

# 在數學教學中用 ChatGPT, OK 嗎?



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賽馬會「混合式教學」計劃副負責人

# 在數學教學中用 ChatGPT，OK 嗎？

21世紀教室

人工智能 混合式學習 創新教學法及課堂設計

廣東話

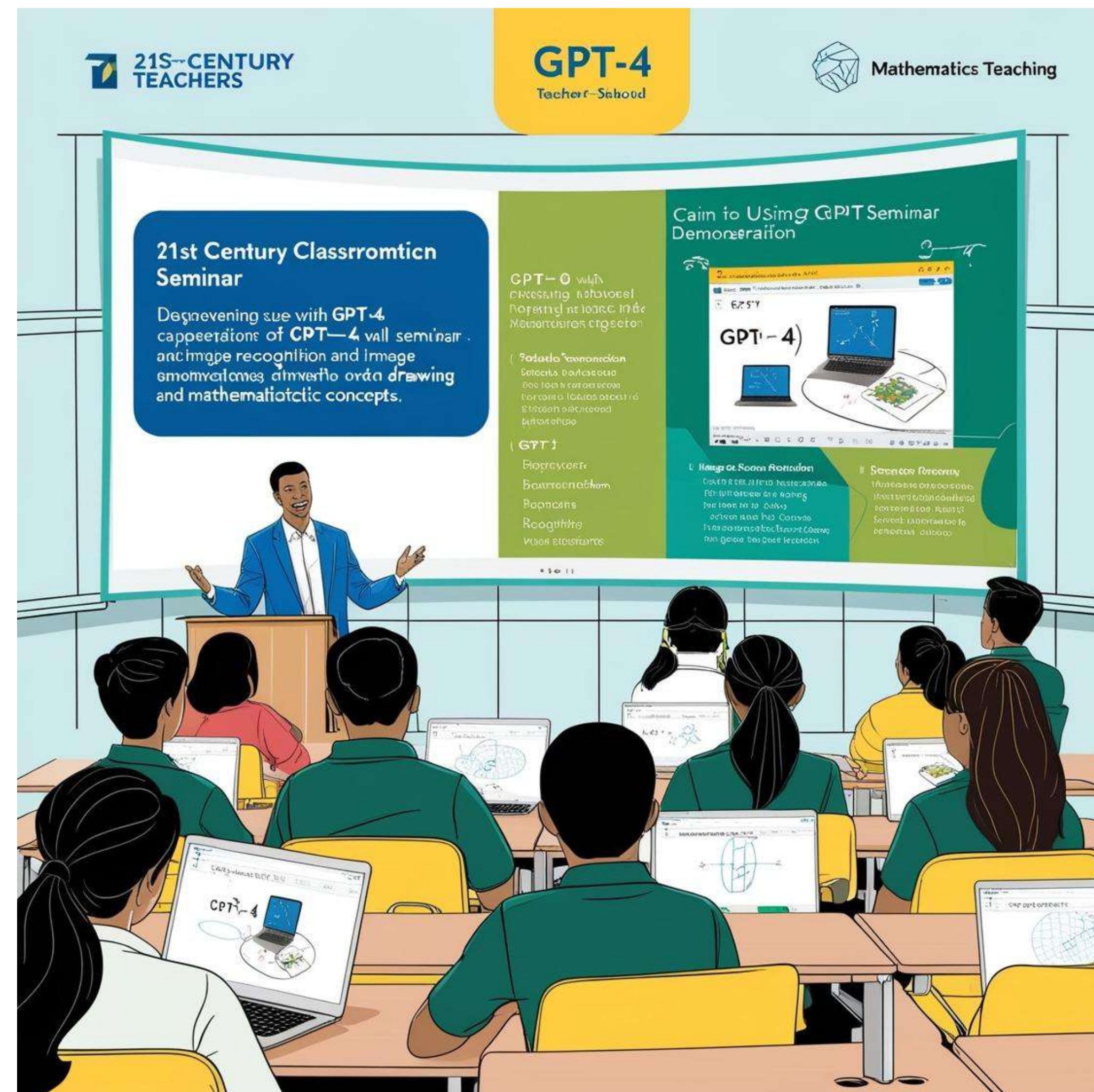
## 概覽

自從OpenAI於2022年11月推出ChatGPT後，生成式AI技術迅速成為熱門話題。作為一個語言模型，ChatGPT在語文表現出色，但其在數學方面的表現卻未能滿足數學教師期望。事實上，GPT-4在數學表現上已顯著超越先前的ChatGPT 3.5版本。

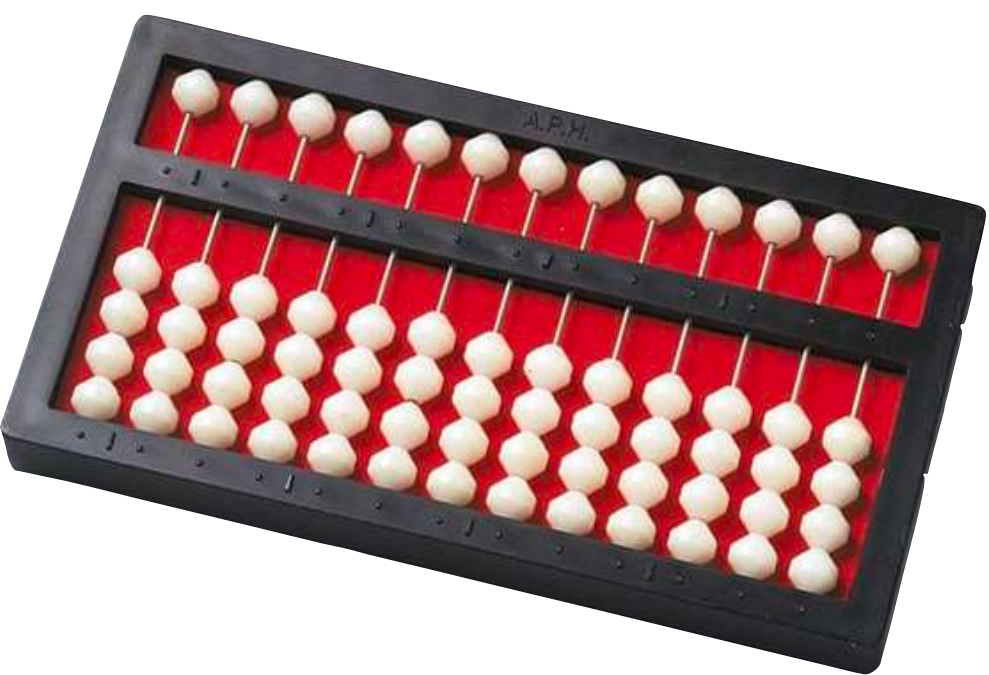
在此研討會中，講者將介紹GPT-4在數學教學上的實際應用，包括出題、解題、繪圖和認圖等多方面，重點將放在如何透過適當提示，從GPT-4獲取最有用的資訊。講者已使用ChatGPT近一年半，頻繁利用此工具進行出題、備課、製作試卷、設計學生作業，以及為DSE考生提供應試指導，成效顯著。此外，講者亦曾到訪多間本地學校，並在全校教師發展日及網上研討會上主持，向教師群介紹如何運用生成式AI技術來有效減輕教師的工作負擔。

參與者可在此公開示範課中了解：

1. 探索 GPT-4 處理數學題目的能力範圍；
2. 體驗 GPT-4 模擬出數學題目的驚人效能；及
3. 觀察 GPT-4 在辨認數學圖像方面的快速進步。



# 計算工具的發展



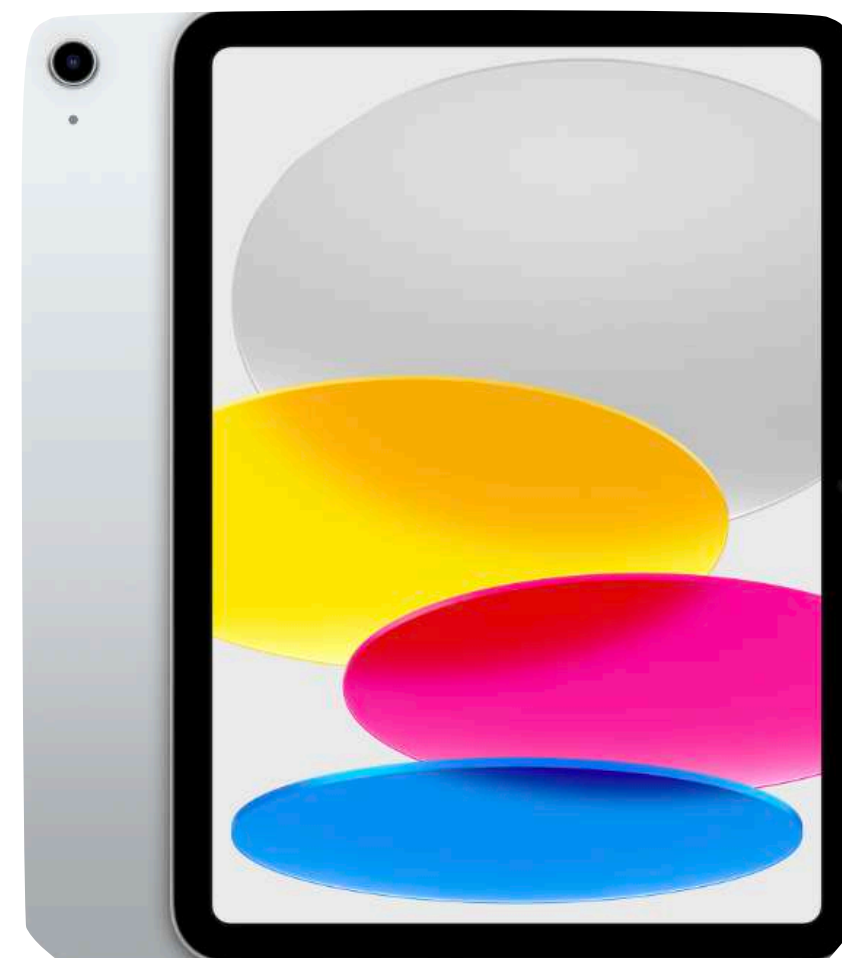
算盤

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56	7482	7490	7497	7505	7513	7520	7528	7536	7543	7551	1	2	3	4	5	6	7	8	9	
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對數表



計數機



iPad



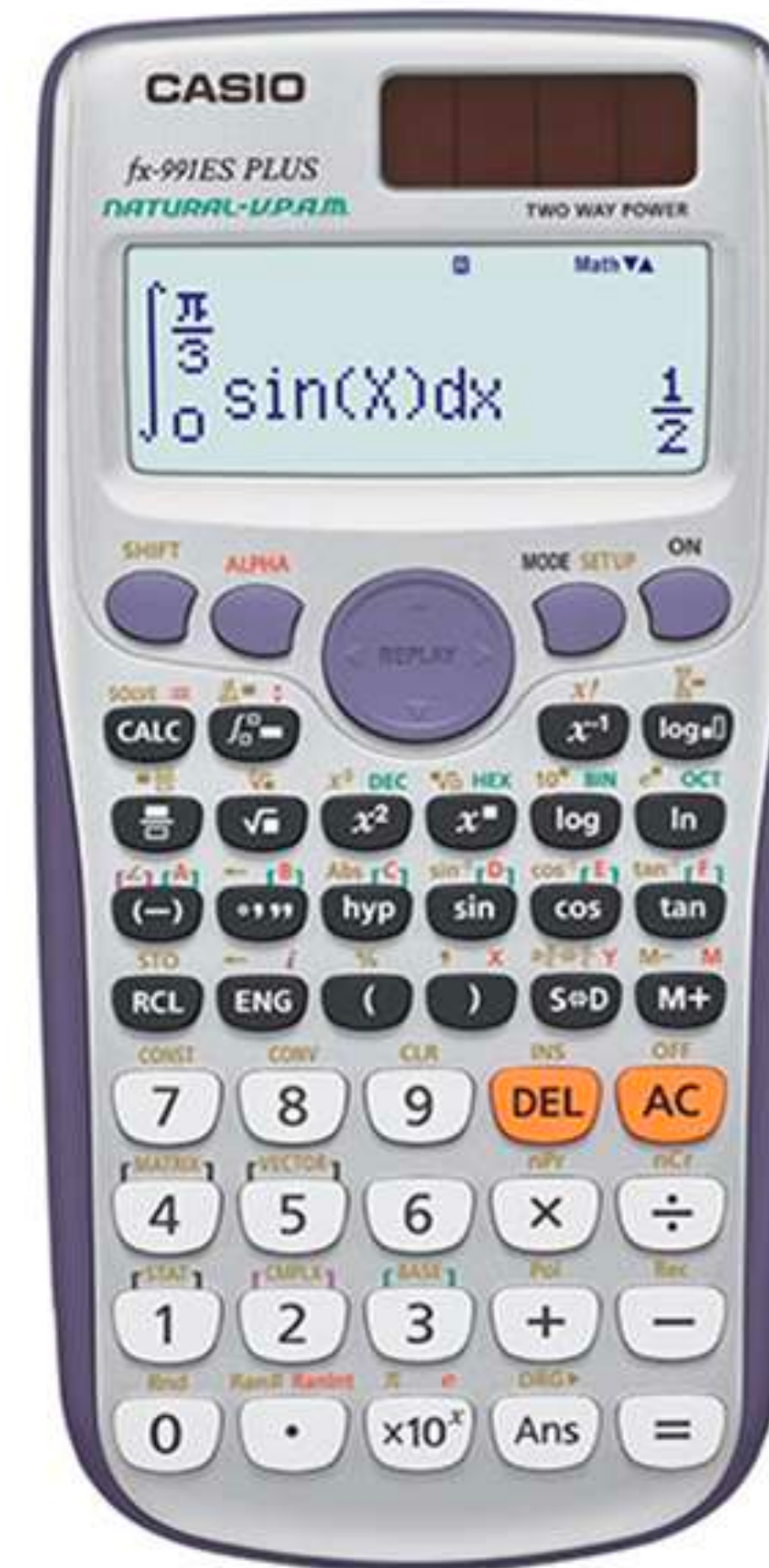
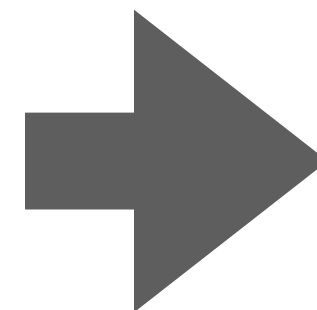
人工智能



人性化  
智能化

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	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9

對數表




聚焦數字運算


聚焦公式運用及解難



改簿能力



解難能力  
出題能力



認圖能力



繪圖能力



識睇係睇留言 

講到咁好，遲早連老師都被取代😂

2d Like Reply

48  

[View all 10 replies](#)

