

Laboratory work No. 1

Handling large numbers

Purpose of the work: implementation of arithmetic operations on numbers that go beyond the bit grid of a personal computer, selection of the necessary data types for storing and processing these numbers.

Create a program for multiplying or dividing two numbers, where the exponent has up to 5 digits: from -99999 to +99999, and the mantissa has up to 40 digits.

The program must enter numbers and check their correctness and produce either the correct result in the specified format (if the data is correct) or a message about the impossibility of calculating.

No.	Task No. 1	PS7- 31.34	PS7- 32.35	PS7- 33.36
1	Model the operation of dividing a real number in the form $-mn E -K$, where the total length of the mantissa ($m+n$) is up to 35 significant digits, and the value of the order K is up to 5 digits, by an integer up to 35 decimal digits long. Give the result in the form $-0.m1 E -K1$, where $m1$ is up to 35 significant digits, and $K1$ is up to 5 digits.	1.7, 13.19 25.31	6.12, 18.24, thirty	4.10, 16.22, 28
2	Model the operation of multiplying a real number in the form $-mn E -K$, where the total length of the mantissa ($m+n$) is up to 40 significant digits, and the value of the order K is up to 5 digits, by an integer up to 30 decimal digits long. Give the result in the form $-0.m1 E -K1$, where $m1$ is up to 30 significant digits, and $K1$ is up to 5 digits.	2.8, 14.20 26.32	5.11, 17.23, 29	5.11, 17.23 29
3	Model the operation of multiplying an integer of up to 40 decimal digits by a real number in the form $-mn E -K$, where the total length of the mantissa ($m+n$) is up to 30 significant digits, and a value of the order of K is up to 5 digits. Give the result in the form $-0.m1 E -K1$, where $m1$ is up to 40 significant digits, and $K1$ is up to 5 digits.	3.9, 15.21 27.33	4.10, 16.22 28	6.12, 18.24 thirty
4	Model the operation of dividing an integer up to 40 decimal digits by a real number in the form $-mn E -K$, where the total length of the mantissa ($m+n$) is up to 40 significant digits, and a value of the order of K is up to 5 digits. Give the result in the form $-0.m1 E -K1$, where $m1$ is up to 50 significant digits, and $K1$ is up to 5 digits.	4.10, 16.22 28	3.9, 15.21 27.33	1.7, 13.19 31
5	Model the operation of multiplying a real number by a real number in the form $-mn E -K$, where the total length of the mantissa of the first factor ($m+n$) is up to 35 significant digits, the second - up to 40 significant digits, and the value of order K - up to 5 digits. Give the result in the form $-0.m1 E -K1$, where $m1$ is up to 40 significant digits, and $K1$ is up to 5 digits.	5.11, 17.23 29	2.8, 14.20 26.32	2.8, 14.20 26, 32
6	Model the operation of dividing a real number by a real number in the form $-mn E -K$, where the total length of the mantissa ($m+n$) is up to 40 significant digits, and the value of order K is up to 5 digits. Give the result in the form $-0.m1 E -K1$, where $m1$ is up to 40 significant digits, and $K1$ is up to 5 digits.	6.12, 18.24 thirty	1.7, 13.19 25, 31	3.9, 15.21 27, 33