

## Can You Do Calculations?

*I need your help again.*

But ... let me check your background first.

Without a calculator, how many of you can ...

- do long division?
- calculate a square root?
- calculate transcendental and hypertranscendental functions (sin, cos, tanh,  $\Gamma$ , ...)?
- use a library to find out?

(The last skill is important!)

## What is a Library?

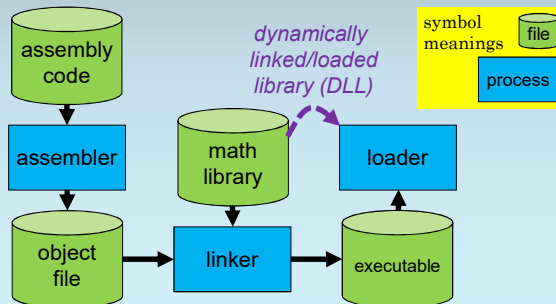
In programming, a **library** is...

- a **body of subroutines** for common tasks
- typically **written in advance**
- **by someone else**, and
- **incorporated** into a program **by a linker**.

Examples from C include...

- the standard I/O library
- the math library

## Libraries are Incorporated by the Linker



## System Calls / Traps are a Library, Too

But the system calls provided by an OS are also a body of subroutines...

**System Calls/Traps** are (usually)

- a **set of library routines**
- usually **executed with privilege\***
- **preloaded into the computer** (sometimes in ROM, as with BIOS)
- **accessed indirectly** (by number, not address)

\*But not in the LC-3 ISA.