主要係師資越來越參差，為公平及沒有主觀問題下，改用AI做批改係未來走勢

2d Like Reply

48 

只用過百篇去訓練，樣本會唔會太少？

1d Like Reply

2 

 Top fan

幾年後會有幾多行業被淘汰呢，會有幾多人失業

1d Like Reply

3 

[誤差僅1分]足夠引發爭議啦

2d Like Reply 21  

Chee Chung Wong 咁咪淨係  
擲界果堆卷人手睇多次囉


2d Like Reply Edited 


View 1 reply

 Top fan

49分同50  
分的差別

1d Like Reply 

 Reply to Chee Chung Wong

咁咪老師無法了解每一位學生嘅情  
況？每位學生的功課，都代表着自己  
獨特風格。用Ai改功課的想法，簡直  
荒謬，失去教育原本的義義 

2d Like Reply 19  

老師可以用AI改卷,學生可以用AI答卷  
嗎？

1d Like Reply 12  

我覺得如果都係AI改卷太過機械化 邊  
個都知道答案冇唯一性 如果咁做 好  
多題目一些不一樣的想法嘅AI呢度變  
成了錯誤答案

1d Like Reply

View 1 reply

手機便可以做到修改中文或英文, 還  
可以應用在數學上. 我經常用！

23h Like Reply

 Top fan

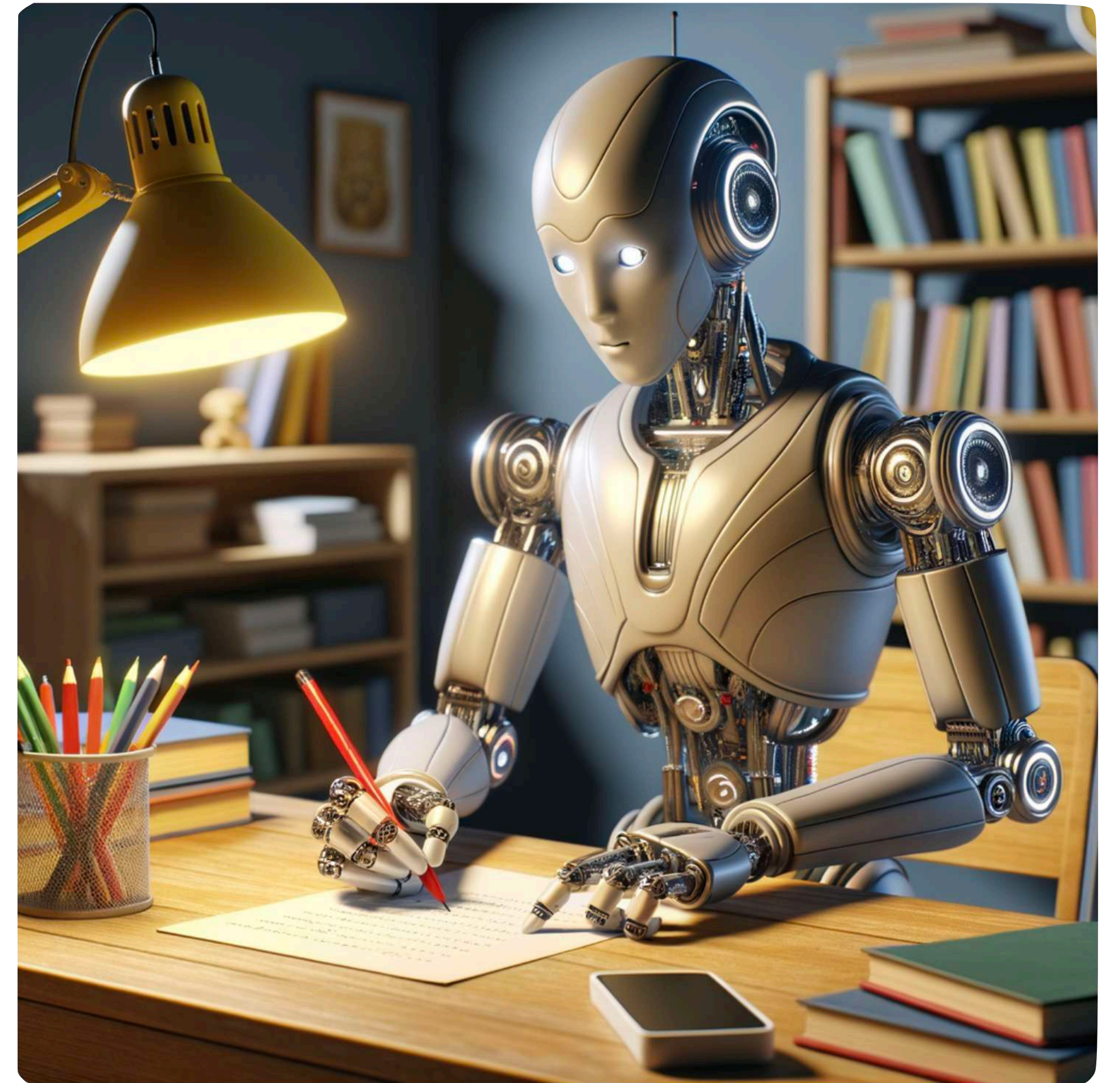
是抄答案或是擴闊學習視野，相信僅  
是一線之差

2d Like Reply

點都要有老師再覆卷啦！測驗默書差  
一分就無所謂，考試差一分，分分中  
影響成個grade！

ChatGPT 可以改  
數學作業嗎？👌

# 個人夢想成真 改作業機械人面世



用科技協助評估  
絕對不是新鮮事



Optical Mark Recognition



# Poe – Fast AI Chat

Ask questions and get answers

Open



30K RATINGS

4.8

★★★★★

AGE

17+

Years Old

CHART

No. 3

Productivity

DEVELOPER



Quora,

## What's New

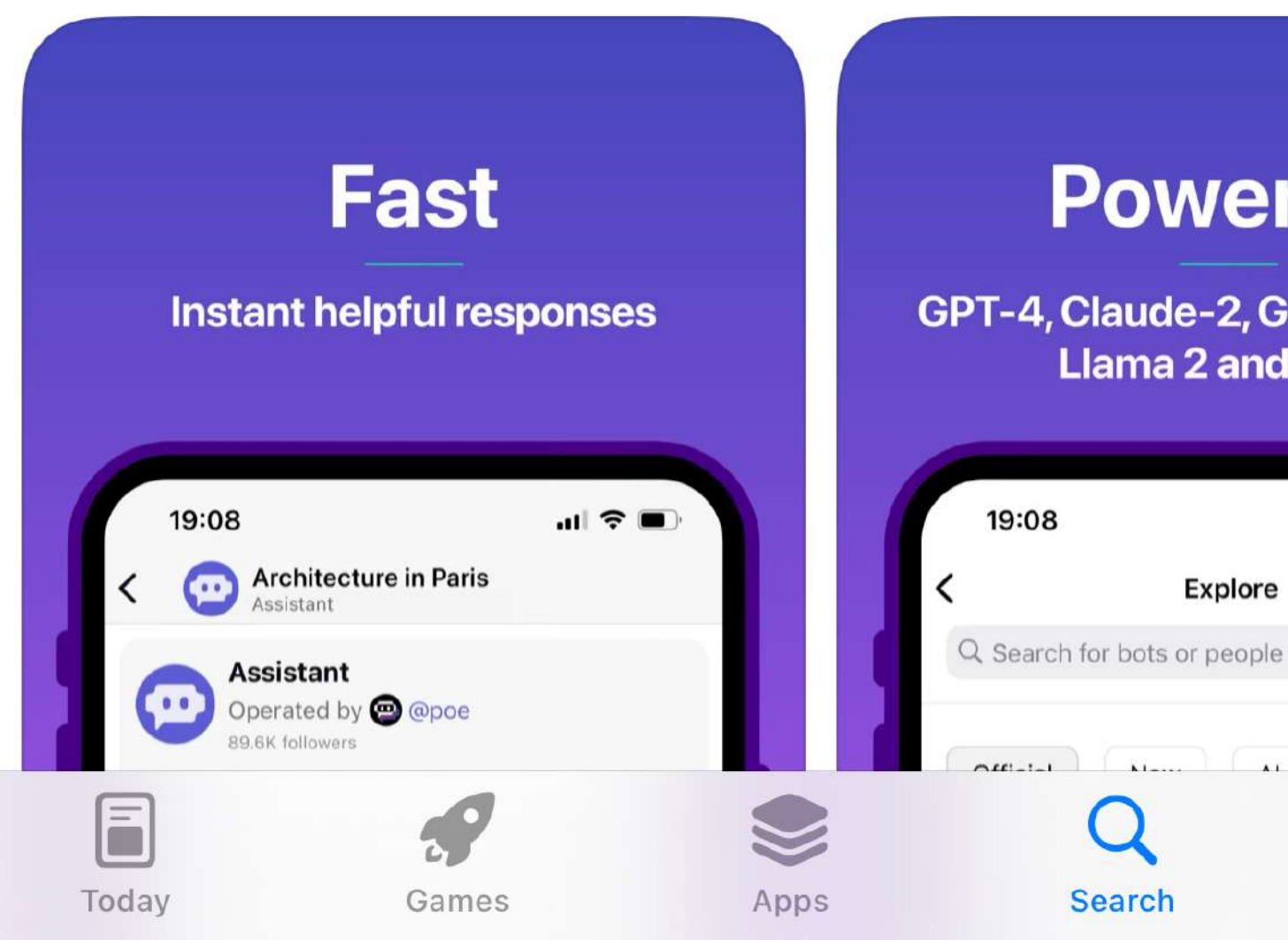
[Version History](#)

Version 3.9.0

16h ago

Bug fixes and performance improvements.

## Preview



<https://poe.com>

Free and VPN-less

Sign-in with Google

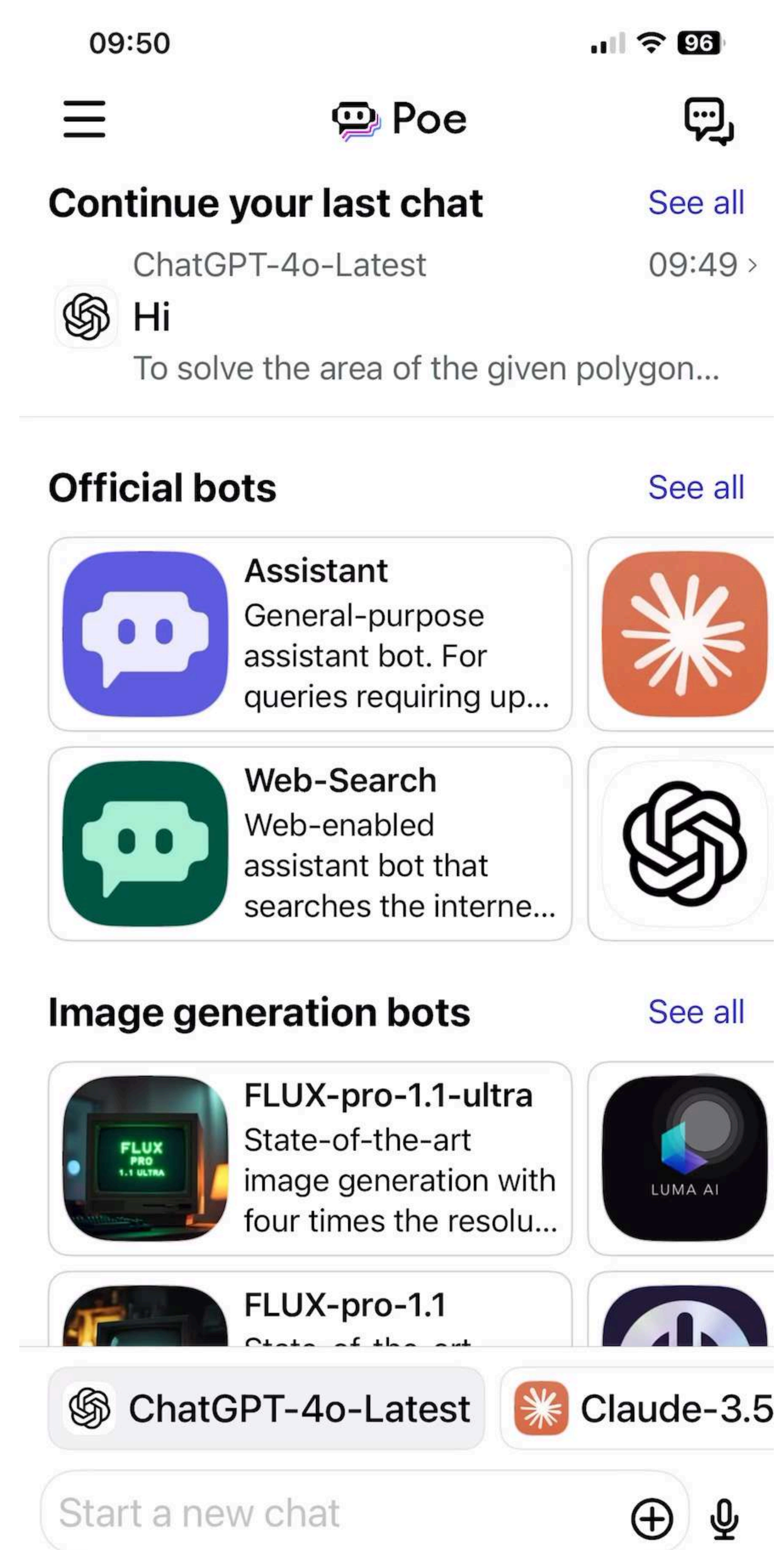
# 動手做 🙌

用紙筆刻意計錯一題數

用手機/iPad 拍照 📷

在 POE 選定一隻 chatbot

提示 AI 檢查答案及步驟



Class: B (9) Group: 8Name: Mola Chung

Solve the following equations.

Rule 1: Undo what have been done.

Rule 2: Do the same thing on both sides.

$$22. \quad \frac{x}{2} + \frac{x}{4} = 3$$

$$\frac{2x}{4} + \frac{x}{4} = 3$$

$$\frac{3x}{4} = 3$$

$$3x = 12$$

$$x = 4$$

$$24. \quad \frac{s}{5} - \frac{2s}{15} = 3$$

$$\frac{3s}{15} - \frac{2s}{15} = 3$$

$$\frac{s}{15} = 3$$

$$s = 45$$

$$25. \quad \frac{2t}{3} + \frac{5t}{12} = 26$$

$$\frac{8t}{12} + \frac{5t}{12} = 26$$

$$\frac{13t}{12} = 26$$

$$13t = 312$$

$$t = 24$$

$$26. \quad \frac{h}{6} = 9 - \frac{4h}{3}$$

$$\frac{h}{6} + \frac{4h}{3} = 9$$

$$\frac{h}{6} + \frac{8h}{6} = 9$$

$$\frac{9h}{6} = 9$$

$$9h = 54$$

$$h = 6$$

$$37. \quad \frac{y-1}{4} = \frac{2y+5}{6}$$

$$\frac{6y-6}{24} = \frac{8y+20}{24}$$

$$6y-6 = 8y+20$$

$$6y-8y = 6+20$$

$$-2y = 26$$

$$y = -13$$

$$38. \quad \frac{m}{4} - 2 = \frac{m-6}{5}$$

$$5 \times \frac{m}{4} - 2 = 5 \times \frac{m-6}{5}$$

$$5m - 40 = 4m - 24$$

$$5m - 4m = 40 - 24$$

$$m = 16$$

Prompt:

There are 6 questions in the attached worksheet.

Grade the student responses (handwritten).

Each question is 10 marks.

Demo 



Explore



Create bot



ChatGPT-4o-Latest

14:39



Grade Work

### Grading the Student's Work Ea...



ChatGPT-4o-Latest

By @poe

Chatbot

7.7K followers

Chats



OpenAI's most powerful model. Dynamic model continuously updated to the current version of GPT-4o in ChatGPT. Stronger than GPT-3.5 in quantitative questions (math and physics), creative writing, and many other challenging tasks. Powered by chatgpt-4o. View more

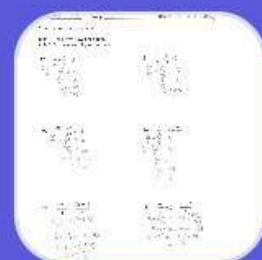
504 per standard message · View details

OFFICIAL

Prompt 提示

Compute points

grade the student work. There are 6 questions and each question is 10 marks.



Copy & Paste 學生作業照片/截圖



All chats



Your bots



ChatGPT-4o-Latest

Poe

### Grading the Student's Work

Each question is worth **10 marks**, and marks are allocated based on correctness of the solution, proper steps, and logical reasoning. Below is a detailed grading breakdown for each question:

Solve the following equations.

Rule 1: Undo what have been done.

Rule 2: Do the same thing on both sides.

$$\begin{aligned} 22. \quad & \frac{x}{2} + \frac{x}{4} = 3 \\ & \frac{2x}{4} + \frac{x}{4} = 3 \\ & \frac{3x}{4} = 3 \\ & 3x = 12 \\ & x = 4 \end{aligned}$$

Answer: 4

### Grading the Student's Work

Each question is worth **10 marks**, and marks are allocated based on correctness of the solution, proper steps, and logical reasoning. Below is a detailed grading breakdown for each question:

#### Question 22

Equation:

$$\frac{x}{2} + \frac{x}{4} = 3$$

Steps:

- Combined the fractions correctly:

$$\frac{2x}{4} + \frac{x}{4} = \frac{3x}{4}$$

- Multiplied through by 4 to eliminate fractions, leading to:

$$3x = 12 \implies x = 4$$

**Marks: 10/10.**

The steps and final answer are correct.

$$24. \quad \frac{s}{5} - \frac{2s}{15} = 3$$

$$\frac{3s}{15} - \frac{2s}{15} = 3$$

$$\frac{s}{15} = 3$$

$$s = 45$$

Answer: 45

### Question 24

Equation:

$$\frac{s}{5} - \frac{2s}{15} = 3$$

Steps:

- Combined the fractions correctly by finding the common denominator (15):

$$\frac{3s}{15} - \frac{2s}{15} = \frac{s}{15}$$

- Multiplied through by 15 to eliminate fractions, leading to:

$$s = 45$$

**Marks: 10/10.**

The steps and final answer are correct.

25.  $\frac{2t}{3} + \frac{5t}{12} = 26$

$$\frac{8t}{12} + \frac{5t}{12} = 26$$

$$\frac{13t}{12} = 26$$

$$13t = 312$$

$$t = 24$$

Answer: 24

### Question 25

Equation:

$$\frac{2t}{3} + \frac{5t}{12} = 26$$

Steps:

- Found the common denominator (12) correctly:

$$\frac{8t}{12} + \frac{5t}{12} = \frac{13t}{12}$$

- Multiplied through by 12 to eliminate fractions, leading to:

$$13t = 312 \implies t = 24$$

**Marks: 10/10.**

The steps and final answer are correct.

$$\begin{aligned}
 26. \quad \frac{h}{6} &= 9 - \frac{4h}{3} \\
 \frac{h}{6} + \frac{4h}{3} &= 9 \\
 \frac{h}{6} + \frac{8h}{6} &= 9 \\
 \frac{9h}{6} &= 9 \\
 9h &= 54 \\
 h &= 6
 \end{aligned}$$

Answer: 6

### Question 26

Equation:

$$\frac{h}{6} = 9 - \frac{4h}{3}$$

Steps:

- Found the common denominator (6) correctly:

$$\frac{h}{6} + \frac{8h}{6} = 9$$

- Combined terms:

$$\frac{9h}{6} = 9$$

- Simplified and solved for  $h = 6$ .

**Marks: 10/10.**

The steps and final answer are correct.

37.  $\frac{y-1}{4} = \frac{2y+5}{6}$

$$\frac{6y-6}{24} = \frac{8y+20}{24}$$

$$6y-6 = 8y+20$$

$$6y-8y = 6+20$$

$$-2y = 26$$

$$y = -13$$

Answer: -13

### Question 37

Equation:

$$\frac{y-1}{4} = \frac{2y+5}{6}$$

Steps:

- Found the common denominator (12) correctly:

$$3(y-1) = 2(2y+5)$$

- Expanded and simplified:

$$3y - 3 = 4y + 10 \implies -y = 13 \implies y = -13$$

**Marks: 10/10.**

The steps and final answer are correct.

$$38. \quad \frac{m}{4} - 2 = \frac{m-6}{5}$$

$$5 \times \frac{m}{4} - 2 = 5 \times \frac{m-6}{5}$$

$$5m - 40 = 4m - 24$$

$$5m - 4m = 40 - 24$$

$$m = 16$$

Answer: 16

### Question 38

Equation:

$$\frac{m-2}{4} = \frac{m-6}{5}$$

Steps:

- Cross multiplied correctly:

$$5(m-2) = 4(m-6)$$

- Expanded and simplified:

$$5m - 10 = 4m - 24 \implies m = 16$$

Marks: 10/10.

The steps and final answer are correct.

Class: 1B (8) Group: 333 Name: Chow Nadia Yan Tung

Solve the following equations.

Rule 1: Undo what have been done.

Rule 2: Do the same thing on both sides.

multiply both sides by  
LCM of denominators

$$22. \quad \frac{x}{2} + \frac{x}{4} = 3$$

$$4 \times \left( \frac{x}{2} + \frac{x}{4} \right) = 3 \times 4$$

$$2x + x = 12$$

$$3x = 12$$

$$\frac{3x}{3} = \frac{12}{3}$$

$$x = 4$$

$$24. \quad \frac{s}{5} - \frac{2s}{15} = 3$$

$$15 \times \left( \frac{s}{5} - \frac{2s}{15} \right) = 3 \times 15$$

$$3s - 2s = 45$$

$$s = 45$$

$$25. \quad \frac{2t}{3} + \frac{5t}{12} = 26$$

$$12 \times \left( \frac{2t}{3} + \frac{5t}{12} \right) = 26 \times 12$$

$$8t + 5t = 312$$

$$13t = 312$$

$$\frac{13t}{13} = \frac{312}{13}$$

$$t = 24$$

$$26. \quad \frac{h}{6} = 9 - \frac{4h}{3}$$

$$\frac{h}{6} \times 3 = \left( 9 - \frac{4h}{3} \right) \times 3$$

$$\frac{h}{2} = 27 - 4h$$

$$2 \times (-27) = \left( -4h - \frac{h}{2} \right) \times 2$$

$$-54 = -8h - h$$

$$-54 = -9h$$

$$\frac{-54}{-9} = \frac{-9h}{-9} \quad h = 6$$

$$37. \quad \frac{y-1}{4} = \frac{2y+5}{6}$$

$$38. \quad \frac{m}{4} - 2 = \frac{m-6}{5}$$

Better prompt: Feedback is the key

There are 6 questions in this worksheet. Each question is 10 marks. Check the handwritten steps and answers of this student. The correct answers of questions are as follows:

Q22. 4

Q24. 45

Q25. 24

Q26. 6

Q37. -13

Q38. 16

give positive feedback with growth mindset with Emojis to the student and also list her name.



## Grading and Feedback for Chow Nadia Tan Tung 🌟

### Grading:

Each question is worth 10 marks. Here's the detailed assessment:

1. **Q22:**

**Student's Answer:**  $x = 4$

All steps are correct, and the answer matches the expected solution. Great job!

**Marks:** 10/10 ✓

2. **Q24:**

**Student's Answer:**  $s = 45$

The student solved this problem perfectly, showing clear and logical steps. Well done!

**Marks:** 10/10 ✓

3. **Q25:**

**Student's Answer:**  $t = 24$

The solution is accurate, and all calculations are correct. Excellent work!

**Marks:** 10/10 ✓

## Growth Mindset Feedback:

Hi Chow Nadia Tan Tung! 😊✨ Fantastic effort on this worksheet! You did an amazing job on **Q22, Q24, Q25, and Q26**, solving them with accuracy and showing a clear understanding of the steps. Keep up this excellent work—you've got a strong grasp of solving equations! ✨👏

For **Q37** and **Q38**, don't worry about the incomplete solutions—they're opportunities for growth! 💪 Take your time to carefully set up the equations and follow through to the end. Mistakes are part of learning, and with a bit more focus and practice, you'll master these questions in no time. 🚀✨

You're doing great, and your hard work is paying off. Keep practicing—you're on the right track! 🌈😊

AI 比 feedback 的質量及速度，我作為人類感到望塵莫及 😲

## Prompt (再改良)

There are 6 questions in this worksheet. Each question is 10 marks. The correct answers of questions are as follows:

Q22. 4

Q24. 45

Q25. 24

Q26. 6

Q37. -13

Q38. 16



模擬老師改簿行為

Check the handwritten answers of this student. If the student is correct, there is no need to list her steps.

If the student make a mistake, show the step where the mistake is found.

If the student leave blank for a question, do not give her marks.

Give positive feedback with growth mindset with Emojis to the student and also list her name.

## Evaluation and Feedback for Cherry Fung 🌟

Hi, Cherry Fung 😊. Great effort on this worksheet! You've demonstrated strong problem-solving skills in solving fractional equations. Below is a detailed evaluation of your performance, highlighting the steps where you made a mistake and providing positive feedback with a growth mindset.

### Q22 (Correct)

Your answer is **4**, which is correct. Well done handling the denominators and simplifying the equation!

Score: 10/10 ✓

### Q24 (Correct)

Your answer is **45**, which is correct. You successfully eliminated the denominators and solved for  $s$ .

Score: 10/10 ✓

### Q25 (Correct)

Your answer is **24**, which is correct. You managed the denominators well and simplified the equation correctly.

Score: 10/10 ✓

### Q26 (Correct)

Your answer is **6**, which is correct. You simplified correctly and rearranged the terms accurately.

Score: 10/10 ✓

### Q37 (Incorrect)

Your answer is **12**, but the correct answer is **-13**. Here's where you made an error:

1. You started correctly by multiplying through by the LCM (12):

$$3(y - 1) = 2(2y + 5)$$

2. You expanded correctly:

$$3y - 3 = 4y + 10$$

3. However, when rearranging terms, you should have found:

$$-y = 13$$

Instead, you wrote  $y = 12$  instead of  $y = -13$ .

