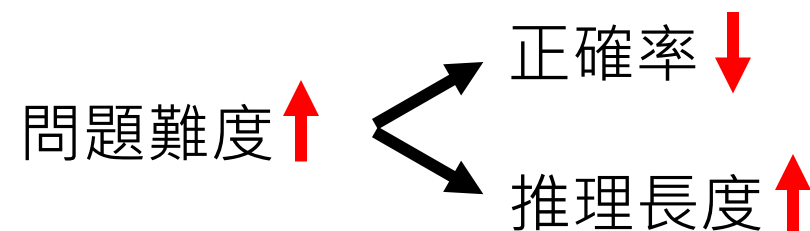
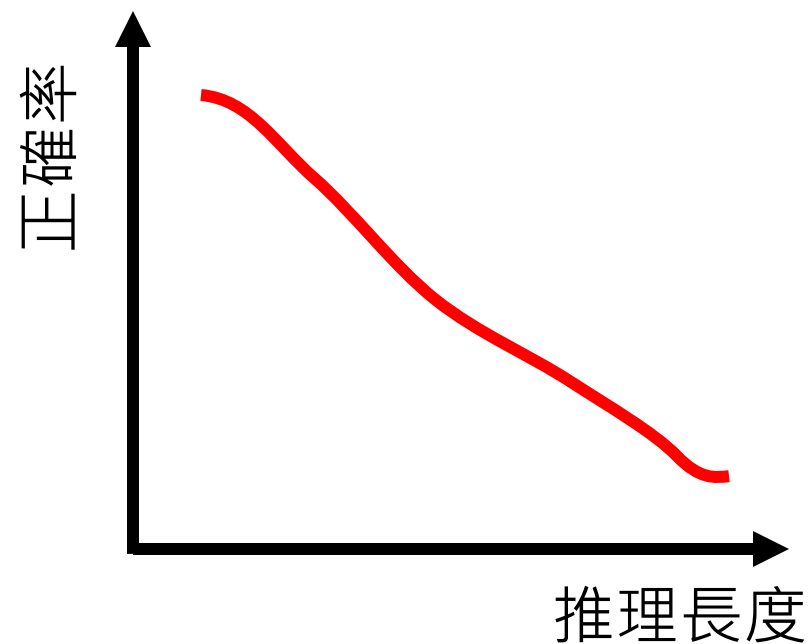
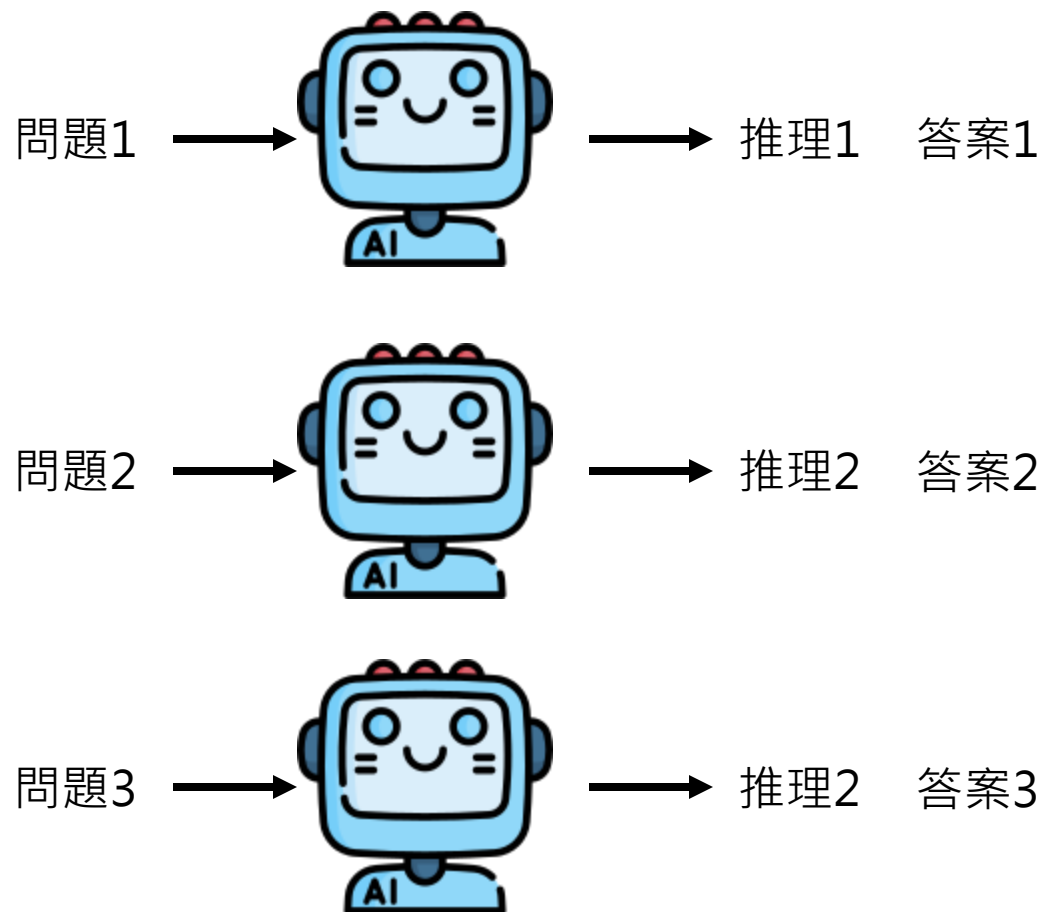
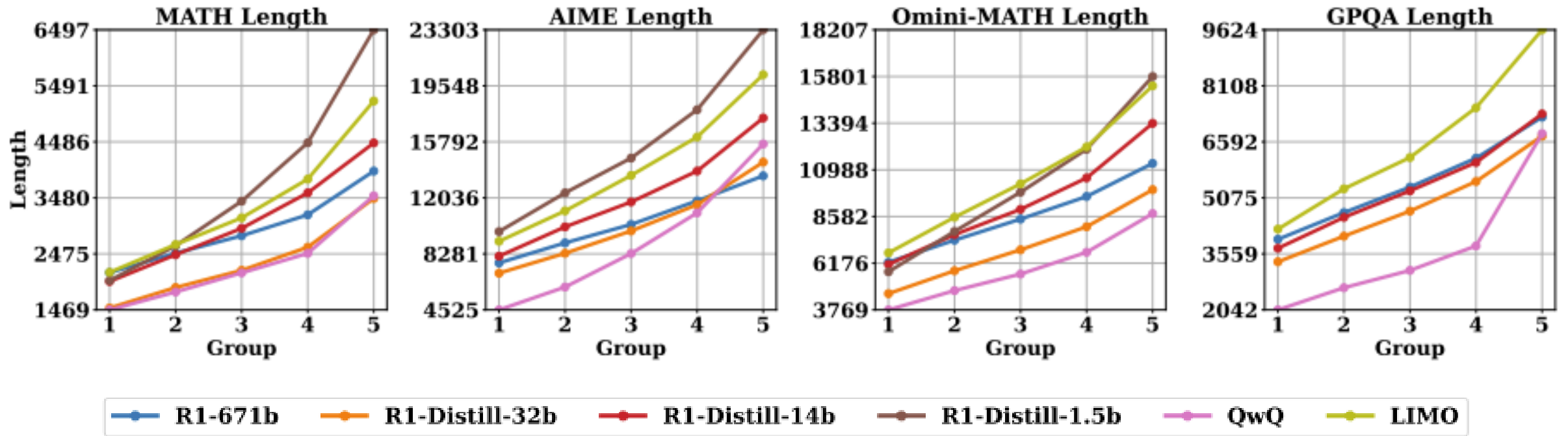
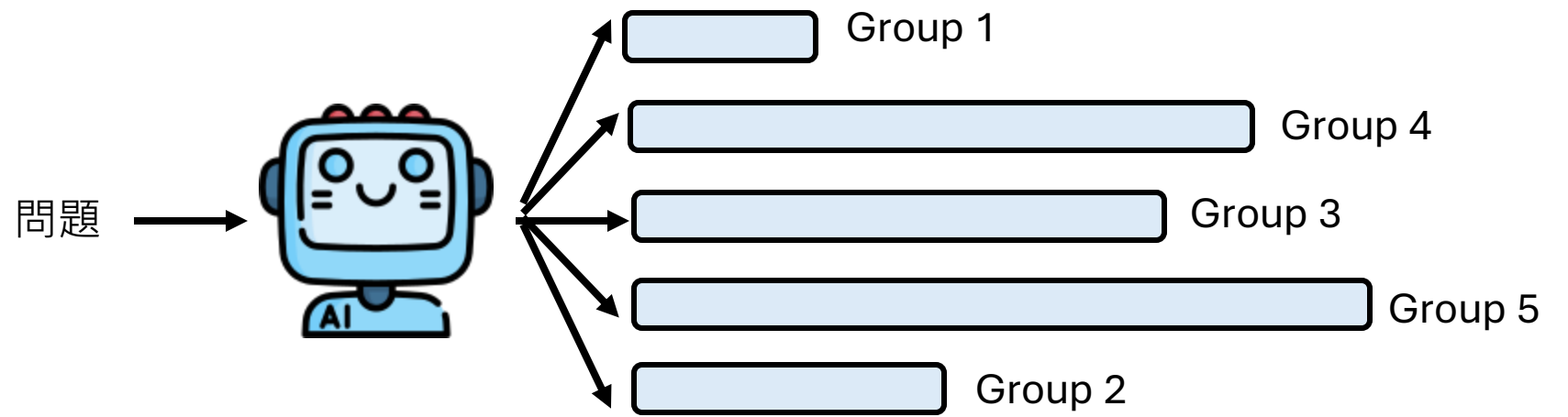


