Intermediate Computation Space: Why CoT Works

Standard Generation

Q: 17 + 28 = ?

Single
forward pass

A: 44 (maybe wrong!)

No space to "think"

Chain-of-Thought Generation

Q: 17 + 28 = ? Let's think...

Reasoning tokens (scratchpad):

"17 + 28: First, 7+8=15, carry 1..."

"10+20+10+5 = 45"

A: 45 (verified!)

Key Insight: Reasoning tokens = intermediate computation that enables multi-step problem solving