Score: 5/10 ✗

Class: B (11) Group: 333Name: Cherry Fung

Solve the following equations.

Rule 1: Undo what have been done.

Rule 2: Do the same thing on both sides.

22.  $\frac{x}{2} + \frac{x}{4} = 3$

Multiply both sides by L.C.M of denominators

$$4 \times \left( \frac{x}{2} + \frac{x}{4} \right) = 3 \times 4$$

$$2x + x = 12$$

$$3x = 12$$

$$x = \frac{12}{3}$$

$$x = 4$$

24.  $\frac{s}{5} - \frac{2s}{15} = 3$

$$15 \times \left( \frac{s}{5} - \frac{2s}{15} \right) = 3 \times 15$$

$$3s - 2s = 3 \times 15$$

$$s = 45$$

25.  $\frac{2t}{3} + \frac{5t}{12} = 26$

$$12 \times \left( \frac{2t}{3} + \frac{5t}{12} \right) = 26 \times 12$$

$$8t + 5t = 26 \times 12$$

$$8t + 5t = 312$$

$$13t = 312$$

$$t = 24$$

26.  $\frac{h}{6} = 9 - \frac{4h}{3}$

$$\frac{h}{6} \times 3 = \left( 9 - \frac{4h}{3} \right) \times 3$$

$$\frac{h}{2} = 27 - 4h$$

$$2 \times -27 = (-4h - \frac{h}{2}) \times 2$$

$$-54 = -8h - h$$

$$-54 = -9h$$

$$6 = h$$

37.  $\frac{y-1}{4} = \frac{2y+5}{6}$

$$\frac{y-1}{4} = \frac{2y+5}{6}$$

$$\frac{3y-3}{12} = \frac{4y+10}{12}$$

$$3y-4y = 13$$

$$-y = 13$$

$$y = -13$$

38.  $\frac{m}{4} - 2 = \frac{m-6}{5}$

$$\frac{m}{4} - 2 = \frac{m-6}{5}$$

$$5 \times \left( \frac{m}{4} - 2 \right) = 5 \times \left( \frac{m-6}{5} \right)$$

$$\frac{5m}{4} - 10 = m - 6$$

$$\frac{5m}{4} - m = 10 - 6$$

$$\frac{5m - 4m}{4} = 4$$

$$\frac{m}{4} = 4$$

$$m = 16$$

學生沒有答 Q38

## Q38 (Correct)

Your answer is **16**, which is correct. You eliminated the denominators and solved the equation accurately.

Score: 10/10 ✓

Total Score:

55/60

AI 卻睇漏眼

the student did not answer Q38

老師出手糾正 AI

## Q38 (Not Attempted)

You left this question blank, so no marks can be awarded. The correct answer is **16**. Ensure to attempt all questions, even if unsure, as partial marks can sometimes be earned.

Score: 0/10 ✗

# AI 會犯錯 (例如 : OCR)

## Grading of Student's Responses:

Each question is out of 10 marks.

**Q22:**  $\frac{x}{2} + \frac{x}{4} = 3$

- The student correctly finds the least common denominator (LCD) and then simplifies the equation step by step.
- The final value of  $x = 4$  is correct.

**Marks: 10/10**

**Q24:**  $\frac{s}{5} - \frac{2s}{15} = 3$

- The student correctly finds a common denominator and simplifies the equation.
- The final value of  $s = 45$  is correct.

**Marks: 10/10**

**Q25:**  $\frac{2t}{4} + \frac{5t}{12} = 26$

- The student starts correctly by finding the LCD (12), but there is an error in the simplification.
- In the second step,  $\frac{2t}{4}$  should be rewritten as  $\frac{6t}{12}$ , not  $8t$ , and the subsequent steps are incorrect.
- The final answer  $t = 24$  is incorrect.

**Q26:**  $\frac{h}{6} = 9 - \frac{4h}{3}$

- The student correctly eliminates the denominators by multiplying both sides by 6.
- They correctly simplify the equation and find the correct value  $h = 6$ .

**Marks: 10/10**

**Q37:**  $\frac{y-1}{4} = \frac{2y+5}{6}$

- The student multiplies both sides by 24 correctly to eliminate the denominators.
- However, there is a mistake in the next step when simplifying the equation.  $6y - 6 = 8y + 20$  is correct, but the subtraction afterward is incorrect. The final value  $y = -13$  is incorrect.

**Marks: 5/10**

**Q38:**  $\frac{m}{4} - 2 = \frac{m-6}{5}$

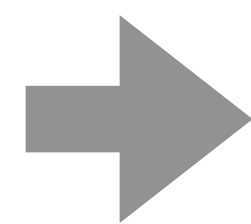
- The student multiplies both sides by 20 correctly to eliminate the denominators.
- However, there is a small error in the simplification.  $5m - 40 = 4m - 24$  is correct, but the final solution should be  $m = 16$ , which is correct.

**Marks: 9/10**

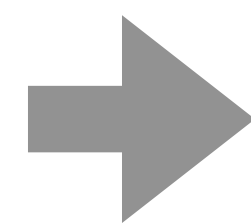
# 人機合一：監督評分流程

回饋/提示 No

作業答案  
評分標準



AI 批改學  
生作業



Yes

把分數/回饋  
發給學生

老師：評分正確嗎？

# 利用 AI 協助批改的好處

效能暴昇



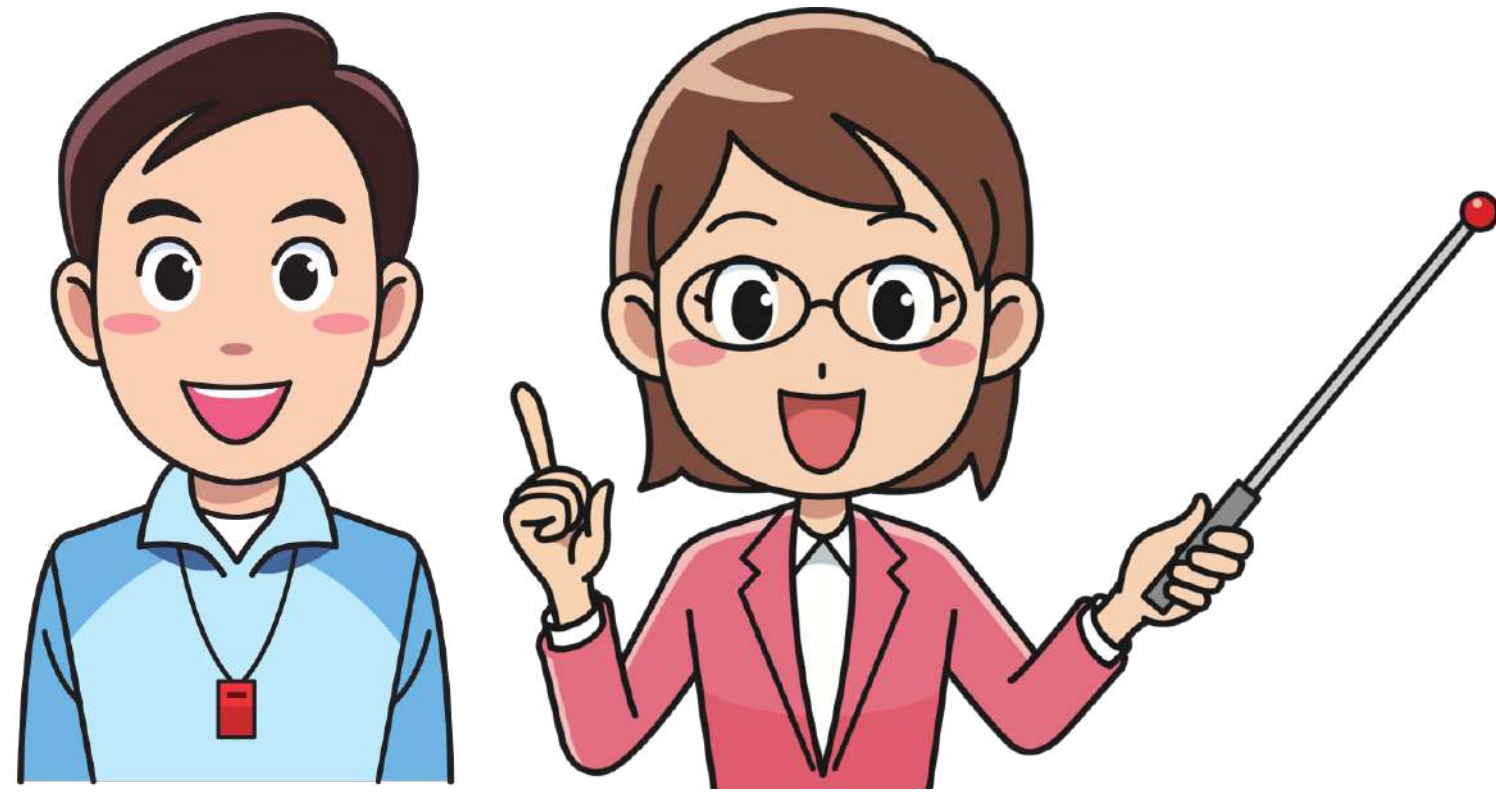
批改過程身心輕省 😊

給予學生回饋質量倍升

老師病了時的替工? 🤒

老師角式改變 ➡️ 監督

# 由誰去把關，找尋 AI 犯的錯？



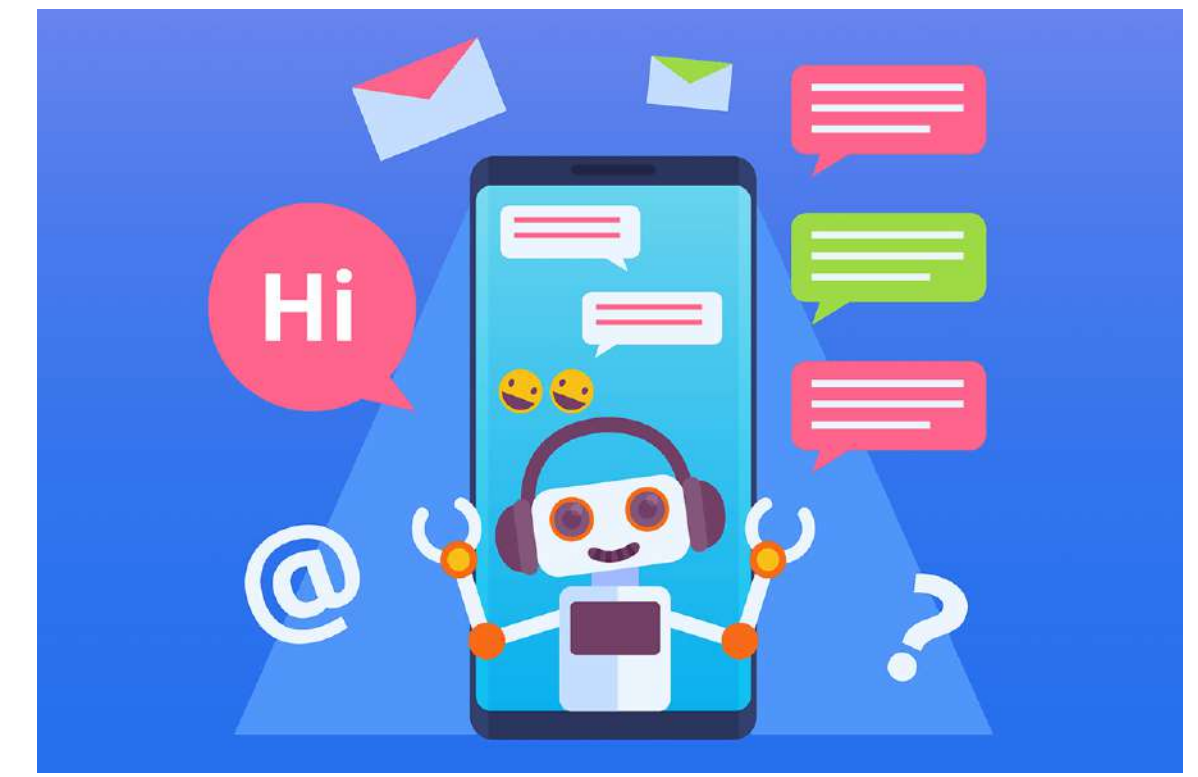
老師

專業責任



學生

資訊素養訓練



AI chatbot

免人手但欠把關

指導學生找出 AI 的錯  
是很好的資訊素養訓練

## AI 年代的資訊素養

九個素養範疇	
1	有效地、符合道德地及負責任地使用、提供和互通資訊
2	識別和定義對資訊的需求
3	找出和獲取相關資訊
4	評估資訊、媒體內容和資訊來源／提供者
5	提取和整理資訊、產生及表達新意念
6	運用資訊科技處理資訊、建立內容和於分享資訊時先作反思
7	認識社會上資訊提供者的角色和功能
8	認識能獲取可靠資訊的條件
9	認識應用新興和先進資訊科技時所衍生的道德問題

我係好學生  
唔會用 AI 代做功課

學習如何問 AI (Prompt)

分析思維，AI 也有錯

我用 AI 嘅方法  
會唔會對人有壞影響

AI 的角色是甚麼？

分辨那個 Chatbot 可靠

這是假相，Deepfake 嗎？

# ∴ 用 AI 要貨比三家



ChatGPT-4o-Latest

OFFICIAL



Claude-3.5-Sonnet

OFFICIAL

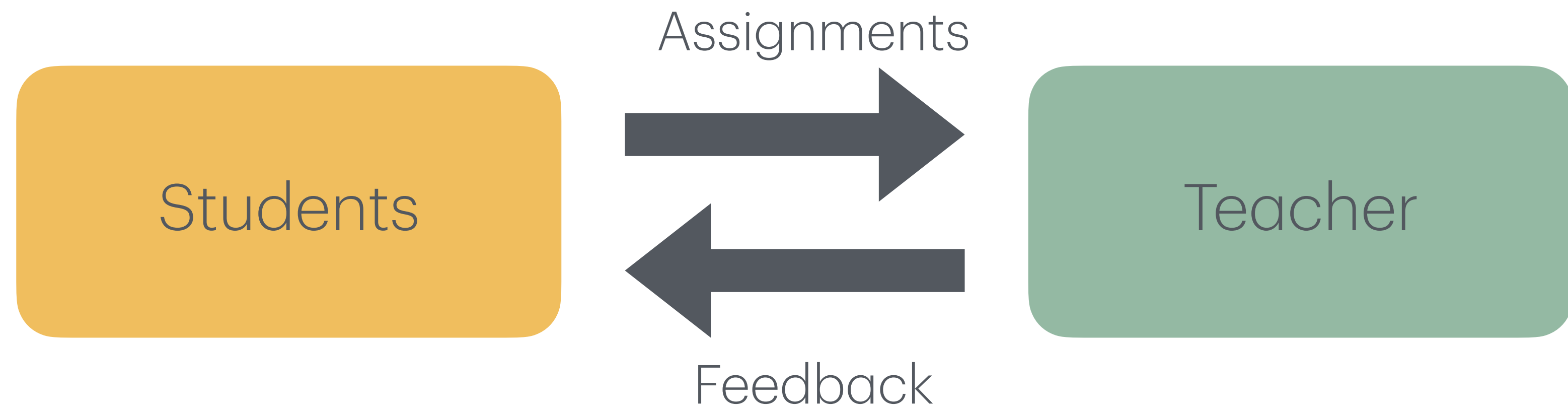


Gemini-1.5-Pro

OFFICIAL




# Dual AI model (Teacher and students)



AI chatbot

Checking for mistakes/  
improvement before submission

Efficiency  AI chatbot



改簿能力

解難能力  
出題能力

認圖能力

繪圖能力

# 小學數學例題

$$73 - 6 \times 5 + 20 =$$

寫出28的所有因數

約簡 24/30

所有平行四邊形均擁有正  
方形的所有特性。

所有正方形均擁有長方形  
的所有特性。



重點

AI 有機會出錯，必須  
check 步驟及答案。

# 70題必做四則運算數學題

- 問題 1. 王先生用紙箱盛載舊衣服，兩箱衣服分別重 18.3 公斤和 25.9 公斤。如果每個紙箱重 0.3 公斤，舊衣服共重多少公斤？ 1. \_\_\_\_\_
- 問題 2. 美美有一卷長 13.64 米的紅色絲帶，她剪去 12 段各長 9 厘米的絲帶來包裝禮物後，還餘絲帶多少米？ 2. \_\_\_\_\_
- 問題 3. 襪子每對 9.8 元，3 對特價 28.5 元。蘇太太用 90 元買襪子，她最多可買襪子多少對？還餘多少元？ 3. \_\_\_\_\_
- 問題 4. 一枝筆售 15.8 元，現減價 2.5 元。嘉明買兩枝筆，共需付多少元？ 4. \_\_\_\_\_
- 問題 5. 陳宅一家四口到餐廳，點了一個 88 元的套餐和一個 54 元的小食拼盤，平均每人需付多少元？ 5. \_\_\_\_\_

問題 6. 一套紀念郵票售 14.8 元，小詩購買 3 套紀念郵票和一枚面值 2.4 元的郵票後，還餘 28.6 元，她原有多少元？ 6. \_\_\_\_\_

問題 7. 珍珠奶茶每杯售 \$12.5，炭燒咖啡每杯售 \$18.5，蘋果綠茶每杯售 \$14.5。梁小姐有 \$40，她買了蘋果綠茶 2 杯後，還餘下多少元？ 7. \_\_\_\_\_

問題 8. 弟弟有 24 元，哥哥有的款項是他的 1.6 倍，他們合資購買一把售 45.9 元的羽毛球拍，餘下多少元？ 8. \_\_\_\_\_

問題 9. 心妍把一卷長 2.8 米的絲帶平均分成 5 條，她用了其中一條的 0.3 米，這條絲帶餘下多少米？ 9. \_\_\_\_\_

問題 10. 糖果店發售自製的花生糖，每 50 克只售 19.9 元，叔叔買花生糖 500 克，共須付多少元？ 10. \_\_\_\_\_

問題 11. 姐姐買了檸檬汁 2 瓶，每瓶有 0.75 L，她做檸檬批用了 0.4 L，還餘檸檬汁多少？ 11. \_\_\_\_\_

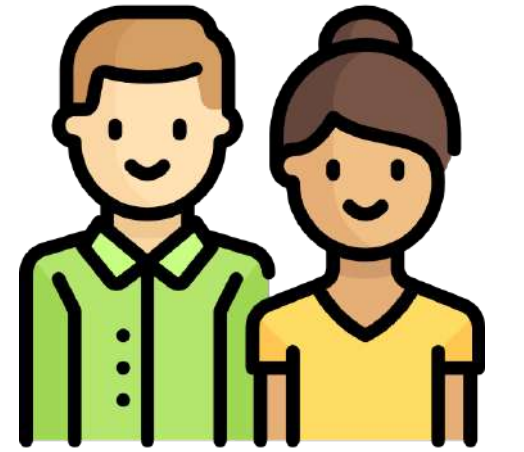
問題 12. 豬肉丸每公斤售 38 元，牛肉丸每公斤售 55 元，歐太太買了豬肉丸 1 公斤和牛肉丸 0.6 公斤，共須付多少元？ 12. \_\_\_\_\_