別讓「推理」 大型語言模型想太多

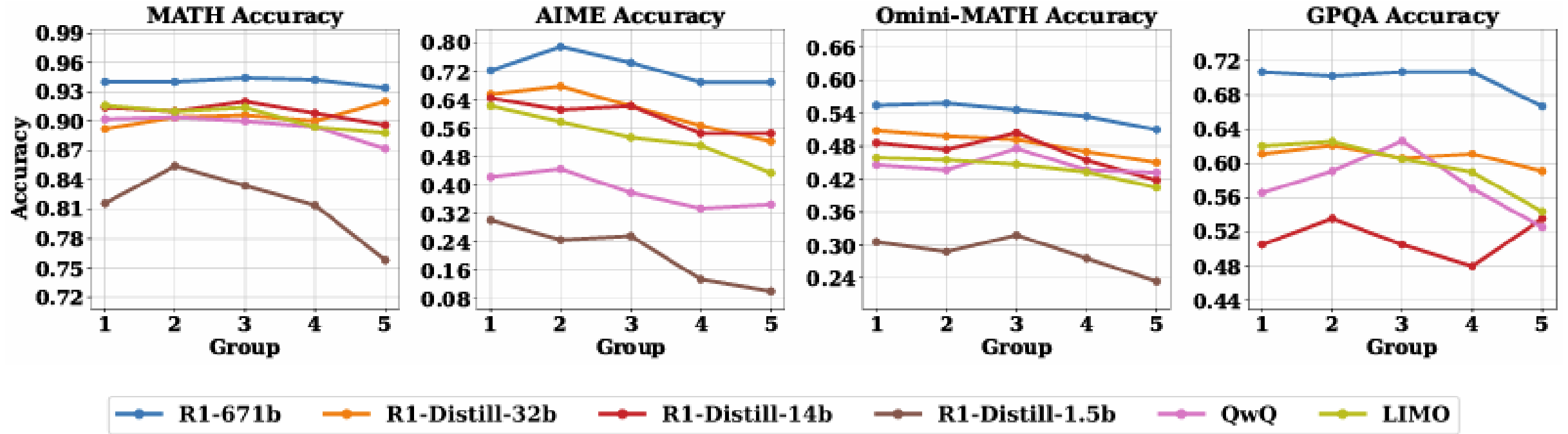
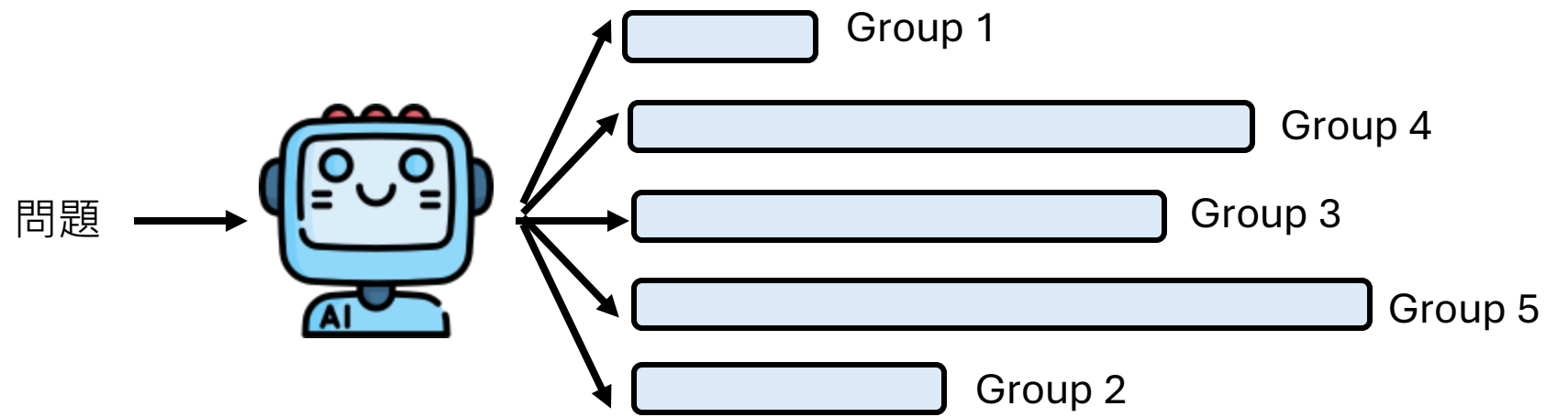
2025/04/30

