

MILLIARD

Компьютер угадывает число из миллиарда или триллиона за
время логарифмическое
Computer guesses a number out of a billion or a trillion
in logarithmic time

Программа угадывает 1 из миллиарда на qbasic qb64

```
h1=0: h2=10^9: t=1: f=0: Randomize Timer ' milliardb.bas
human = Int(Rnd*h2) 'human
comp = Int(Rnd*h2) 'comp
While f < 1
Print t; "human ="; human; " comp ="; comp;
If comp < human Then
Print " MORE": a=comp: comp=Int((comp+h2)/2): h1=a
Else If human < comp Then
Print " less": a=comp: comp=Int((h1+comp)/2): h2=a
Else If human=comp Then
Print " win by "; t; " steps": f=1
End If: End If: End If: t = t + 1
Wend: End
```

Результаты для диапазона от 1 до 100

```
1 40 11 MORE
2 40 55 less
3 40 33 MORE
4 40 44 less
5 40 38 MORE
6 40 41 less
7 40 39 MORE
8 40 40 win by 8 steps
```

Программа C# Миллиард
угадывающая 1 из 1'000'000'000 rextester.com/DYVZM84267
за =log(10^9;2) за 30 ходов

```
using System; // milliardx.cs
namespace DANILIN { class Program
{ static void Main(string[] args)
{ Random rand = new Random();int t=0;
int h2=1234567890; int h1=0; int f=0; int a;
int comp = rand.Next(h2);
int human = rand.Next(h2);
while (f<1)
{ Console.WriteLine();
Console.Write("{0} {1} {2}", t, comp, human);
if(comp < human)
{ Console.Write(" MORE");
a=comp; comp=(comp+h2)/2; h1=a; }
else if(comp > human)
{ Console.Write(" less");
a=comp; comp=(h1+comp)/2; h2=a;}
else {Console.Write(" win by {0} steps", t);f=1;}
t++; }
Console.ReadKey();}}}
```

Компилирует c# bat

```
csc.exe /nologo Milliarda.cs
pause
Milliarda.exe
```

Удобно задаётся в Windows общая переменная
Path
C:\Windows\Microsoft.NET\Framework64\v4.0.30319

```

JavaScript JS Milliard
rextester.com/PYYQS76244
jdoodle.com/h/2U1
<!DOCTYPE html> <html lang="en">
<head> <meta charset="UTF-8">
<meta name="viewport" content="width=device-width,
initial-scale=1.0">
<meta http-equiv="X-UA-Compatible" content="ie=edge">
<title>Milliard JavaScript</title>
</head> <body> <noscript>Vkluch JS</noscript>
https://rextester.com/PYYQS76244
<script>
h2=1000000000, h1=0, f=0, t=0, a=0 // Milliard.js
comp = Math.floor(Math.random() * h2)
human = Math.floor(Math.random() * h2)
while (f<1)
{ document.write("<br/>" + t + " " + comp + " " + human)
if(comp < human)
{ document.write(" MORE")
a=comp; comp = Math.floor((comp+h2)/2); h1=a}
else if(comp > human)
{ document.write(" less")
a=comp; comp = Math.floor((h1+comp)/2); h2=a}
else { document.write(" win by " + t + " steps "); f=1}
t++}
</script>
</body> </html>

```

```

C++ Milliard rextester.com/QZEGM92902
#include <iostream> // milliardc.cpp
using namespace std;
int main() // rextester.com/QZEGM92902
{ srand(time(NULL));
int h2=1000000000, h1=0, f=0, t=0, a=0;
int comp = rand() % h2;
int human = rand() % h2;
while (f<1)
{ cout<<endl<<t<<" "<<comp<<" "<<human;
if(comp < human)
{ cout << " MORE";
a=comp; comp=(comp+h2)/2; h1=a;}
else if(comp > human)
{ cout << " less";
a=comp; comp=(h1+comp)/2; h2=a;}
else { cout <<" win by "<<t<<" steps "; f=1;}
t++; }system("pause");}