老師



學生/家長



出題目及答案  
提昇工作效能

AI 助手

出題目自行練習  
出答案作核對

自主學習



改簿能力

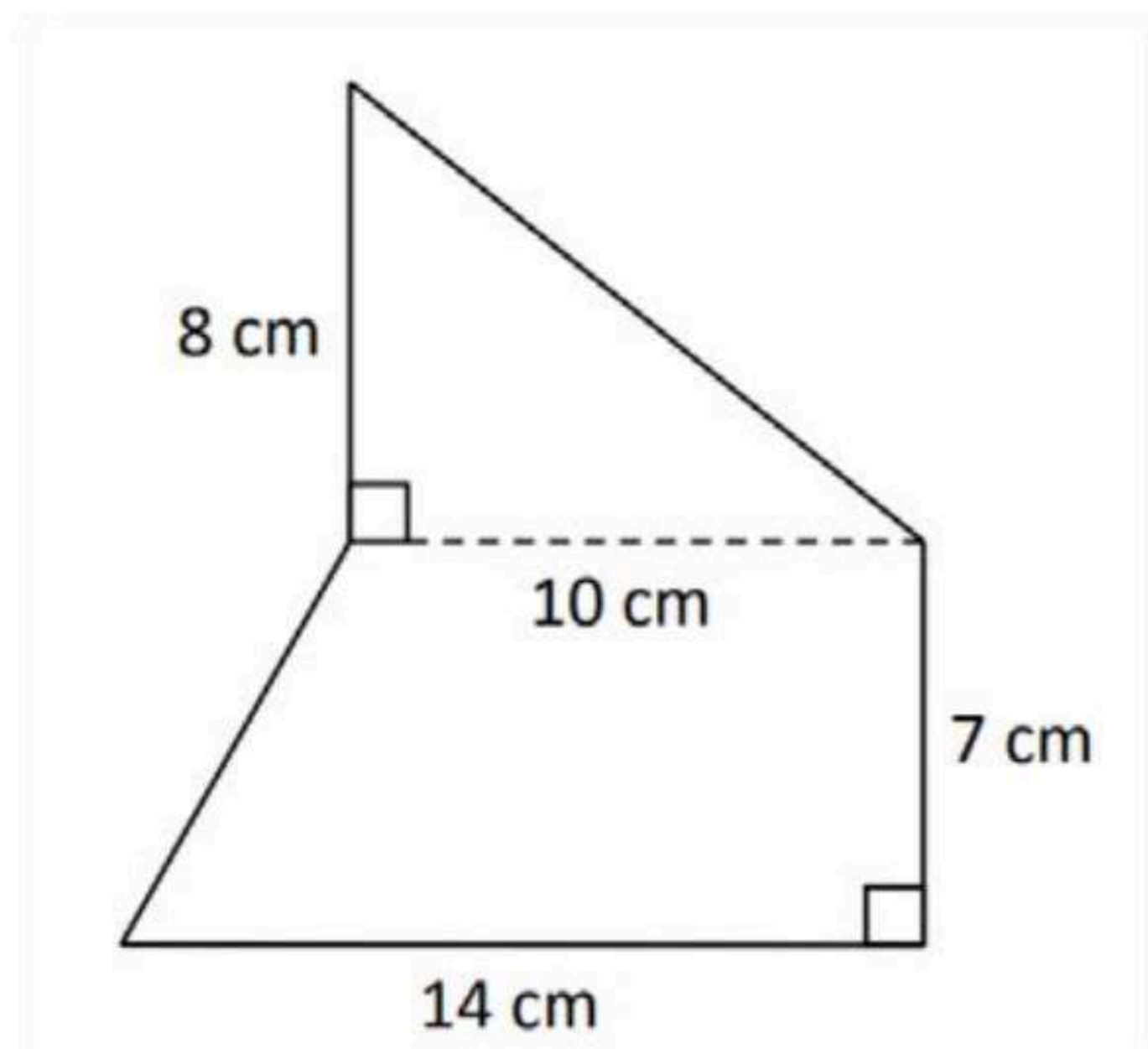
解難能力  
出題能力

認圖能力

繪圖能力

## 多邊形面積

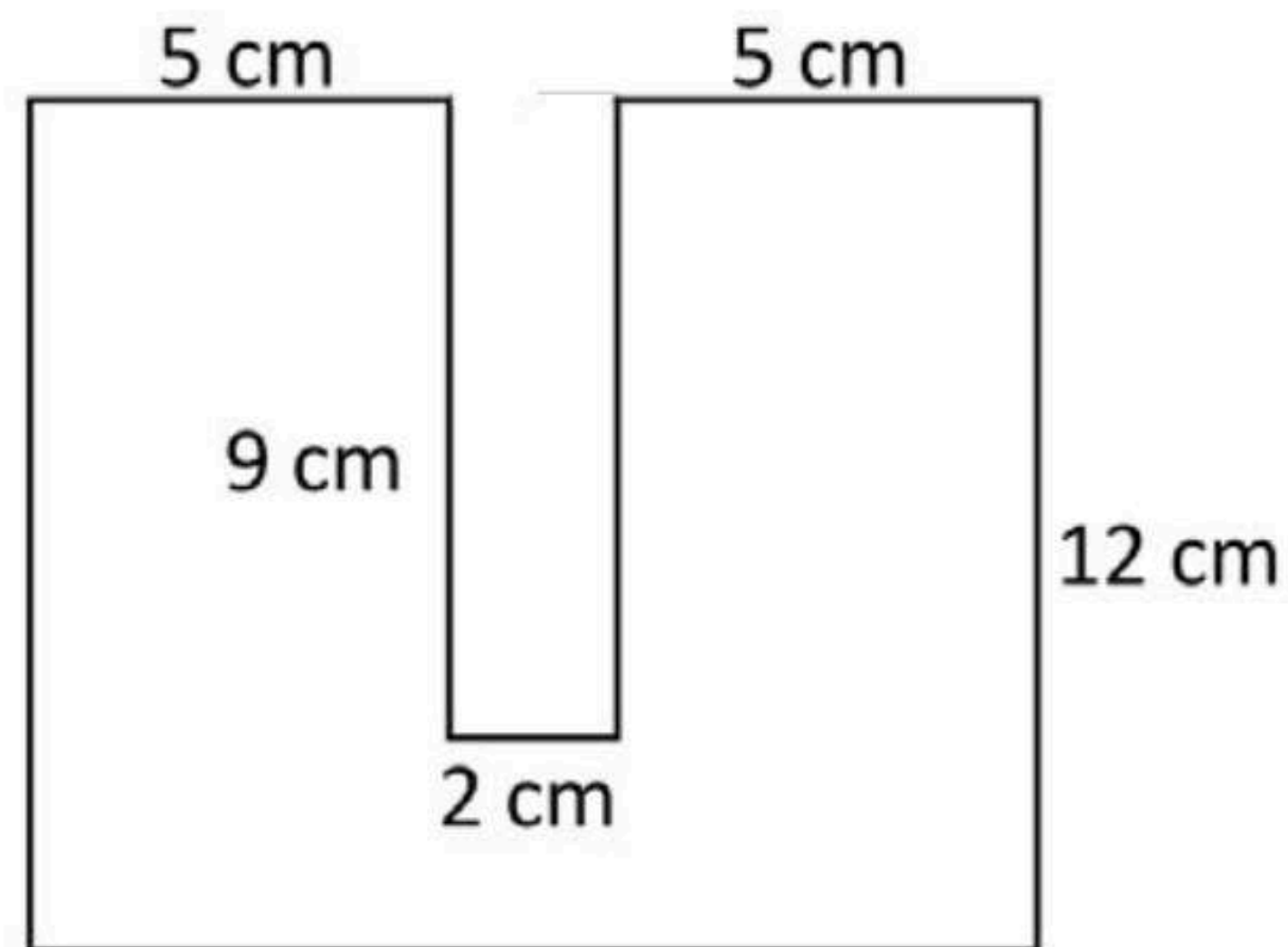
技巧區 1 ) 用分割法求多邊形面積：



多邊形的面積 = \_\_\_\_\_

= \_\_\_\_\_ (cm<sup>2</sup>)

2 ) 用填補法求多邊形面積：



多邊形的面積 = \_\_\_\_\_

= \_\_\_\_\_ (cm<sup>2</sup>)

# 重點：實測 AI 的數學能力局限



AI 做得到  
效能暴昇



AI 會做錯



能夠成為教學  
活動嗎？

# 初中數學例題

$$\frac{y}{4} + \frac{y-3}{6} = 2$$

$$\left(\frac{y}{4} + \frac{y-3}{6}\right) \times 12 = 2 \times 12$$

$$\frac{y}{4} \times 12 + \frac{y-3}{6} \times 12 = 24$$

$$3y + (y-3)(2) = 24$$

$$3y + 2y - 6 = 24$$

$$5y = 30$$

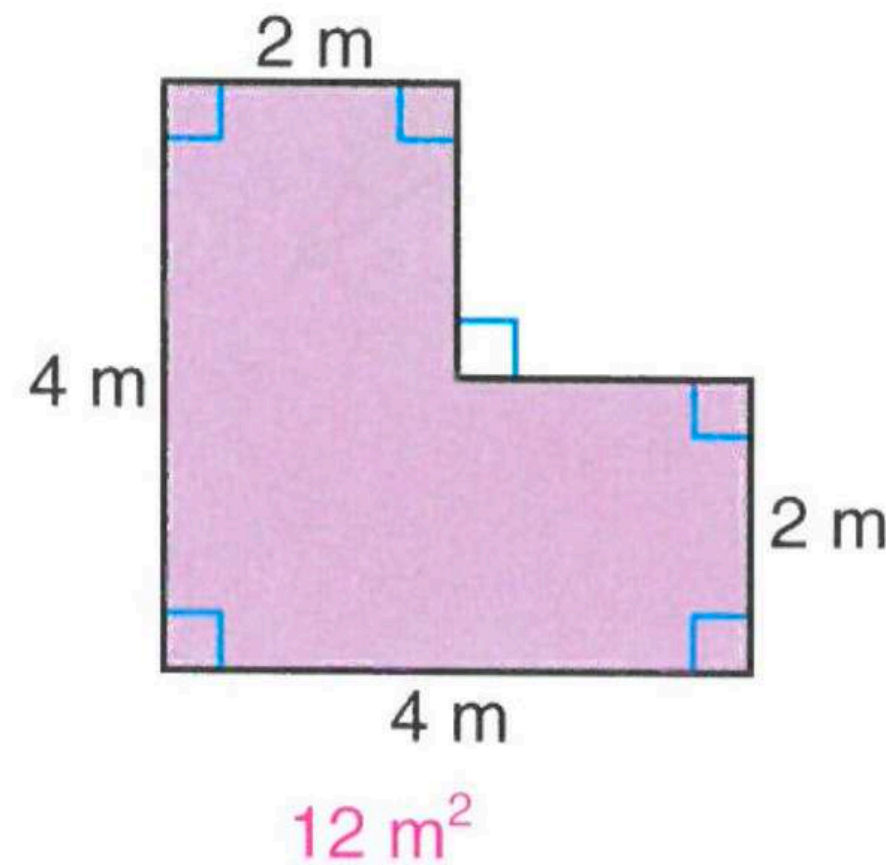
$$y = \frac{30}{5}$$

$$y = \underline{\underline{6}}$$

$$\frac{n+2}{6} - \frac{n}{9} = 3 \quad 48$$

Find the areas of the following figures.

① 1.

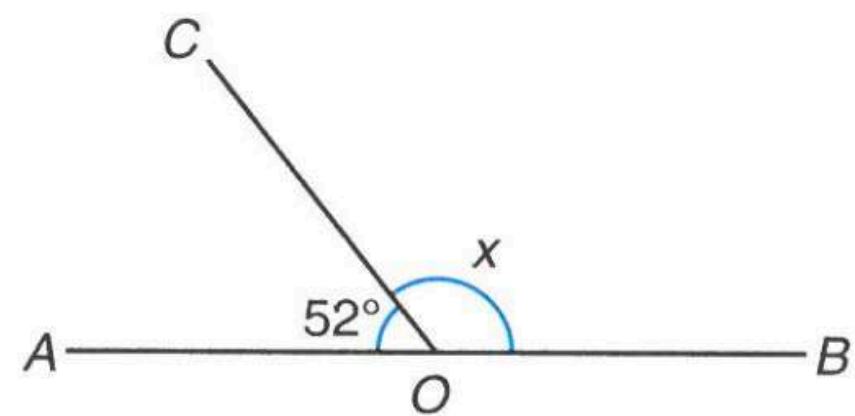


~Examp

A mother's age is now 3 times that of her son. 8 years ago, the mother's age was greater than 4 times that of her son by 4. Find the son's present age. 20

**Example 11.1**Find an angle by using 'adj.  $\angle$ s on st. line'E  
C

LEVEL 1

In the figure,  $AOB$  is a straight line. Find  $x$ .**Solution**

$$52^\circ + x = 180^\circ \quad (\text{adj. } \angle\text{s on st. line})$$

$$x = 180^\circ - 52^\circ$$

$$= \underline{\underline{128^\circ}}$$

**Example 12.12**

Multiplication of two binomials

LEVEL 1

Expand the following expressions.

(a)  $(2x - 3)(x + 6)$

(b)  $(4y - 5z)^2$

**Solution**

$$\begin{aligned} \text{(a)} \quad (2x - 3)(x + 6) &= (2x - 3)(x) + (2x - 3)(6) \\ &= 2x^2 - 3x + 12x - 18 \\ &= \underline{\underline{2x^2 + 9x - 18}} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad (4y - 5z)^2 &= (4y - 5z)(4y - 5z) \\ &= (4y - 5z)(4y) - (4y - 5z)(5z) \\ &= 16y^2 - 20yz - (20yz - 25z^2) \\ &= 16y^2 - 20yz - 20yz + 25z^2 \\ &= \underline{\underline{16y^2 - 40yz + 25z^2}} \end{aligned}$$

SCAN ME



實測 GPT-4o 回答  
數學問題能力



**Gemini-1.5-Pro**

By @poe

4.3K followers

Bot info

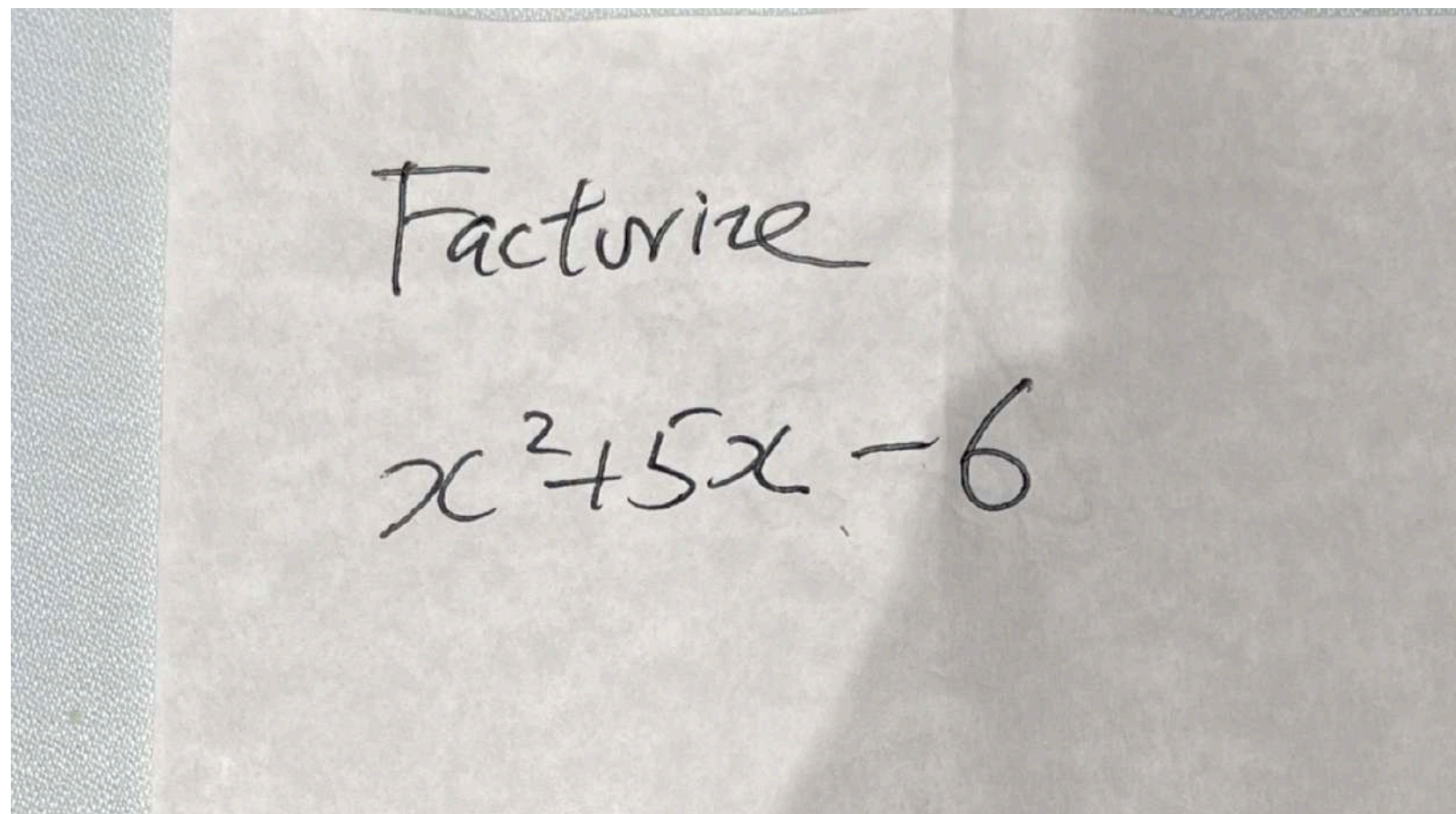


The multi-modal model from Google's Gemini family that balances model performance and speed. The model accepts text, image, and video input from the entire conversation and provides text output, with a restriction of one video per message. Context window has been shortened to optimize for speed and cost. For Longer context messages, please try Gemini-1.5-Pro-128k and Gemini-1.5-Pro-1M. The compute points value is subject to change.

175 per message · [View details](#)

OFFICIAL

SUBSCRIBER ACCESS



Gemini-1.5-Pro

Poe

The image shows a piece of paper with the words "Factorize" and the quadratic expression " $x^2 + 5x - 6$ ".

To factorize the quadratic expression, we need to find two numbers that add up to 5 (the coefficient of the x term) and multiply to -6 (the constant term).

Here's how we can factorize the expression:

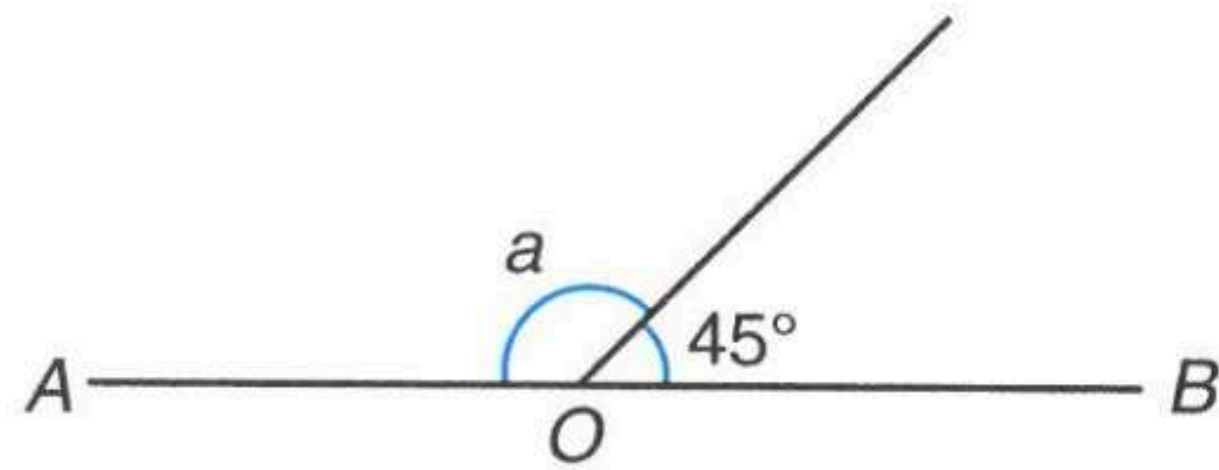
- 1. Identify the factors of -6:** The factors of -6 are: -1, 1, -2, 2, -3, 3, -6, and 6.
- 2. Find the pair of factors that add up to 5:** The pair of factors that satisfy this condition are 6 and -1.
- 3. Rewrite the expression using the identified factors:** We can rewrite  $5x$  as  $6x - x$ . The expression now becomes:  $x^2 + 6x - x - 6$
- 4. Group and factor out common factors:**
  - Group the first two terms and the last two terms:  $(x^2 + 6x) + (-x - 6)$
  - Factor out the greatest common factor from each group:  $x(x + 6) - 1(x + 6)$
- 5. Factor out the common binomial:** Notice that both terms have a common binomial factor of  $(x + 6)$ . Factoring this out, we get:  $(x + 6)(x - 1)$

Therefore, the factored form of the quadratic expression  $x^2 + 5x - 6$  is  **$(x + 6)(x - 1)$** .