「推理」越長、結果越好？





<https://arxiv.org/abs/2502.12215>



<https://arxiv.org/abs/2502.12215>

Q: Let $a, b, x,$ and y be real numbers with $a > 4$ and $b > 1$ such that $\frac{x^2}{a^2} + \frac{y^2}{a^2 - 16} = \frac{(x-20)^2}{b^2 - 1} + \frac{(y-11)^2}{b^2} = 1$. Find the least possible value of $a + b$.

Solution1

Thought1 So I've got this problem here that involves some equations with variables $a, b, x,$ and $y,$ and I need to find the least possible value of $a + b$ given some conditions. ... Perhaps I can think of this as a system of equations and try to solve for x and y in terms of a and b .
411 tokens

Thought2 **Alternatively,** maybe there's a geometric interpretation. Since both equations represent ellipses, perhaps the condition is that these ellipses are tangent to each other. ... So, unless there's some transformation or something, they don't seem to be the same ellipse.
588 tokens

Thought3 **Alternatively,** perhaps the problem is that for some $(x,y),$ both equations hold simultaneously, and I need to find a and b such that this is possible. ... solve the first equation for y in terms of x and substitute into the second equation. But that seems messy.
109 tokens

Thought4 **Alternatively,** perhaps I can consider this as an optimization problem where I need to minimize $a + b$ subject to the condition that the equations have a solution. ... But I'm not sure how to set that up algebraically.
280 tokens

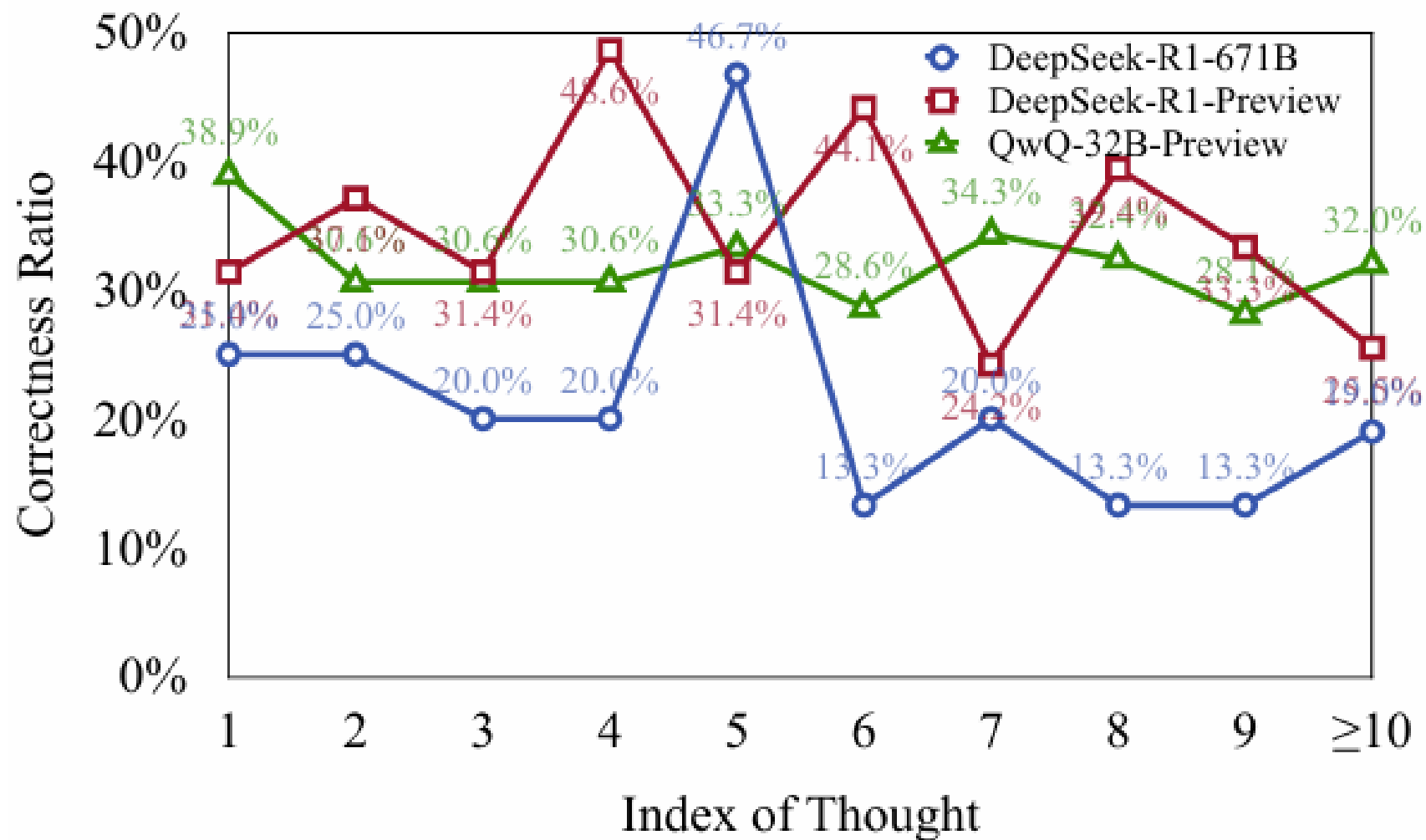
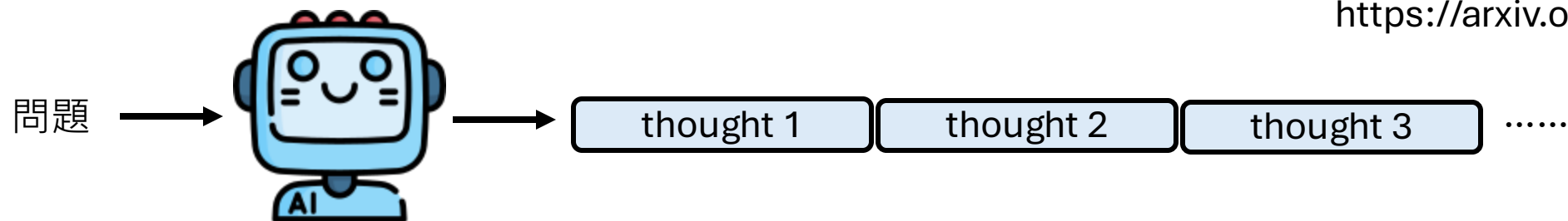
Thought5 **Alternatively,** perhaps I can consider the distance between the centers of the two ellipses and relate it to their axes. ... But $(y - 11)^2$ is $y^2 - 22y + 121$. However, I only have $y^2,$ not y . So maybe this isn't the best way to substitute.
613 tokens