```

Программа Python Миллиард угадывающая 1 из 1'000'000'000 rextester.com/GWJFOO4393

```

import random # milliardp.py
h1=0; h2=10**16;t=0; f=0
c = random.randrange(0,h2) #comp
h = random.randrange(0,h2) #human
while f<1:
print(t,c,h)
if h<c:
print('MORE')
a=h
h=int((h+h2)/2)
h1=a
elif h>c:
print('less')
a=h
h=int((h1+h)/2)
h2=a
else:
print('win by', t, 'steps')
f=1
t+=1

```

trinket.io/embed/python/adae4501bd

GUESS number 2 line C++

c++ угадай число: 2 строка rextester.com/PODQ21675

```
#include <iostream>
using namespace std; int main() { srand(time(NULL)); int
Russia = 0; int n = 1; int num = 0; while (n != num) {
if (Russia == 0) { Russia = 2222; num = rand() %9+1;
cout << num << " " << n; } else if (Russia != 0) { n =
rand() %10 ; cout << num << " " << n; } if (n < num) {
cout << " MORE " << endl; } else if (n > num) { cout <<
" less "<< endl; } else if (n == num) {cout << " da "; }
} system("pause"); } // guessnumberc.cpp 9-9-2019
DANILIN Russia
```

GUESS number 1 line C#

c# угадай число: 1 строка rextester.com/XZGC82928

```
using System; using System.Text; namespace DANILIN {
class Program { static void Main(string[] args) { Random
rand = new Random(); int Russia = 0; int n = 1; int num
= 0; while (n!=num) { if (Russia == 0) { Russia = 2222;
num = rand.Next(10)+1; } else if (Russia != 0)
{Console.Write("? "); n = rand.Next(10)+1;
Console.Write(" {0} {1} ", num, n); } if (n < num) {
Console.WriteLine("MORE"); } else if (n > num) {
Console.WriteLine("less"); } else if (n == num) {
Console.Write("da"); } } Console.ReadKey(); } } //
guessnumberx.cs 9-9-2019 DANILIN Russia
```

qb64 qbasic угадай число 1 строка

```
1 If Russia = 0 Then Russia = 2222: Randomize Timer: num
= Int(Rnd * 100) + 1: GoTo 1 Else If Russia <> 0 Then n
= Int(Rnd * 100) + 1: If n < num Then Print n; num;
"MORE": GoTo 1 Else If n > num Then Print n; num;
"less": GoTo 1 Else If n = num Then Print n; num; "da":
End Else GoTo 1 ' guessnumberb.bas 9-9-2019 DANILIN
Russia
```

qbasic version of "guess my number game" 1 line

JavaScript js угадай число 1

строка rextester.com/SDEAV70887

```
var Russia=0; var n, num=0; while (n != num) { if
(Russia == 0) { Russia = 2222; num =
Math.floor(Math.random()*9+1); } else if (Russia != 0) {
n = Math.floor(Math.random()*10); document.write("<br/>"
+ num + " " + n) } if (n < num) { document.write(" MORE
"); } else if (n > num) { document.write(" less "); }
else if (n == num) {document.write(" da "); } } // guess
number 1-line DANILIN js
```

qbasic qb64 guessnum.bas input & goto 2019-9-9

```
1 IF Russia = 0 THEN Russia = 2222: RANDOMIZE TIMER: num
= INT(RND * 100) + 1: GOTO 1 ELSE IF Russia <> 0 THEN
INPUT n: IF n < num THEN PRINT "MORE": GOTO 1 ELSE IF n
> num THEN PRINT "less": GOTO 1 ELSE IF n = num THEN
PRINT "da": END ELSE GOTO 1 'DANILIN Russia 9-9-2019
guessnum.bas
```

c# guessnum.cs input & goto 2019-9-9

```
using System; using System.Text; namespace GURU { class
Program { static void Main(string[] args) { Random rand
= new Random(); int Russia = 0; int n = 0; int num = 0;
dav: if (Russia == 0) {Russia = 2222; num =
rand.Next(100)+1; goto dav; } else if (Russia != 0)
{Console.Write("? "); n =
Convert.ToInt32(Console.ReadLine());} if (n < num) {
Console.WriteLine(«MORE»); goto dav;} else if (n > num)
{ Console.WriteLine(«less»); goto dav;}else if (n ==
num) {Console.Write(«da»); Console.ReadKey(); } else
goto dav;}}// DANILIN Russia 9-9-2019 guessnum.cs
```