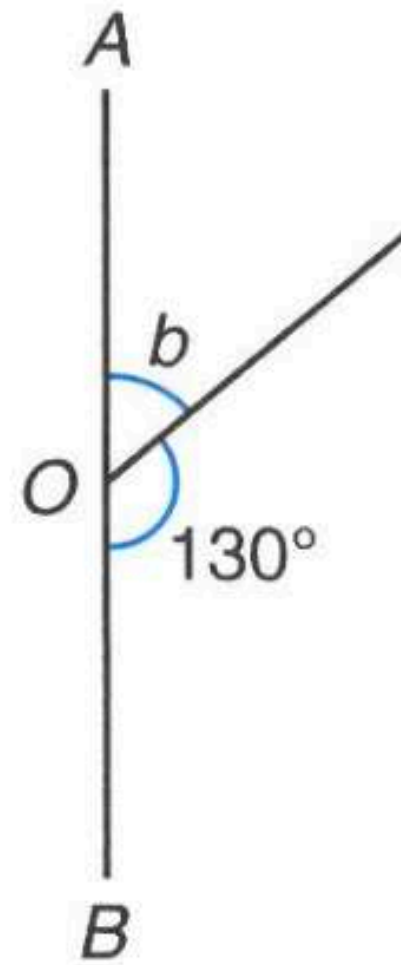
## Level 1

In each of the following figures,  $AOB$  is a straight line. Find the unknown. (1 – 6) ~Example 11.1

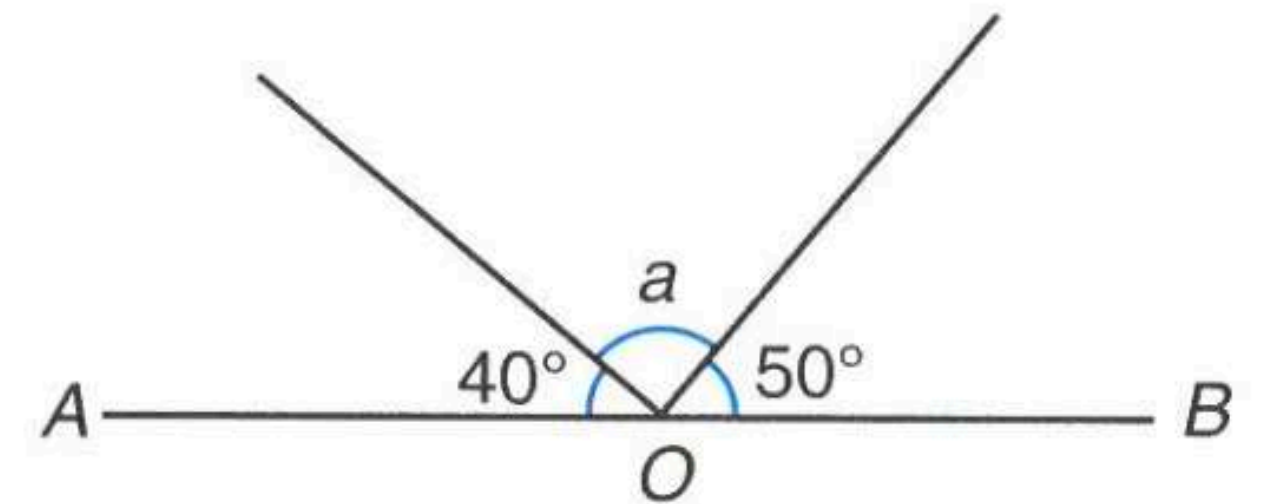
① 1.



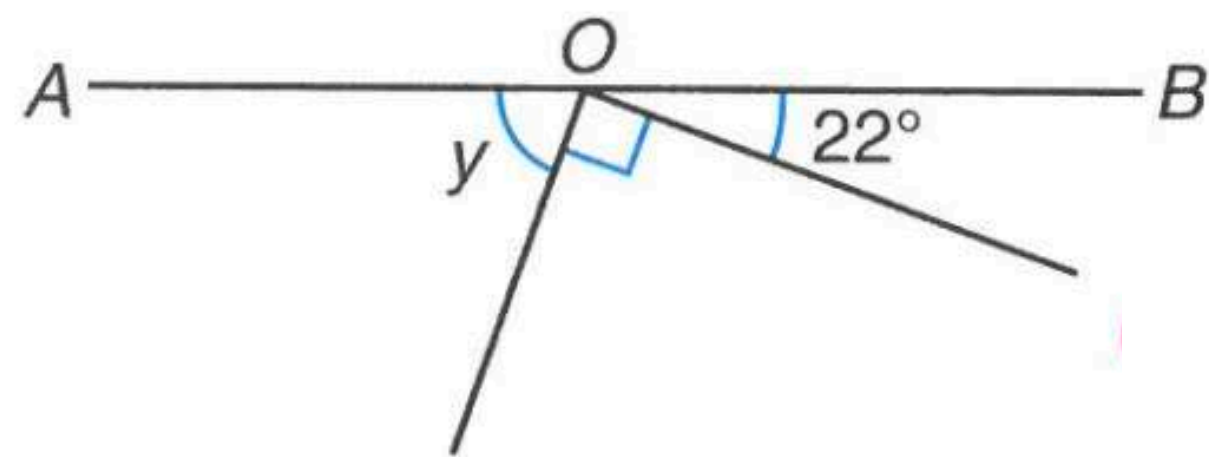
① 2.



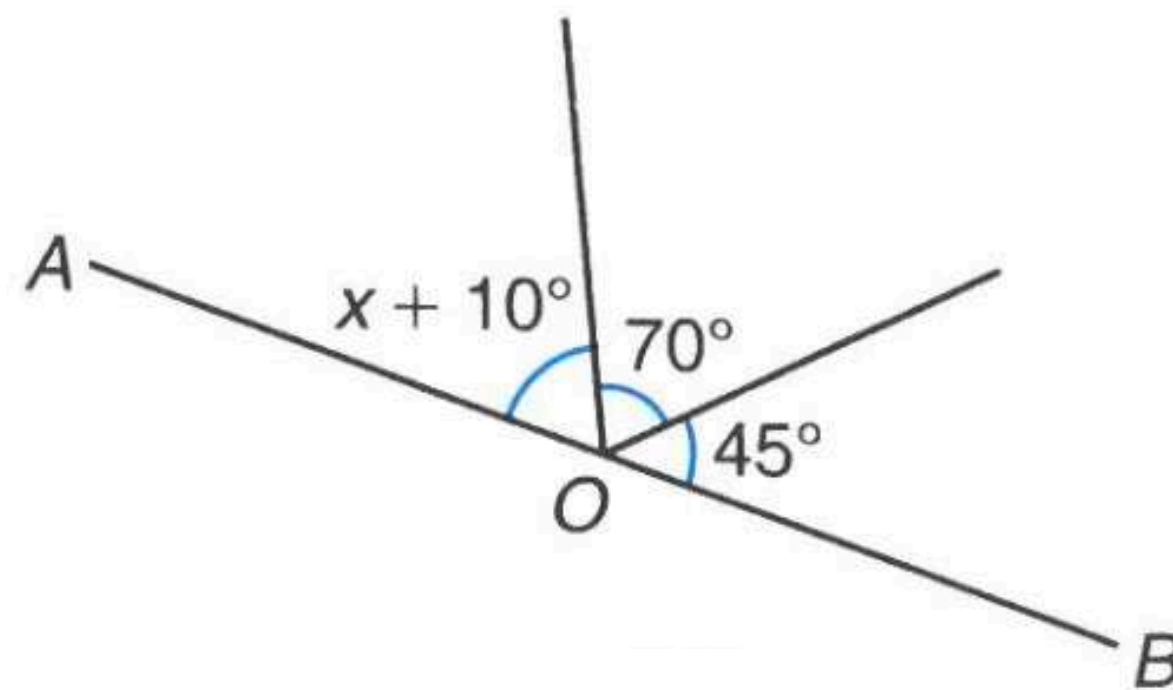
① 3.



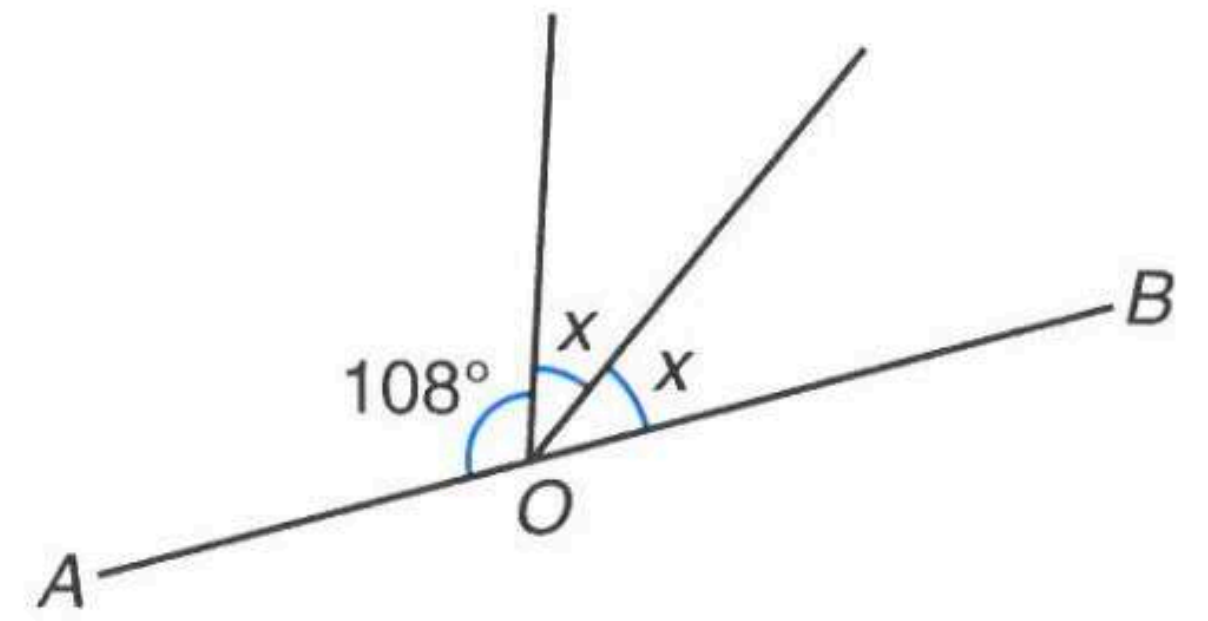
① 4.



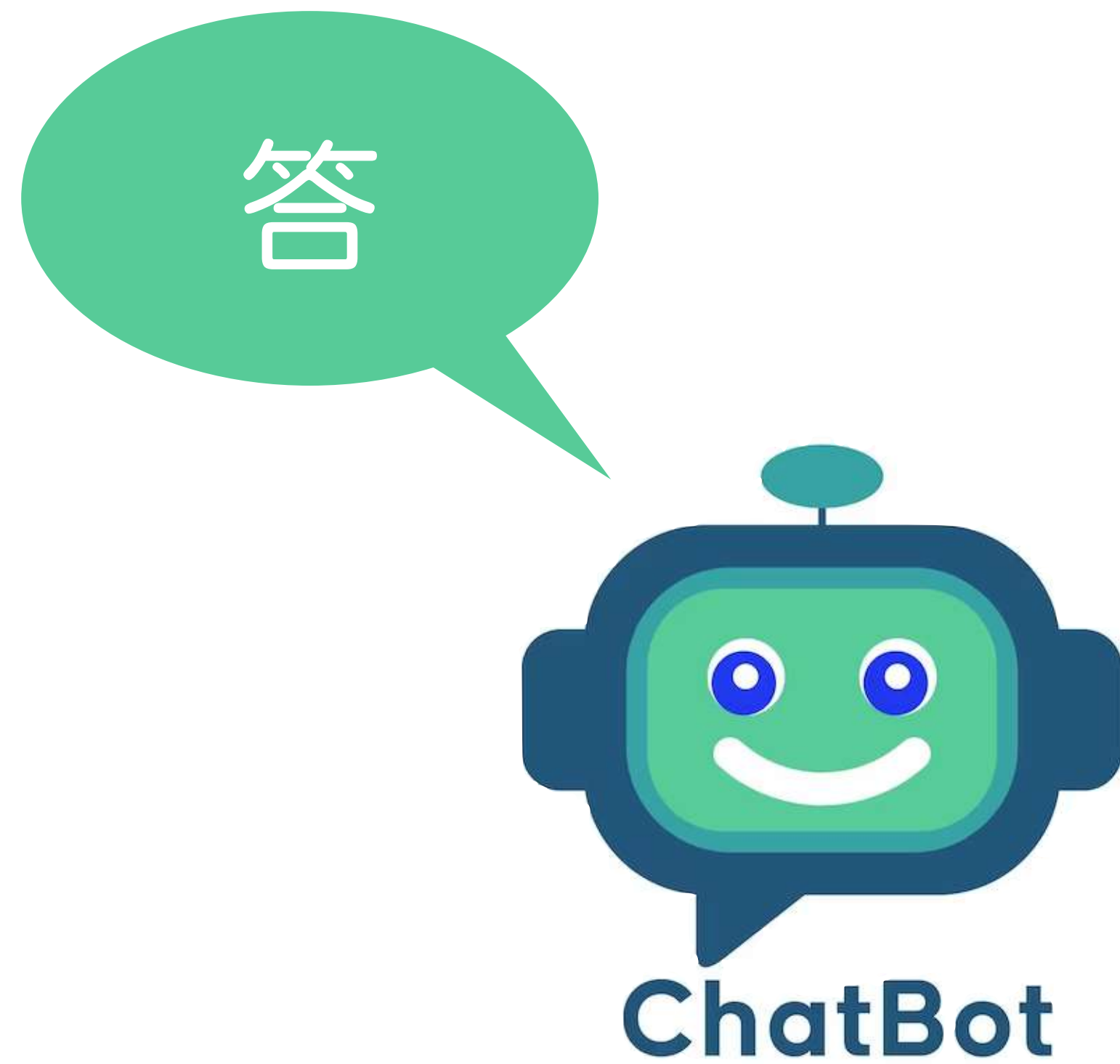
① 5.



① 6.