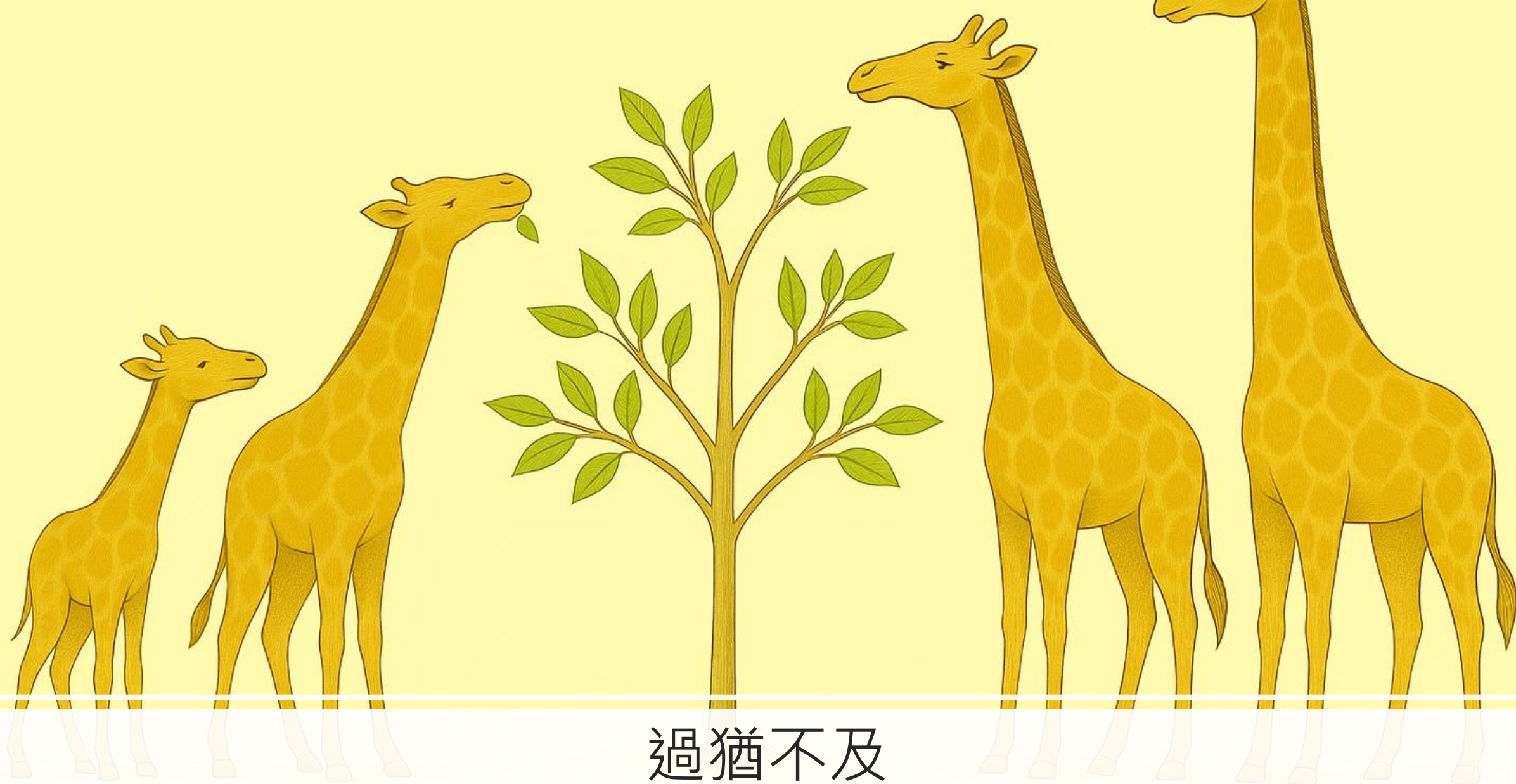
20 More Thoughts
Averaged 284 tokens

.....

Given that, perhaps I need to accept that this problem is beyond my current ability and seek help or look for a different problem.

****Final Answer**:** $\boxed{15}$





過猶不及

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以結果為導向學習推理 (Reinforcement Learning, RL)

Chain of Draft

<https://arxiv.org/pdf/2502.18600>

Standard

Answer the question directly. Do not return any preamble, explanation, or reasoning.

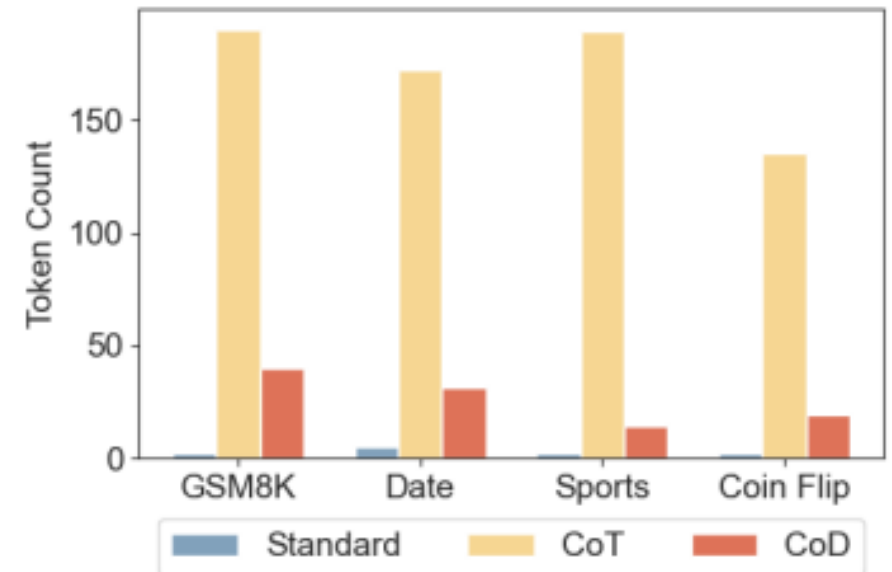
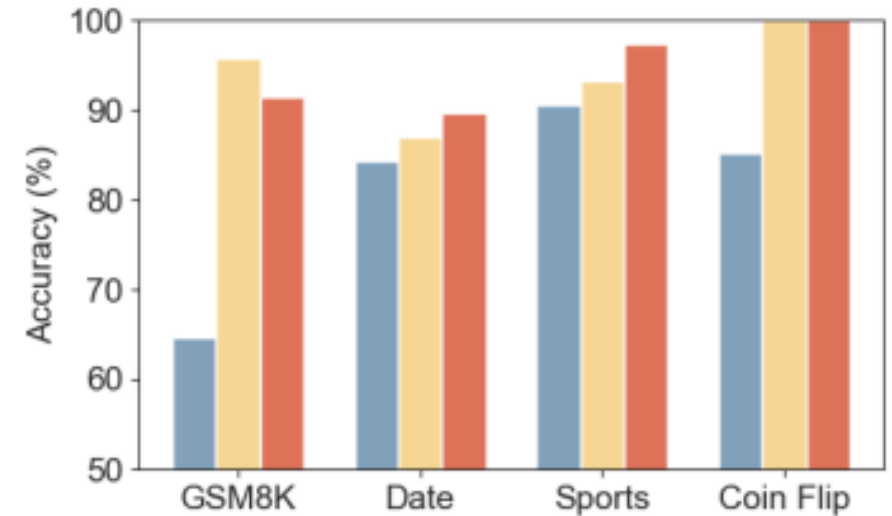
Chain-of-Thought

