

# Calculating FLOPS, TFLOPS, and PFLOPS

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## Formula:

- **FLOPS (Floating Point Operations Per Second)** = Total Floating Point Operations ÷ Total Execution Time (in seconds)
- **TFLOPS (TeraFLOPS)** = FLOPS ÷  $1e12$
- **PFLOPS (PetaFLOPS)** = FLOPS ÷  $1e15$

## Steps:

### 1. Determine the Total Floating Point Operations (FLO):

- This is the total number of floating-point calculations your model performs. It depends on the architecture and the operations used.

### 2. Measure the Total Execution Time:

- The total time taken to perform all the floating-point operations (in seconds).

### 3. Calculate FLOPS:

- Use the formula above to compute FLOPS.

### 4. Convert FLOPS to TFLOPS or PFLOPS:

- Divide FLOPS by  $1e12$  for TFLOPS.
- Divide FLOPS by  $1e15$  for PFLOPS.

## Example Calculation:

Suppose you have:

- Total Floating Point Operations (FLO) =  $9 \times 10^{14}$
- Total Execution Time = **300 seconds**

## Compute FLOPS:

- $\text{FLOPS} = \text{FLO} \div \text{Time}$
- $\text{FLOPS} = (9 \times 10^{14}) \div 300$
- **$\text{FLOPS} = 3 \times 10^{12}$  FLOPS**

## Convert to TFLOPS:

- $\text{TFLOPS} = \text{FLOPS} \div 1e12$
- $\text{TFLOPS} = (3 \times 10^{12}) \div 1e12$
- **$\text{TFLOPS} = 3$  TFLOPS**

## Convert to PFLOPS:

- $\text{PFLOPS} = \text{FLOPS} \div 1e15$
- $\text{PFLOPS} = (3 \times 10^{12}) \div 1e15$

- PFLOPS = **0.003 PFLOPS**

**Summary:**

- **FLOPS:**  $3 \times 10^{12}$  FLOPS
- **TFLOPS:** 3 TFLOPS
- **PFLOPS:** 0.003 PFLOPS

**Note on Prefixes:**

- **Kilo (K)** =  $1e3$
- **Mega (M)** =  $1e6$
- **Giga (G)** =  $1e9$
- **Tera (T)** =  $1e12$
- **Peta (P)** =  $1e15$