重點：AI 的回答，我們必須加以思考。



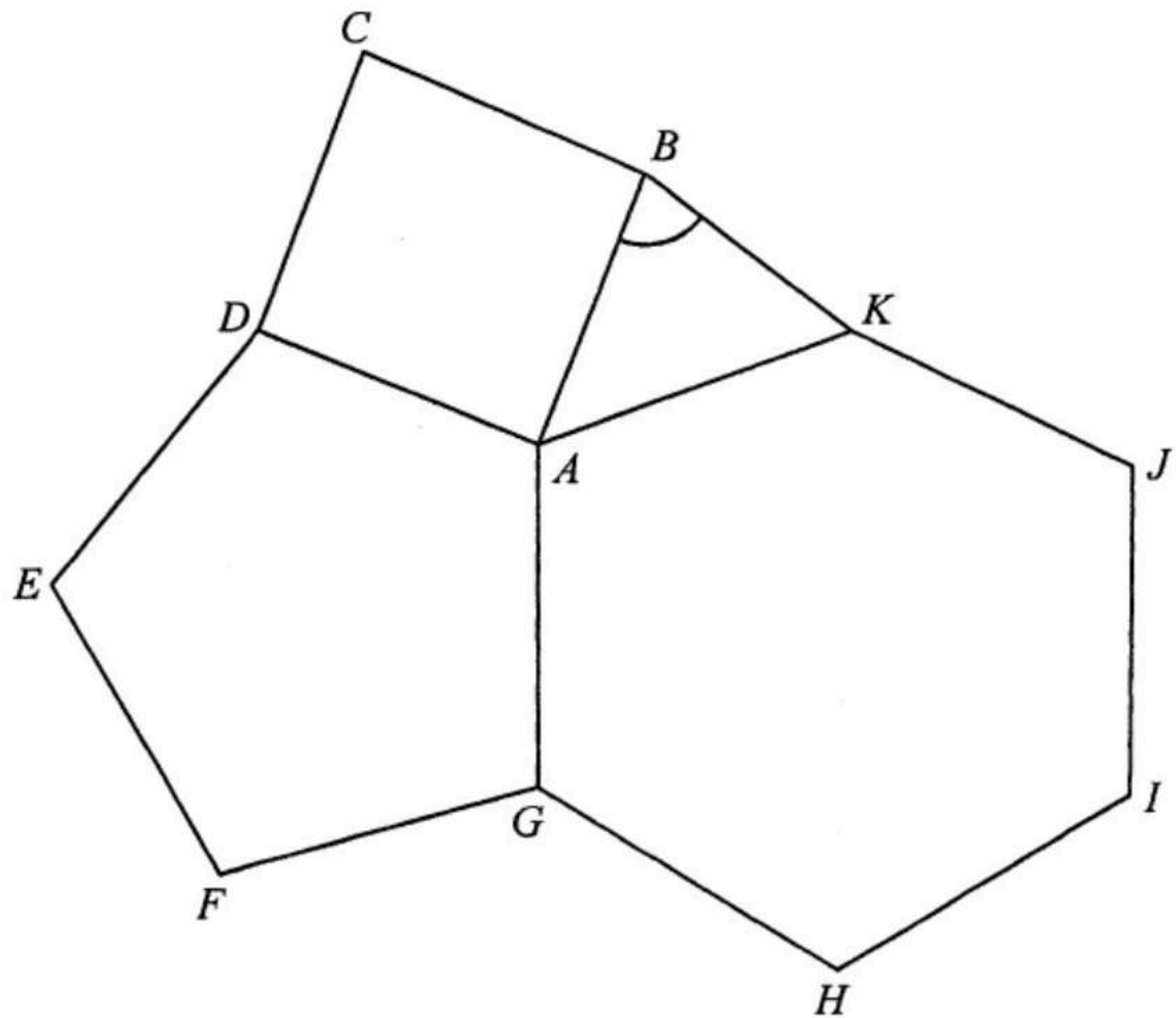


改簿能力

解難能力  
出題能力

認圖能力

繪圖能力

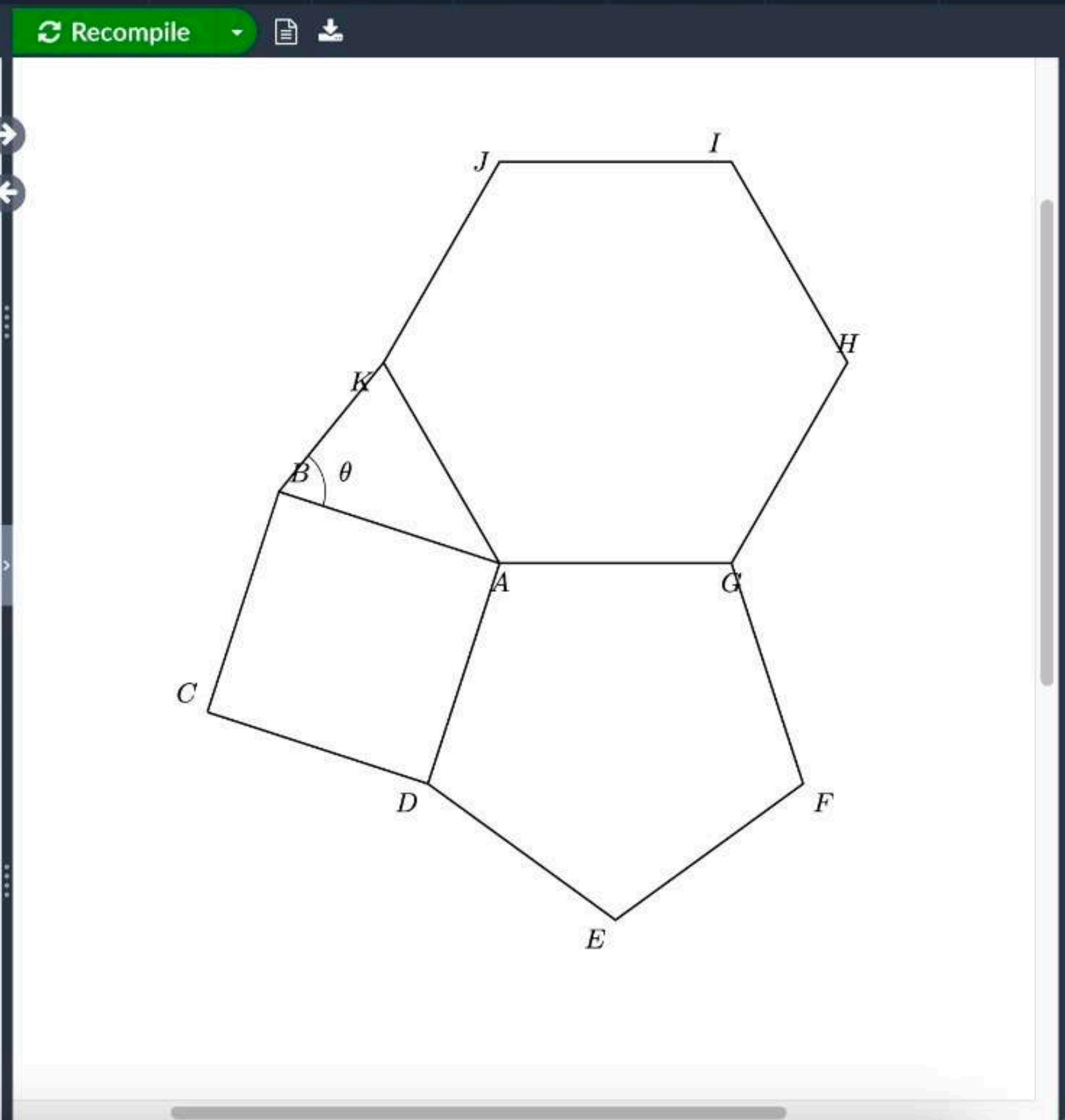


用 AI 畫這幅圖  
可行嗎？

```

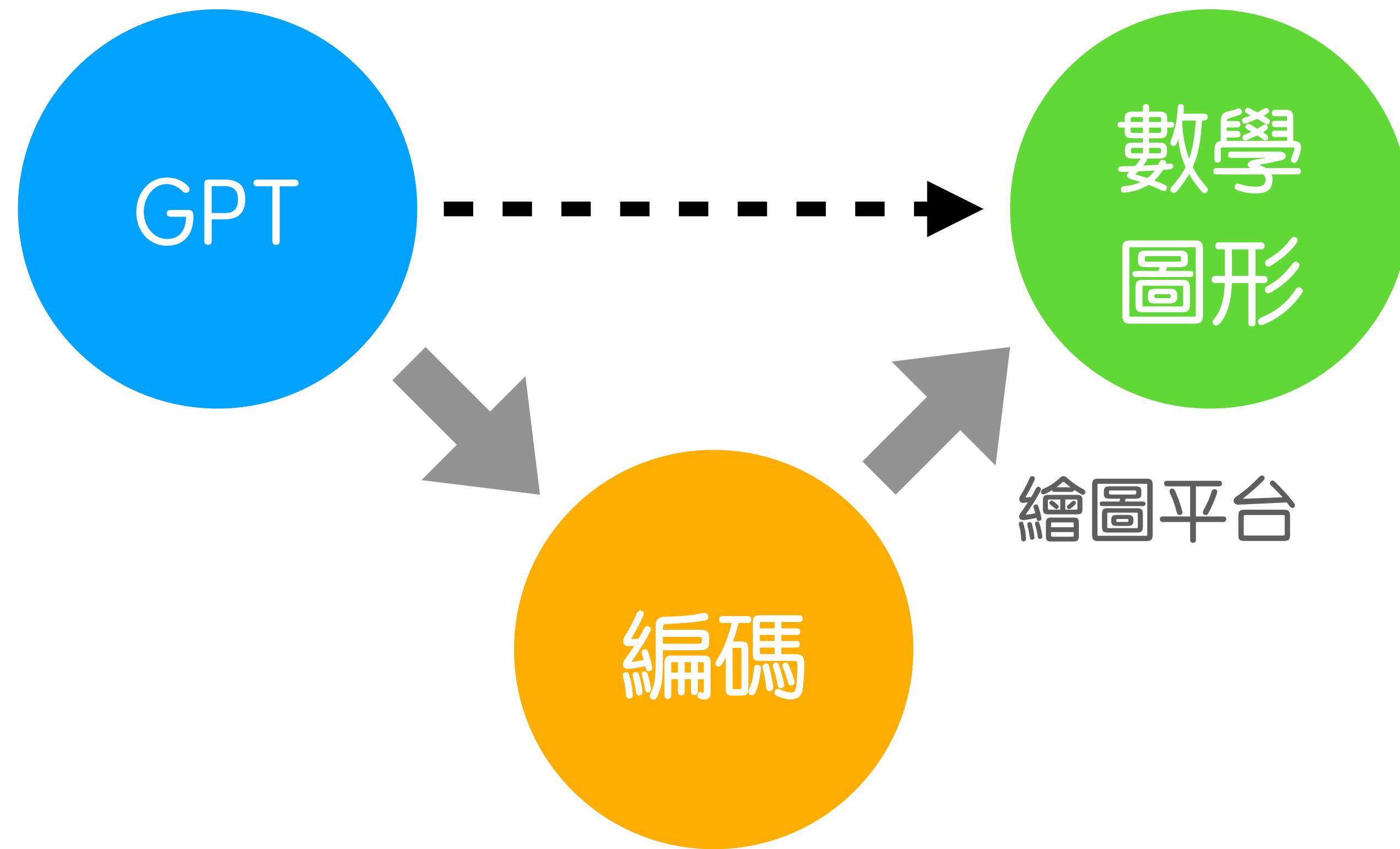
24 -- ++(-144:\sidelength) coordinate (E)
25 -- ++(-216:\sidelength) coordinate (D)
26 -- cycle;
27
28 % Draw the line DC perpendicular to AD
29 \coordinate (C) at ($(D)!1!90:(A)$);
30 \draw[thick] (D) -- (C);
31
32 % Complete the square ADCB
33 \coordinate (B) at ($(C)!1!90:(D)$);
34 \draw[thick] (C) -- (B) -- (A);
35
36 % Connect line BK
37 \draw[thick] (B) -- (K);
38
39 % Label the points
40 \foreach \point/\position in {A/below, D/below left, E/below left,
41 F/below right, G/below, H/above, I/above left, J/left, K/below
42 left, C/above left, B/above right}
43 \node at (\point) [\position] {$\point$};
44
45 % Label the acute part of angle ABK with a smaller arc
46 \pic[draw, angle radius=0.6cm, "$\theta$", angle eccentricity=1.5]
47 {angle = A--B--K};
48 \end{tikzpicture}
49 \end{document}

```



平台：[overleaf.com](https://overleaf.com) (免費)

# AI 能生成編碼 可以代為繪圖



從編碼多樣性及  
支援角度看  
Latex 比 Geogebra  
更優勝

# 課堂設計構思

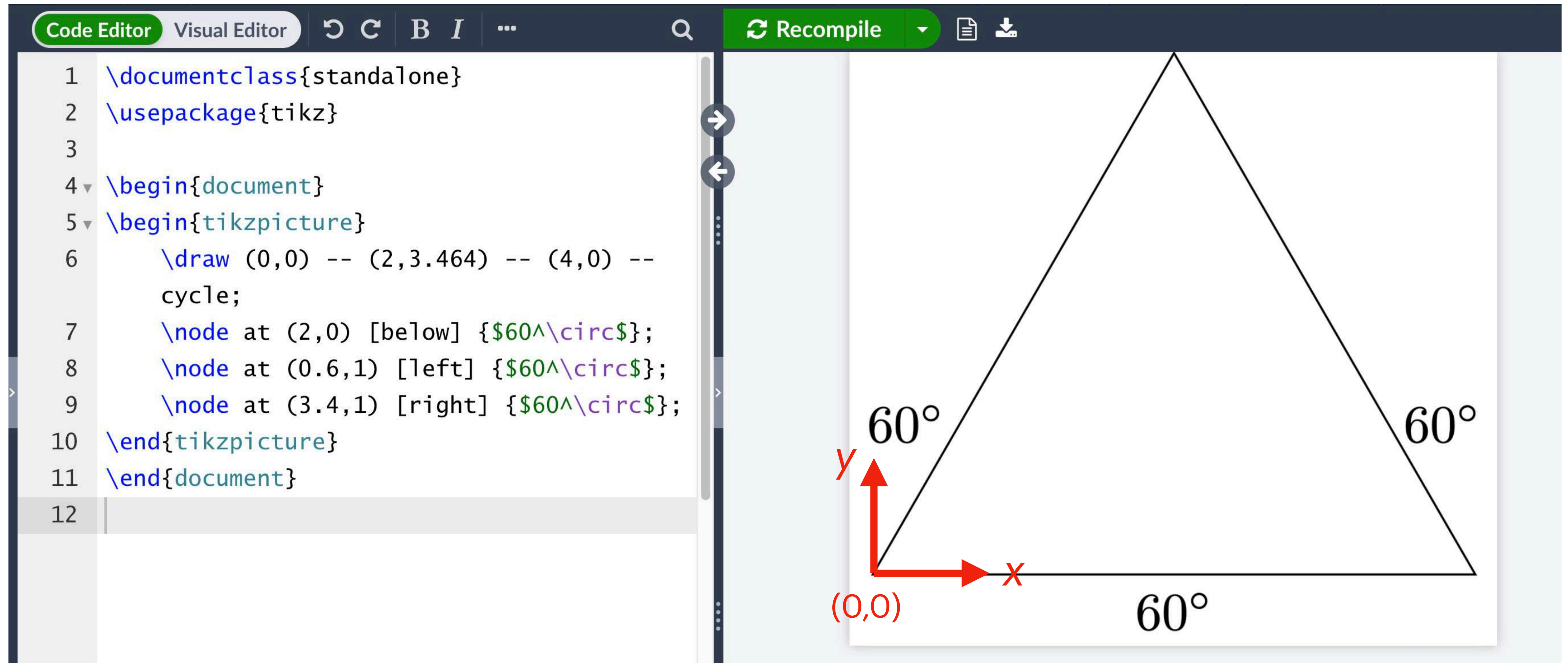
指導同學利用 AI 繪劃

數學圖形 (Latex)

找出出錯地方並修正

[overleaf.com](https://overleaf.com)

Prompt 1: Draw an equilateral triangle **in latex**.  
Label the 3 interior angles with 60 degrees.

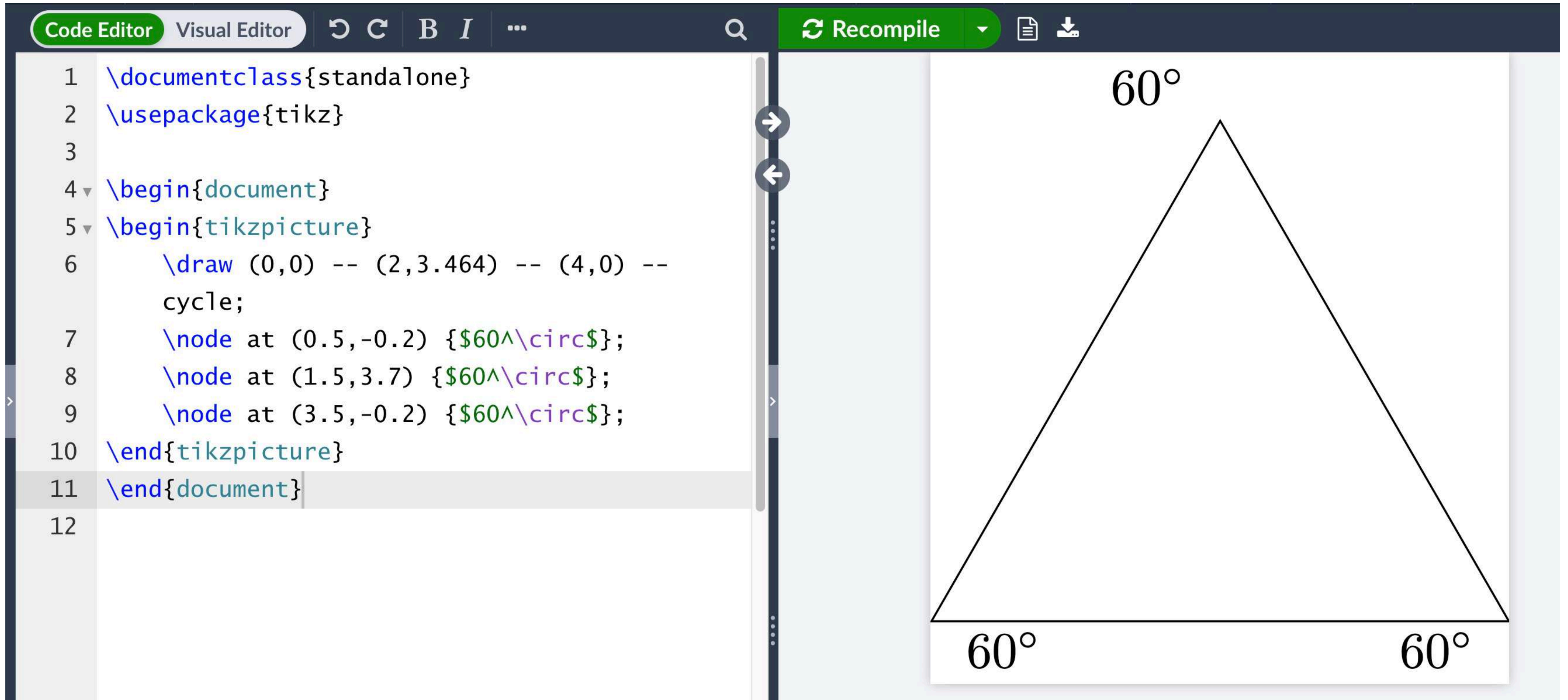


The image shows a screenshot of a LaTeX code editor interface. The editor has a dark theme and includes a toolbar at the top with options like 'Code Editor', 'Visual Editor', 'Recompile', and search icons. The code is as follows:

```
1 \documentclass{standalone}
2 \usepackage{tikz}
3
4 \begin{document}
5 \begin{tikzpicture}
6   \draw (0,0) -- (2,3.464) -- (4,0) --
7     cycle;
8   \node at (2,0) [below] {$60^\circ$};
9   \node at (0.6,1) [left] {$60^\circ$};
10  \node at (3.4,1) [right] {$60^\circ$};
11 \end{tikzpicture}
12 \end{document}
```

The right side of the editor displays the rendered output: an equilateral triangle with its base on the x-axis. The bottom-left vertex is at the origin (0,0), marked with a red coordinate label. The interior angles are labeled with  $60^\circ$  at each vertex. A red coordinate system is shown at the origin, with the x-axis pointing right and the y-axis pointing up.

Prompt 2: The 60 degrees labels should be put near to each vertex of the triangle.

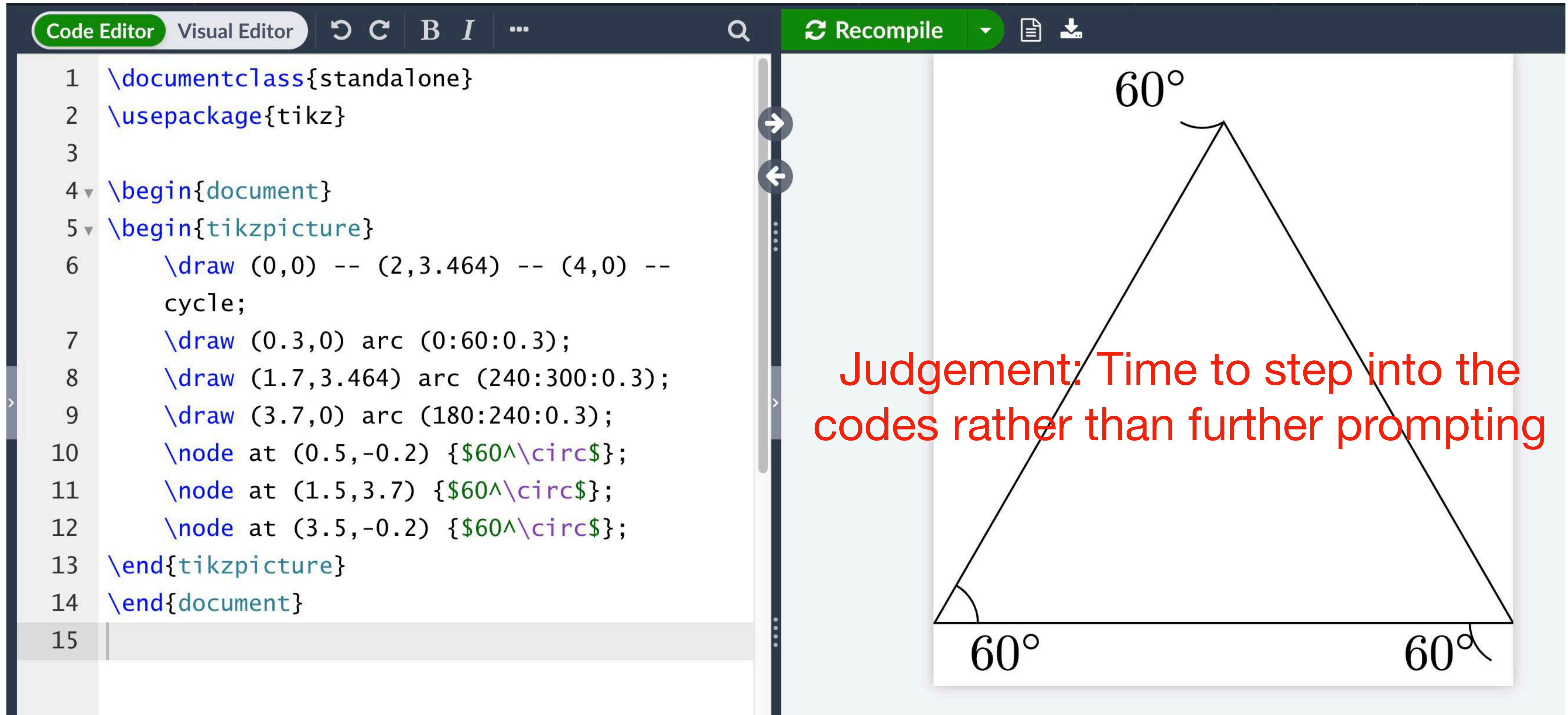


The image shows a LaTeX code editor interface with a dark theme. The left pane contains the following code:

```
1 \documentclass{standalone}
2 \usepackage{tikz}
3
4 \begin{document}
5 \begin{tikzpicture}
6   \draw (0,0) -- (2,3.464) -- (4,0) --
7     cycle;
8   \node at (0.5,-0.2) {$60^\circ$};
9   \node at (1.5,3.7) {$60^\circ$};
10  \node at (3.5,-0.2) {$60^\circ$};
11 \end{tikzpicture}
12 \end{document}
```

The right pane displays the rendered output: an equilateral triangle with three  $60^\circ$  angle labels placed near each vertex. The top vertex label is centered above the top edge, while the bottom-left and bottom-right labels are centered below the bottom edge. The editor interface includes a top bar with 'Code Editor' and 'Visual Editor' tabs, a search icon, a 'Recompile' button, and a vertical scrollbar between the two panes.

# Prompt 3: Label each interior angle with an arc.



The image shows a code editor interface with a dark theme. The left pane contains LaTeX TikZ code for drawing an equilateral triangle with 60-degree angles labeled. The right pane shows the rendered output: a triangle with three interior angles, each marked with a small arc and labeled "60°". A red text overlay is present over the right pane.

```
1 \documentclass{standalone}
2 \usepackage{tikz}
3
4 \begin{document}
5 \begin{tikzpicture}
6   \draw (0,0) -- (2,3.464) -- (4,0) --
   cycle;
7   \draw (0.3,0) arc (0:60:0.3);
8   \draw (1.7,3.464) arc (240:300:0.3);
9   \draw (3.7,0) arc (180:240:0.3);
10  \node at (0.5,-0.2) {$60^\circ$};
11  \node at (1.5,3.7) {$60^\circ$};
12  \node at (3.5,-0.2) {$60^\circ$};
13 \end{tikzpicture}
14 \end{document}
15
```

**Judgement: Time to step into the codes rather than further prompting**

# Prompt History

## 提示歷程充滿數學詞彙

Prompt 1: Draw an **equilateral triangle** in latex. Label the 3 **interior angles** with 60 degrees.

Prompt 2: The 60 degrees labels should be put near to each **vertex** of the triangle.