Think step by step to answer the following question. Return the answer at the end of the response after a separator ####.

Chain-of-Draft

Think step by step, but only keep a minimum draft for each thinking step, with 5 words at most. Return the answer at the end of the response after a separator ####.

Claude 3.5 Sonnet



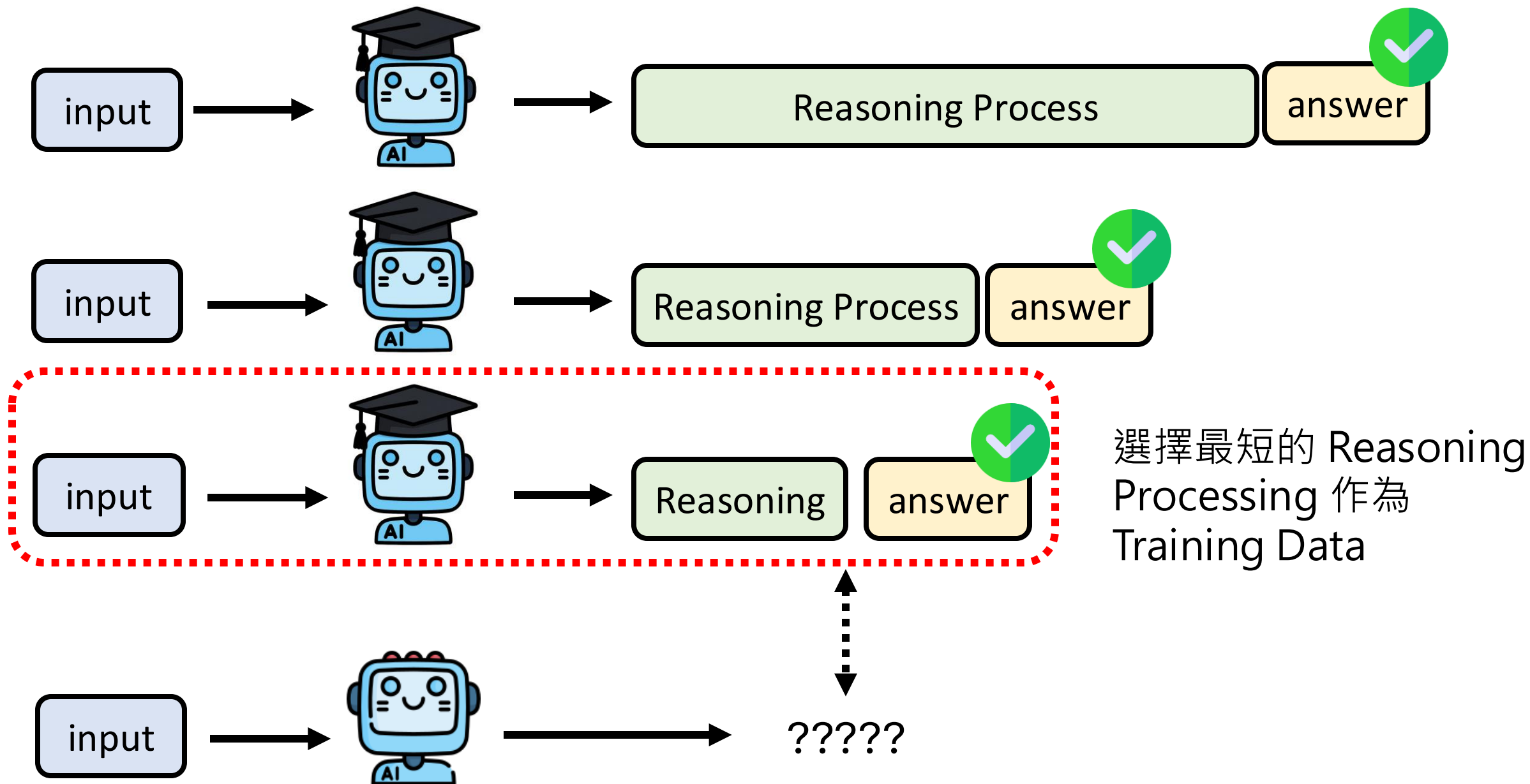
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From Explicit CoT to Implicit CoT

		Input							CoT							Output		
Explicit CoT	Stage 0:	2	1	×	4	3	=		8	4	+	0	6	3	=	8	0	4
	Stage 1:	2	1	×	4	3	=		4	+	0	6	3		=	8	0	4
	Stage 2:	2	1	×	4	3	=			+	0	6	3		=	8	0	4
	Stage 3:	2	1	×	4	3	=				0	6	3		=	8	0	4
	Stage 4:	2	1	×	4	3	=					6	3		=	8	0	4
	Stage 5:	2	1	×	4	3	=						3		=	8	0	4
Implicit CoT	Stage 6:	2	1	×	4	3	=								=	8	0	4

