

Problem 3a

- **Total samples needed:** 107
- **Ranks you can use** (due to QOS limit): 128
- **Samples per rank:**

$$N = \lceil 107/128 \rceil = 1$$

\Rightarrow total samples = 128 \geq 107

- **Core-hour limit:** 100 CPU-hours
- **Compute wall time** w in hours such that

$$cores \times w \leq 100 \Rightarrow w \leq \frac{100}{128} \approx 0.78125 \text{ h} \approx 46.9 \text{ min}$$

- **Choose a safe request:** 23 minutes gives

$$128 \times \frac{23}{60} \approx 49 \text{ CPU-hours} < 100$$

So, we'll request **00:23:00**.