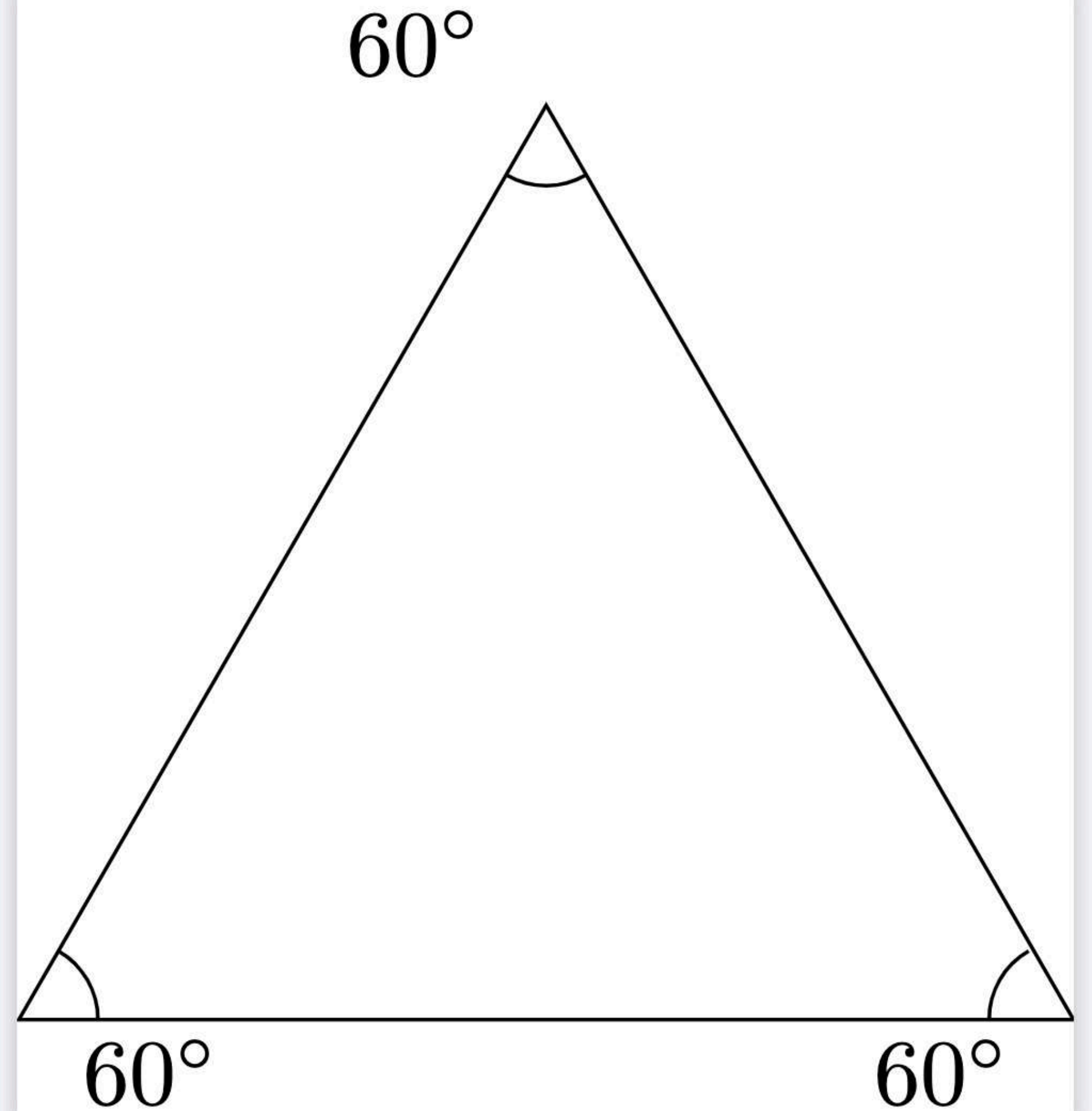
Prompt 3: Label each **interior angle** with an **arc**.

做中學

學生需使用  
已有知識達成任務，  
思考解難，從而獲得  
視覺化成果。

# 修改 arc 位置 (動用數學知識：座標、角)

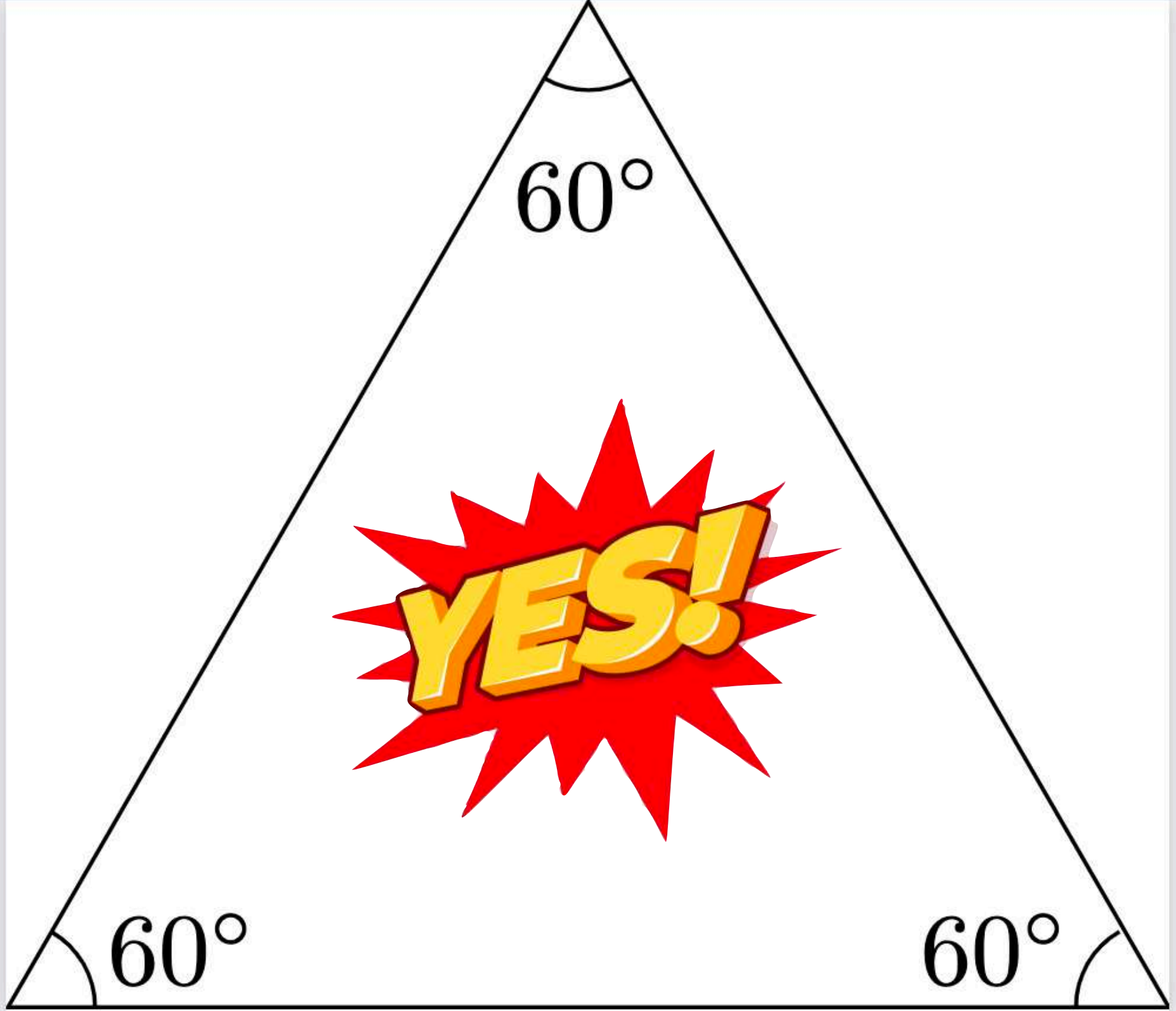
```
1 \documentclass{standalone}
2 \usepackage{tikz}
3
4 \begin{document}
5 \begin{tikzpicture}
6   \draw (0,0) -- (2,3.464) -- (4,0) --
7     cycle;
8   \draw (0.3,0) arc (0:60:0.3);
9   \draw (1.85,3.2) arc (240:300:0.3);
10  \draw (3.83,0.26) arc (120:180:0.3);
11  \node at (0.5,-0.2) {$60^\circ$};
12  \node at (1.5,3.7) {$60^\circ$};
13  \node at (3.5,-0.2) {$60^\circ$};
14 \end{tikzpicture}
15 \end{document}
```



# 修改 label 位置 (動用數學知識：座標)

```
Code Editor Visual Editor ↺ ↻ B I ... 🔍 Recompile 📄 ⬇
```

```
1 \documentclass{standalone}
2 \usepackage{tikz}
3
4 \begin{document}
5 \begin{tikzpicture}
6   \draw (0,0) -- (2,3.464) -- (4,0) --
   cycle;
7   \draw (0.3,0) arc (0:60:0.3);
8   \draw (1.85,3.2) arc (240:300:0.3);
9   \draw (3.83,0.26) arc (120:180:0.3);
10  \node at (0.6,0.2) {$60^\circ$};
11  \node at (2,2.8) {$60^\circ$};
12  \node at (3.4,0.2) {$60^\circ$};
13 \end{tikzpicture}
14 \end{document}
```

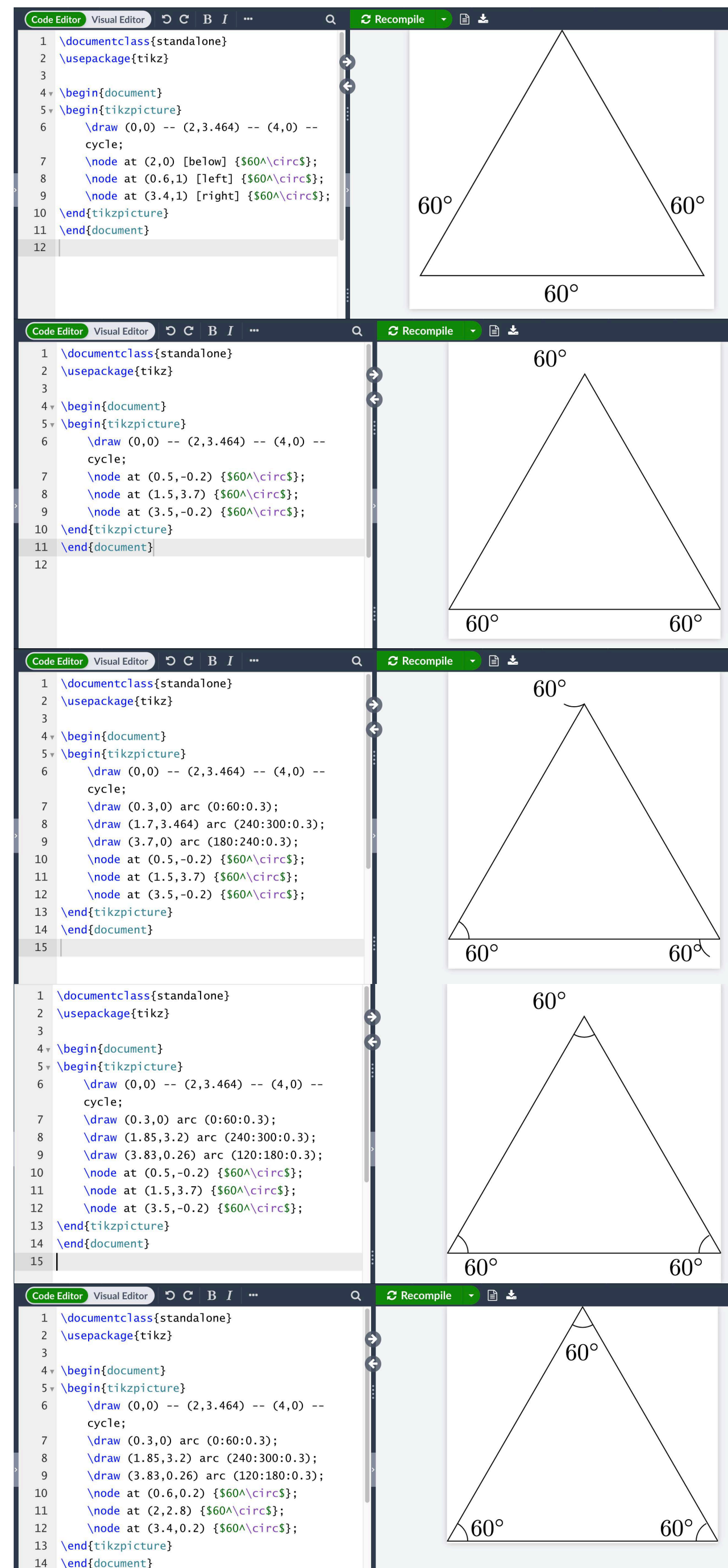


👋

# 教識 AI 劃圖

## 必定帶來 深度學習

量變 → 質變

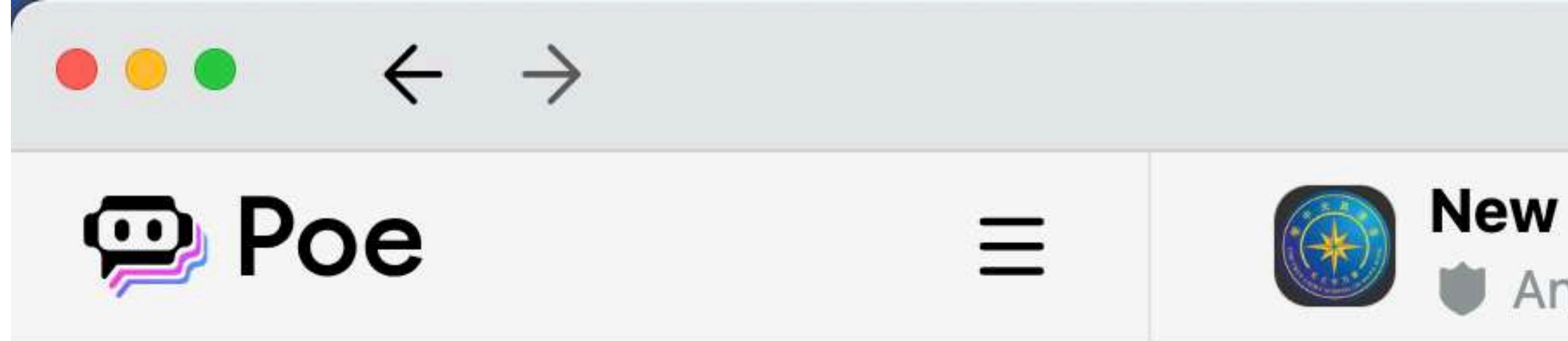



Loop (Deeper learning)


# 以編程畫圖

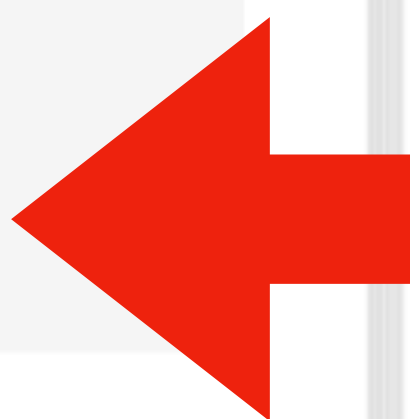
好處：圖形每個部份甚易修改

留意：AI 計算角度不一定準確



  
Explore >

  
Create bot



人人可造 GPT 🍂  
(免費)

ChatGPT-4o-Latest 10:58 >



Photo Prompt

Here is the grading breakdown for ...

Web-Search 10:52 >



Poe Chatbot Privacy

If you unfriend someone on Facebo...

TLHK\_ICT\_Compulsory Nov 19 >



Unit A03

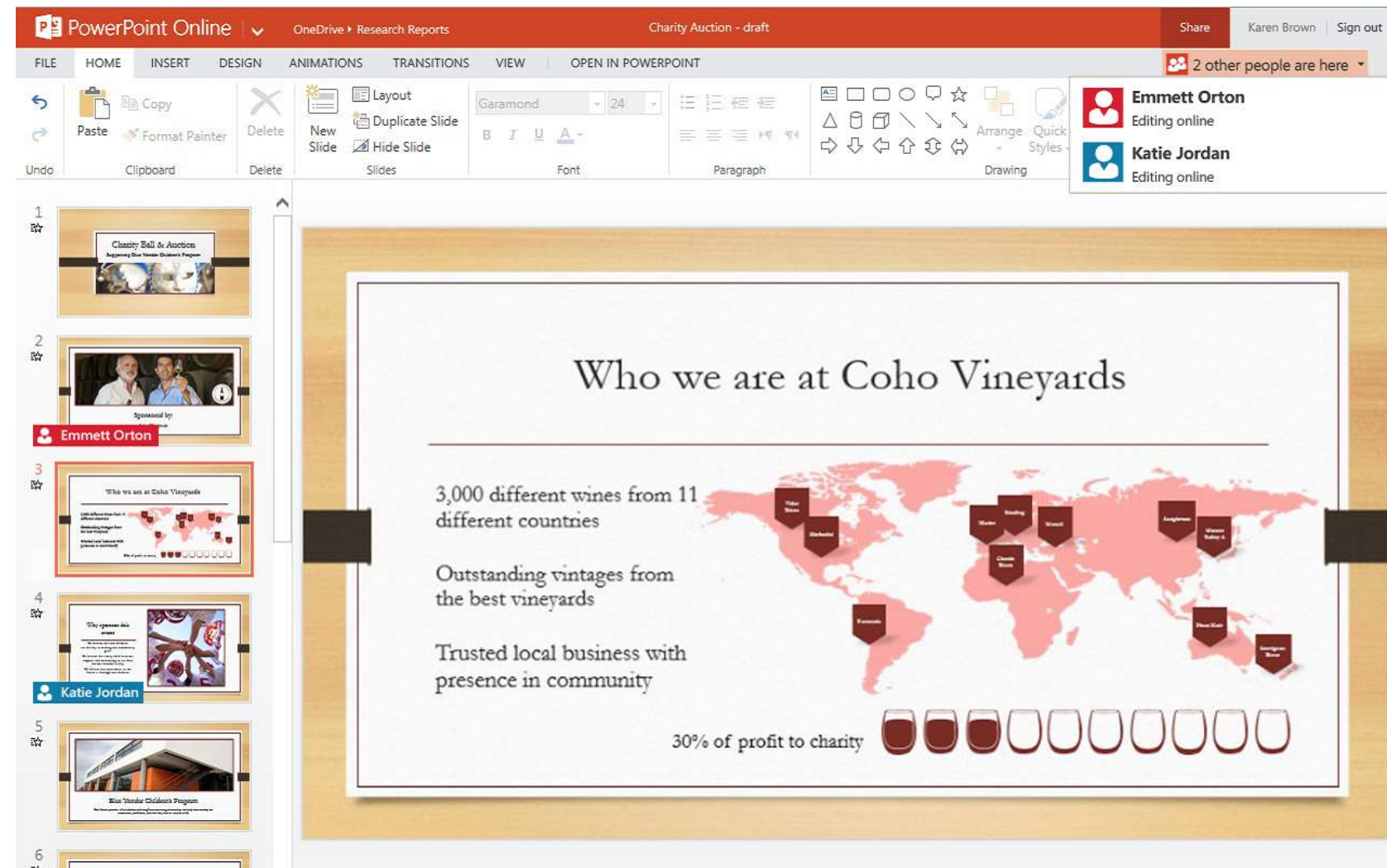
Absolutely! The Binary Bingo game ...