<https://arxiv.org/abs/2405.14838>

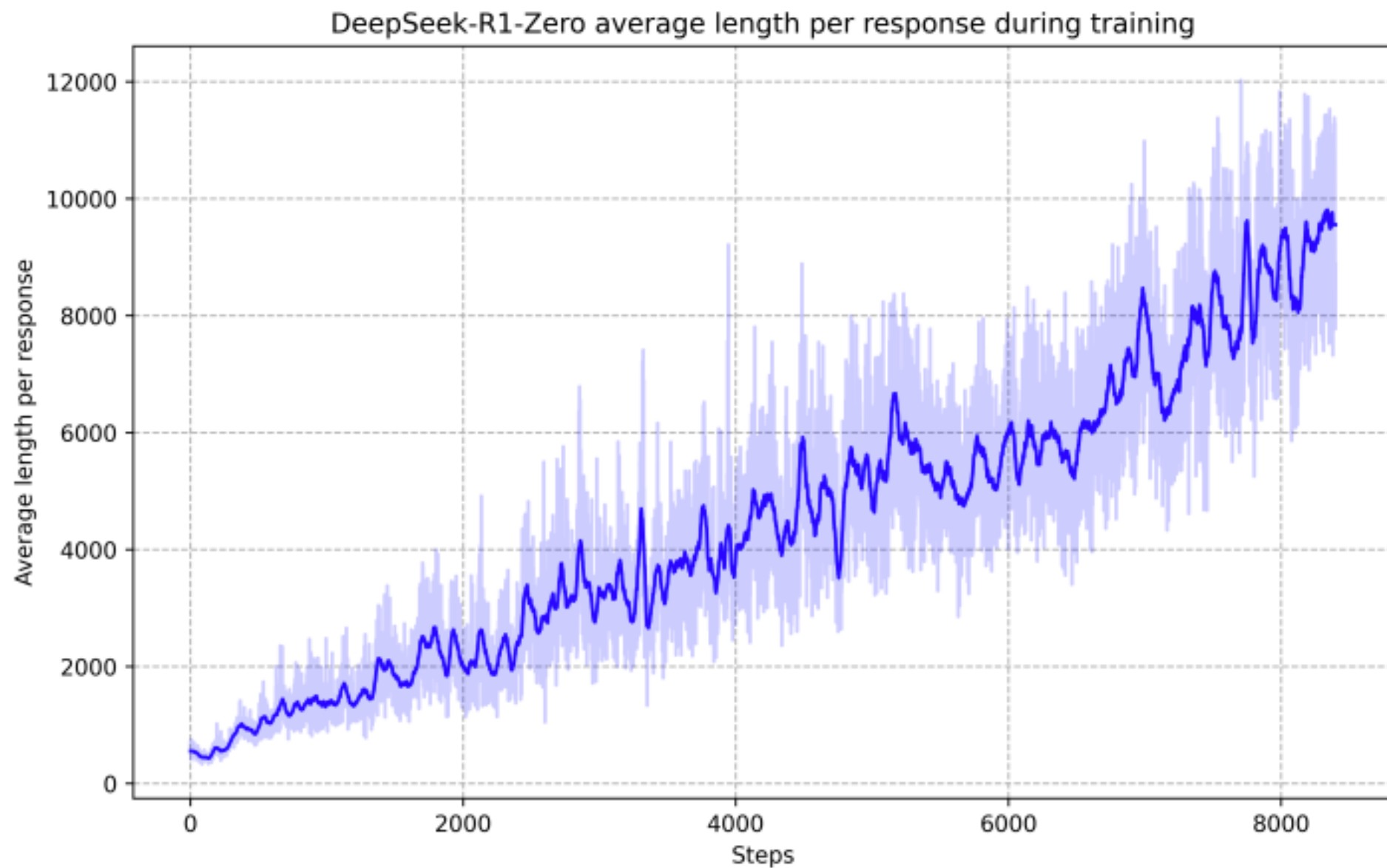
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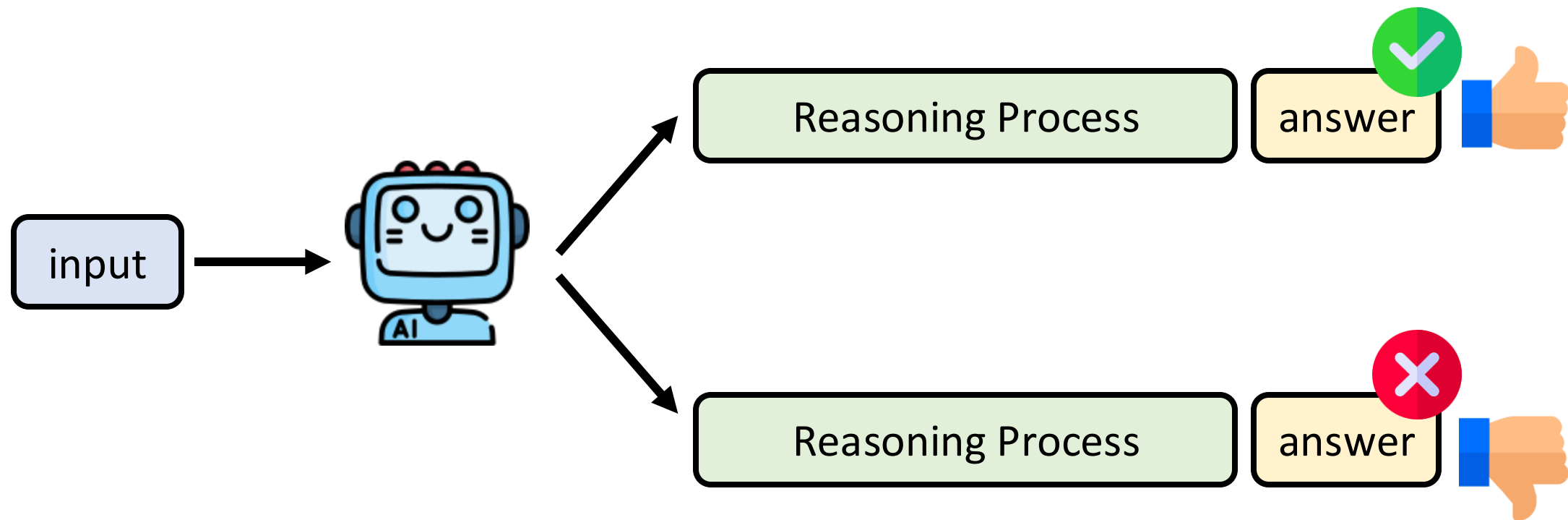
以結果為導向學習推理 (Reinforcement Learning, RL)



