

For profiling we have decided to use the instrumentation method.

When we have used this method with 10 inputs , we have discovered that our most called functions from math library are SUM ( $2 \times \text{number of inputs}$ ) and POW ( $\text{number of inputs} + 1$  ). The average time spent in function itself (doesn't include its children) is mostly spent in function ROOT and functions POW and ROOT have the biggest overall percentage of time spent in function and its children in according to math functions.

With 100 inputs, most called functions are also SUM and POW. ROOT has the most time spent in function . SUM and POW take the most time spent in functions and its children.

In 1000 inputs case, most called functions are likewise SUM and POW. ROOT and MUL take the most time and POW takes the most time overall.

Take a look at this table below:

INPUTS	MOST CALLS	ELAPSED INCLUSIVE TIME (%)	AVG ELAPSED INCLUSIVE TIME
10	POW,SUM	POW, ROOT	ROOT
100	POW,SUM	SUM, POW	ROOT
1000	POW,SUM	POW	ROOT,MUL

When optimizing, we should mainly focus on these functions mentioned above. Especially ROOT because the most time is spent in this function itself and also POW because the most time is spent in this function and its children.