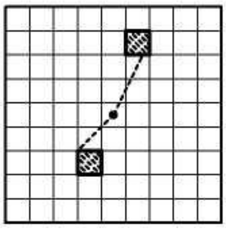
5. Every person of 25 classmates participated in exactly three contests. It is known that any four of them took part together in at least one same contest. What is the largest possible number of contests in which at least one of the classmates could take part?

6. You are to write the largerst possible number of draughtsman of a chessboard (no more than one draughtsman at one square), so: 1) square e4 should be empty; 2) in any two squares that are symmetric about e4 should be at most one draughtsman.

7. You are to write how many seven-digit numbers exist, so every digit (except the last) divides exactly the digit to the right of it.

8. Array $\{a_n\}$ defined as follows: $a_1=1$, $a_{n+1}=a_n+(n+1)$ where n is a positive integer. You should write a decimal number that is equal to $a_{2019}+a_{2020}$.

9. You should paint 12 squares in square 9×9 so its sides aren't totally visible from its center (that is any half-line from center traces at least one point of any painted square – see example at the picture). You should not paint central square and squares that has at least one common point.



10. Triangle ABC is equilateral. K is midpoint of AB, M is situated on BC, so $BM:MC=1:2$. There is a point P at AC, so perimeter of PKM has the smallest possible length. You should write the ratio in which P divides AC, counting from point A.

11. You should find all the positive numbers that are solutions of the following equation:
$x+y+\frac{1}{x}+\frac{1}{y}+4=2(\sqrt{2x+1}+\sqrt{2y+1})$.

12. You should find the largest positive integer number, where all the digit are different and any group of consecutive digits forms a number that divides the number of digits in this group.

13. How many fractions from infinite sequence $\frac{2019}{19}; \frac{2020}{20}; \frac{2021}{21}$ ... are integer numbers?

14. You should find a range of values of the following function: $f(x)=\cos(\cos x)-\sin x$.

15. There are three points $A(a; b)$, $B(c; d)$, $C(e; f)$ which coordinates satisfy the following equations:
$a^2-4a+b^2-2b+2=0$,
$c^2-4c+d^2-2d+2=0$,
$e^2-4e+f^2-2f+2=0$. You should write the largest possible area of triangle ABC.

16. The smallest odd divisor of positive integer n, that is not eqaul to 1, is d, and the largest odd divisor of n is $D > d$. You should find all possible n that satisfy the following equation: $n = 3D+5d$.