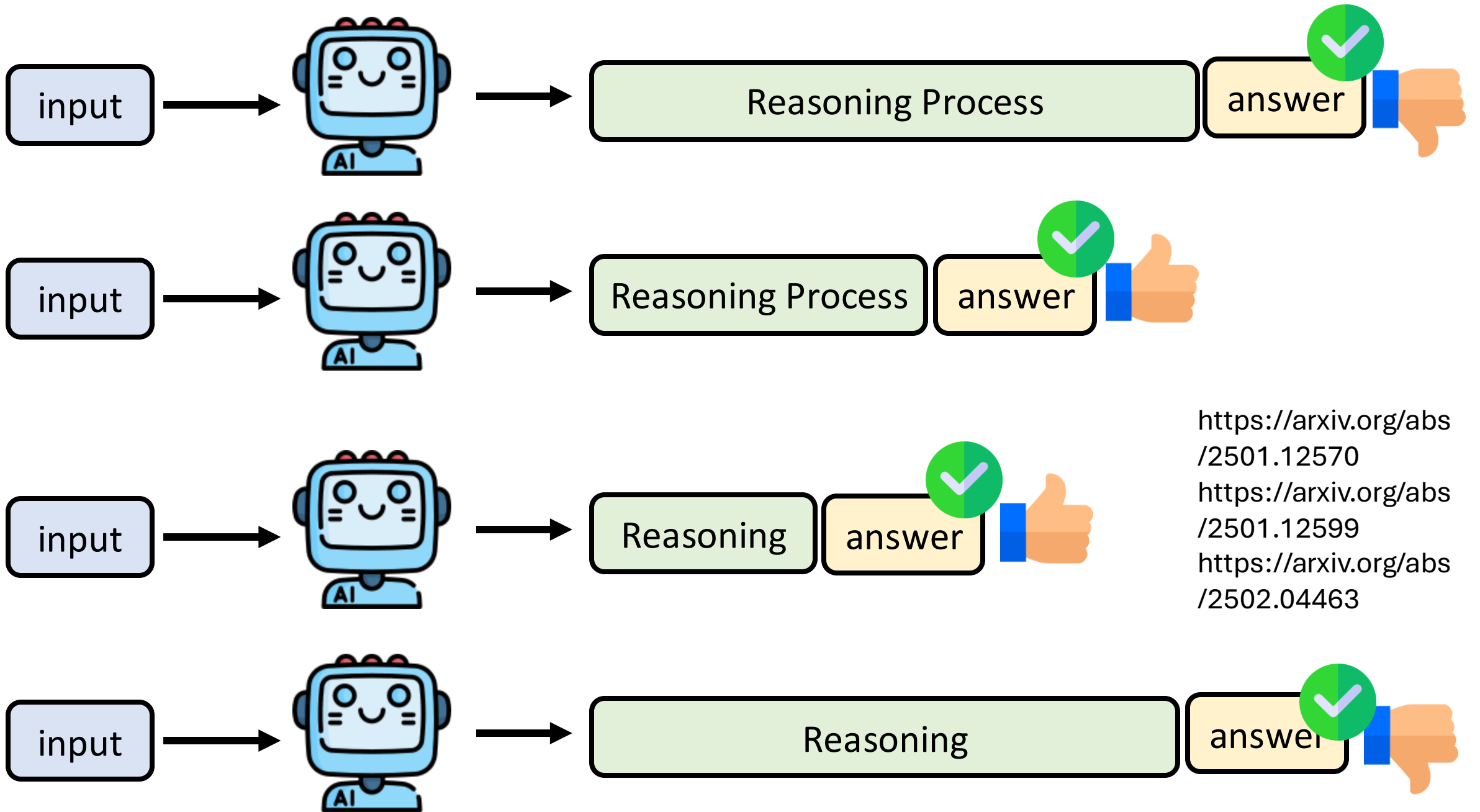
DeepSeek-R1

<https://arxiv.org/abs/2501.12948>

需要把長度考慮進去

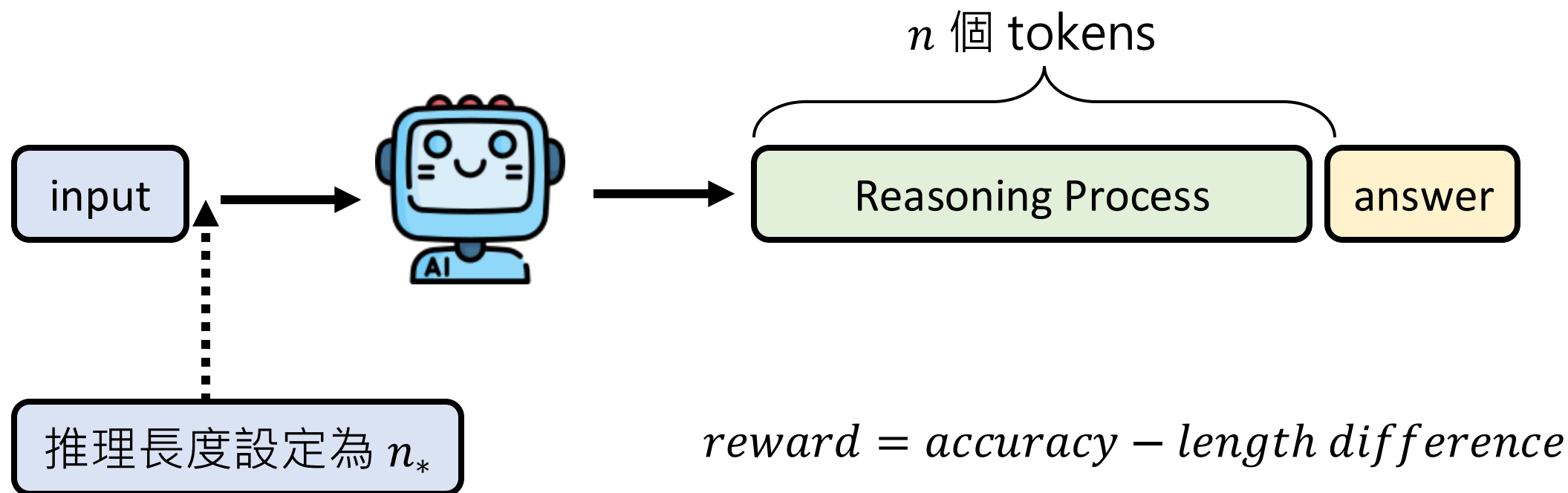


沒人在意 Reasoning Process 的長度!



