Everything is in SysTick ticks (i.e. difference between NVIC\_ST\_CURRENT\_Rs)

CFloat: 2,522,762

CFixed: 81,951 or 163,902

ASMFloat: 65,559

ASMFixed: 49,181

C difference is large (~20 to ~30 times larger) since floating point is not well supported on the Cortex M4 processor. Fixed point is much faster.

ASM difference is not as much because of poor benchmark test. The benchmark test did not use the computationally intensive floating point instructions (e.g. divide) and didn’t run many instructions.

Fixed Point vs. Floating Point (NOTE: these differences are in general and do not apply to everything. Depending on how specialized the architecture is for either number representation, these answers may not apply. People can do some pretty crazy shit).

Fixed point costs less power, is simple to implement, not much overhead, higher resolution, good for when the range is small and known ahead of time.

Floating point requires more hardware support, is harder/more complex to implement, has a lot of overhead that no longer becomes detrimental after the use of many floating point operations or intense optimization, has a larger range, requires more space since it pushes more (floating point) registers onto the stack.