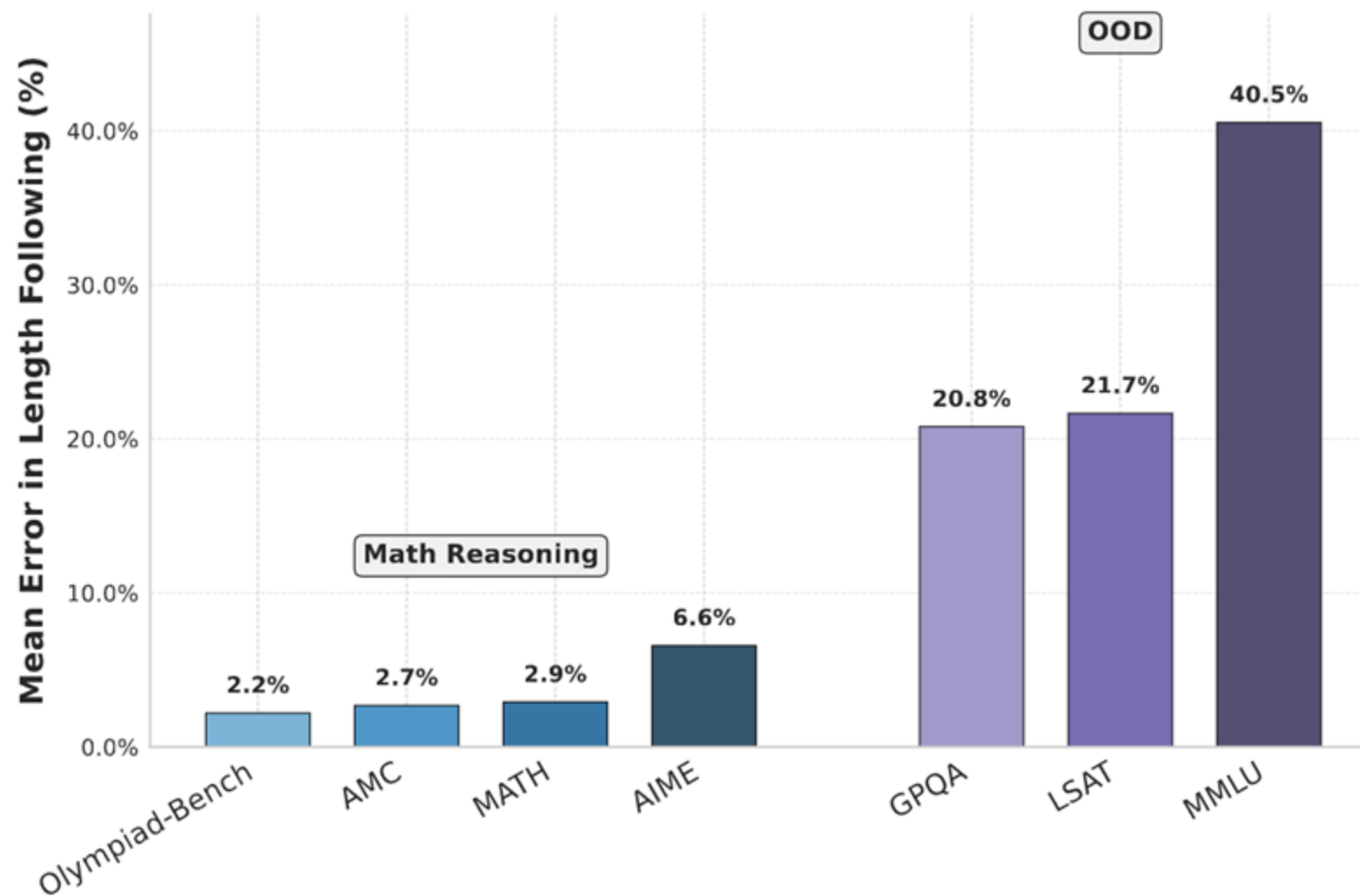
控制「推理」的長度

<https://arxiv.org/abs/2503.04697>



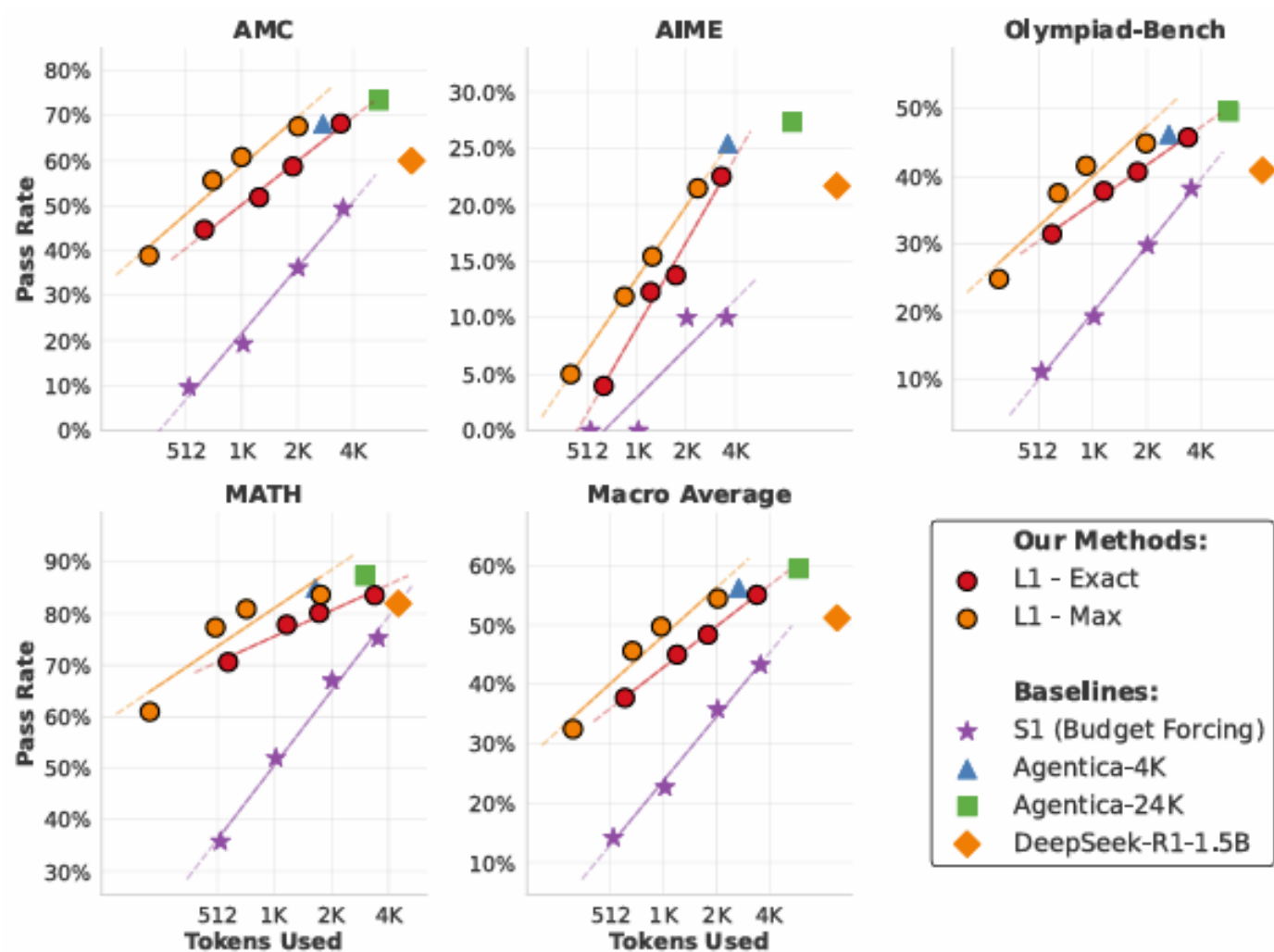
控制「推理」的長度

<https://arxiv.org/abs/2503.04697>



控制「推理」的長度

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