教師可以建立學科知識庫，讓學生透過 AI chatbot 互動，提升學習效果和參與度。

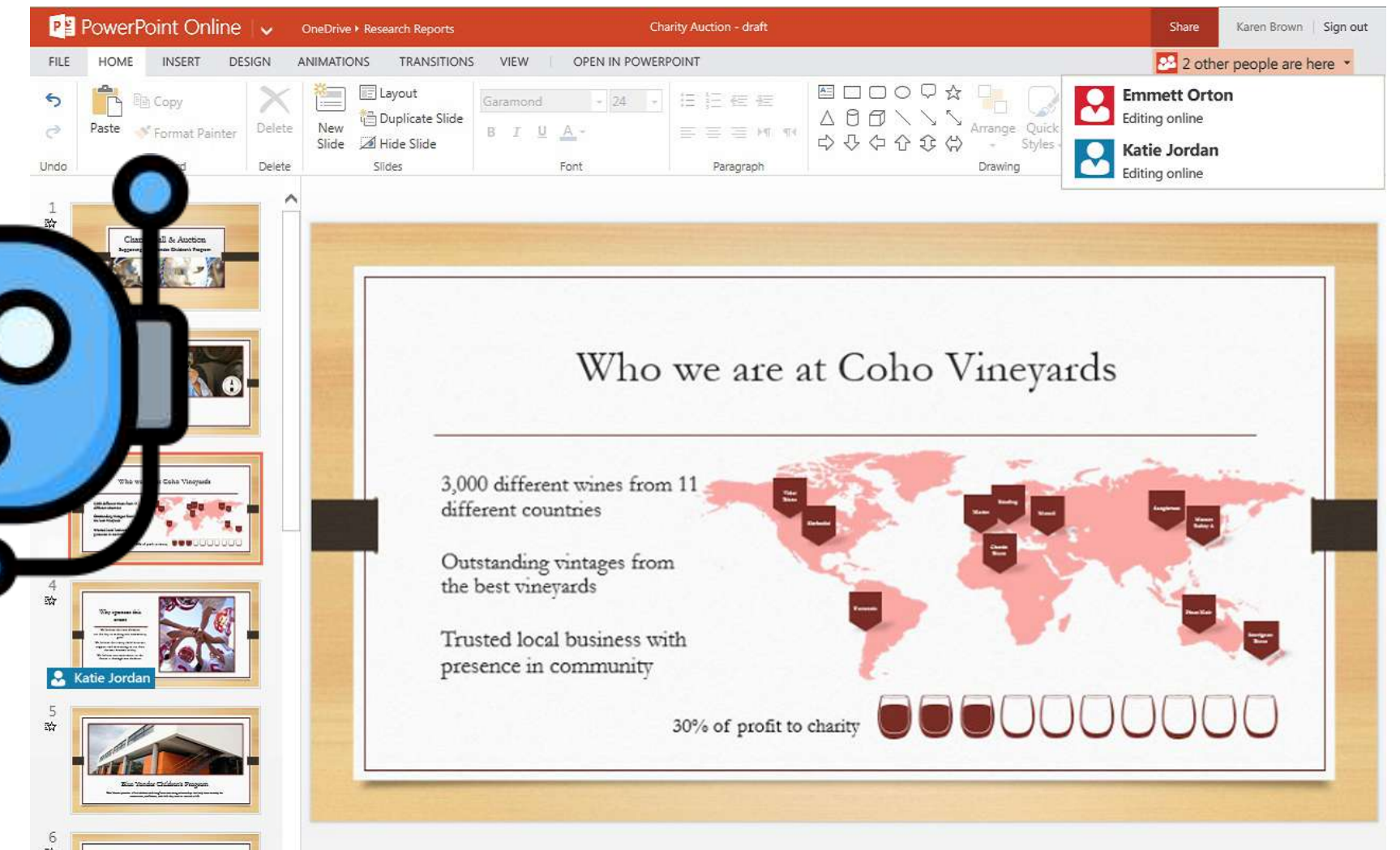
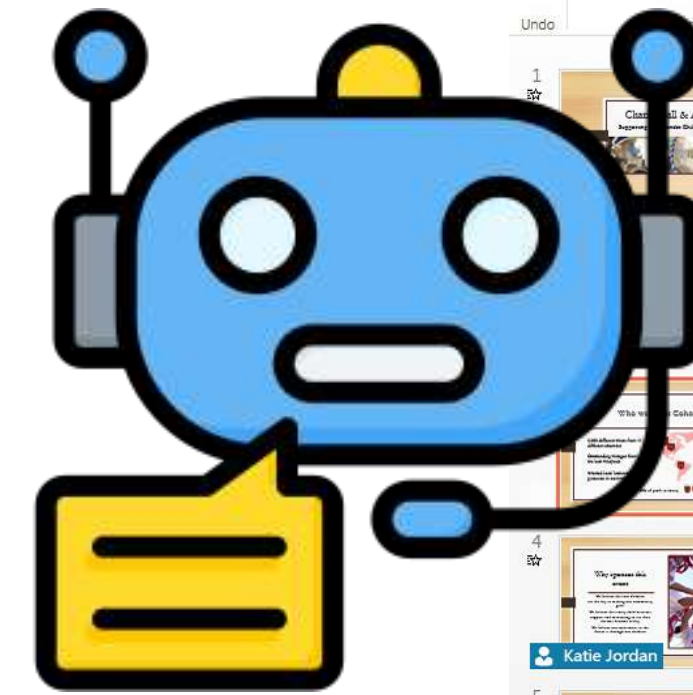
我想這是教育中使用 AI 最具變革性方法之一 🤔

# PPT 永遠是 PPT

# PPT 可以透過 chatbot 回答學生問題



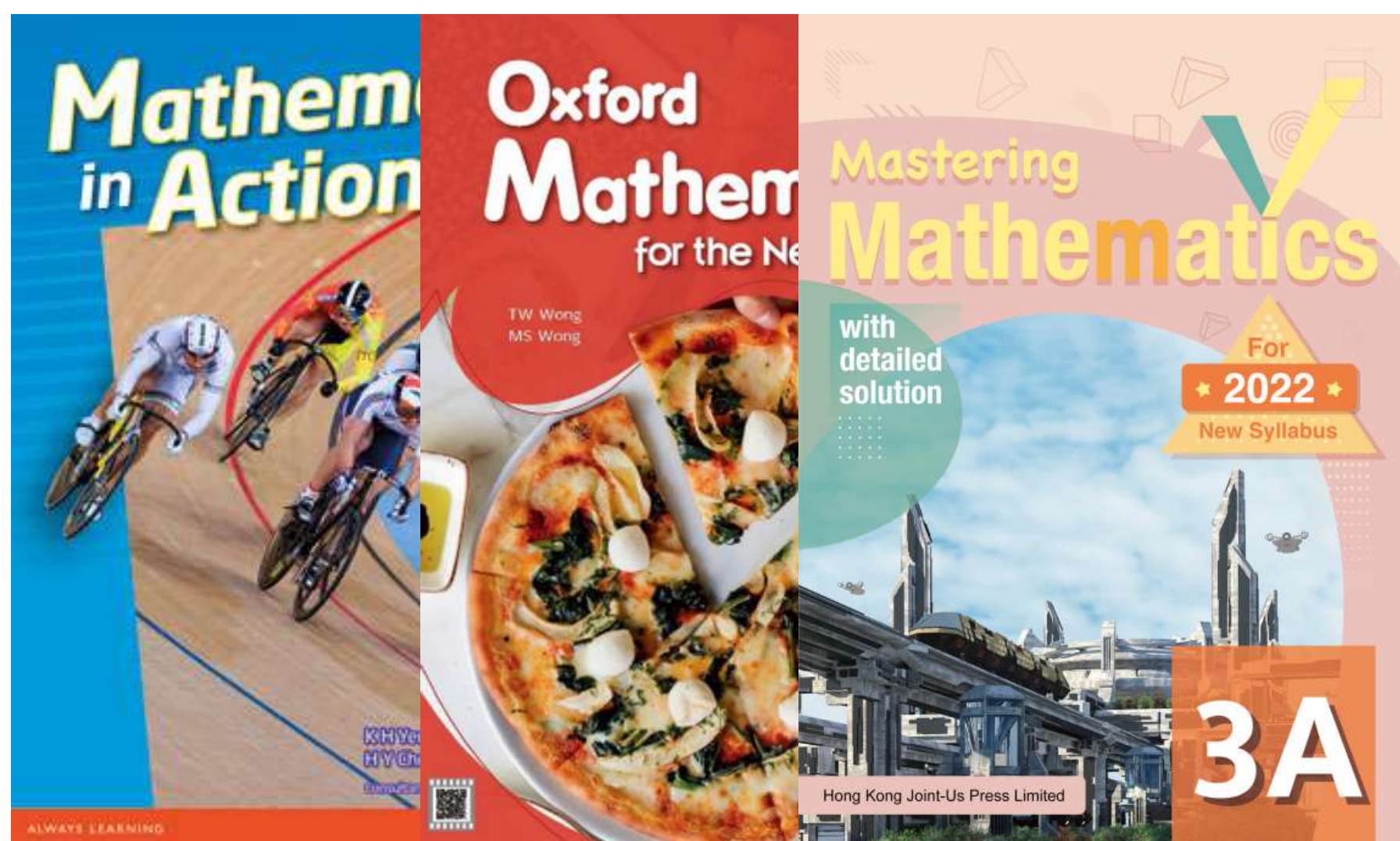
## AI 前



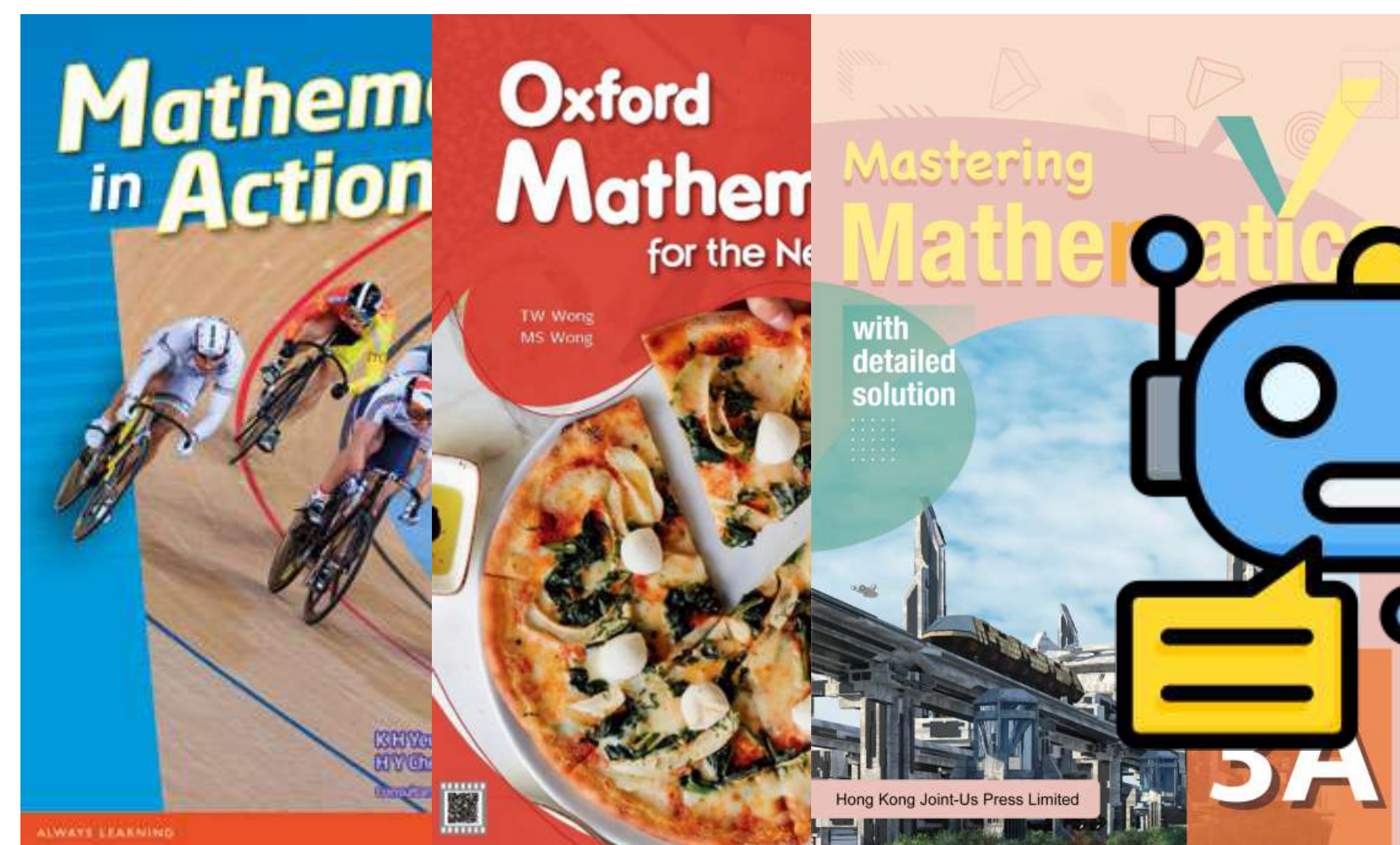
## AI 後

Textbook 永遠是  
Textbook

Textbook 可以透過  
chatbot 回答學生問題

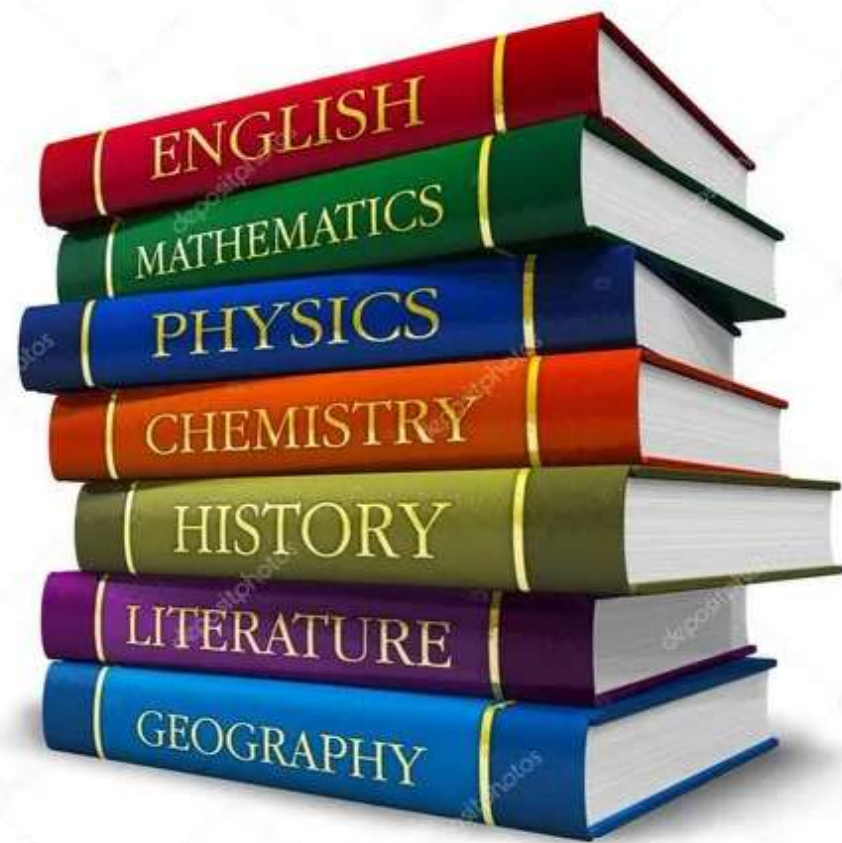


AI 前

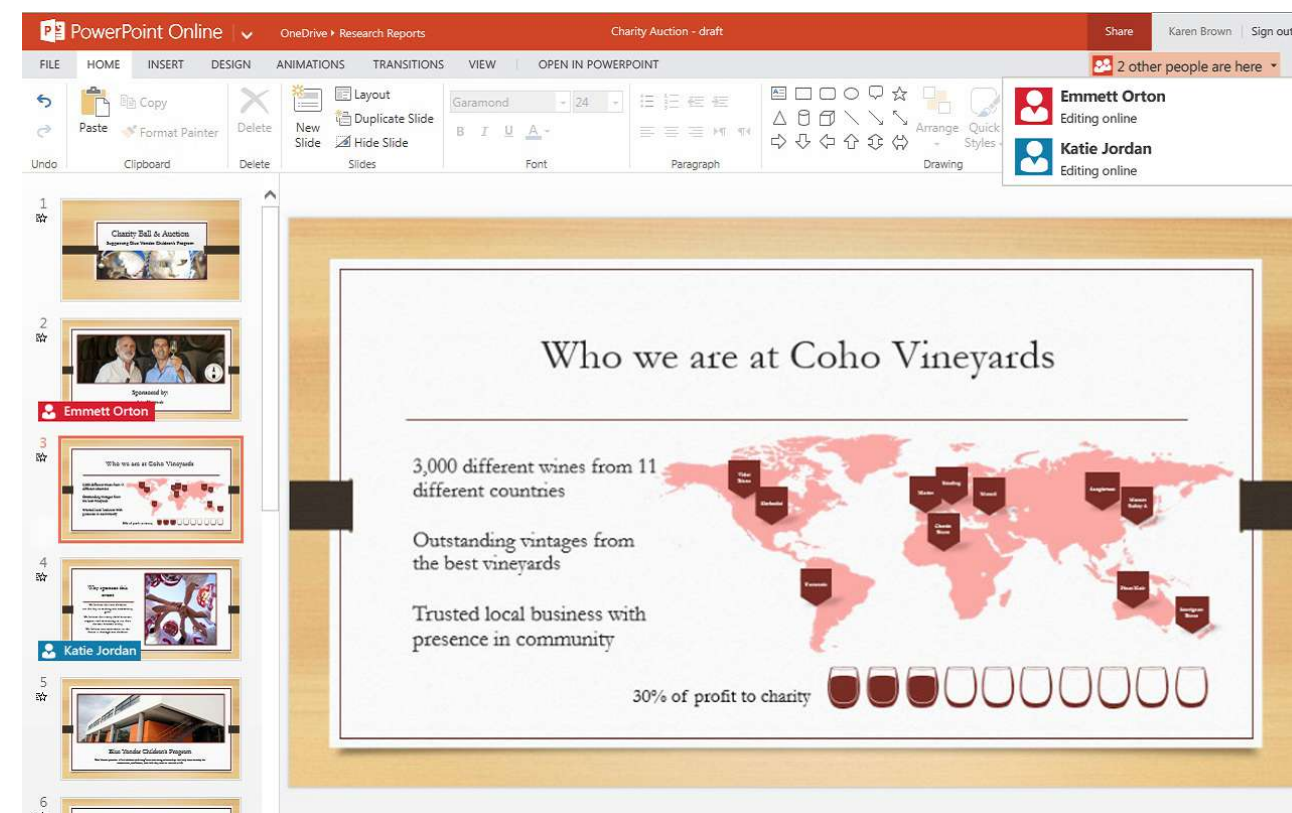


AI 後

# AI open up new ways of delivering knowledge



Books



PPT



Video



AI Chatbot

# Key step: Convert your materials to PDF (searchable) and upload to Knowledge base

**Poe** ☰

Explore > Create bot +

TLHK\_S1\_Maths\_GPT 21:28 >

**Linear Equations**  
Here are 5 questions on solving lin...

All chats

Your bots

**Edit bot**

If enabled, additional instructions will be added to the bot to optimize its performance in generating interactive web applications.

[How does this work? >](#)

**Knowledge base**

Provide custom knowledge that your bot will access to inform its responses. Your bot will retrieve relevant sections from the knowledge base based on the user message. The data in the knowledge base may be made viewable by other users through bot responses or citations.

- 1.2b Removing brackets-ocr.pdf  
File · Last updated 18:24
- 1.2a Number Line-ocr.pdf  
File · Last updated 18:24
- 1.1ax Directed Numbers-ocr.pdf  
File · Last updated 18:24
- 1.4 Mixed Operations-ocr.pdf  
File · Last updated 18:24
- 1.2c Word problems-ocr.pdf  
File · Last updated 18:24

[View all](#)

Cite sources

+ Add knowledge source

上載你的工作紙、題目、  
筆記、PPT





TLHK\_S1\_Maths\_GPT

By @hachihung

1 follower

Chats



View more

508 per standard message · [View details](#)

NEW

有 knowledge base 規範  
就有求必應



TLHK\_S1\_Maths\_GPT

Poe

Hi there! I am a Maths question setter. Ask me to set Maths questions for you.

give me 5 questions on solving linear equations



TLHK\_S1\_Maths\_GPT

Poe

Here are 5 questions on solving linear equations:

1. Solve the equation:  $8 - z = -5$  [2].
2. Solve for  $b$ :  $-3b = 33$  [3].
3. Find the value of  $x$ :  $2x - 32 = 48$  [6].
4. Solve for  $n$ :  $1 - 3n = n + 5$  [5].
5. Solve the equation:  $17 = 4z - 3$  [3].

列明資料來自何處

give me 10 questions on profit and loss, discount and percentages.



TLHK\_S1\_Maths\_GPT

Poe



Here are 10 questions on profit and loss, discount, and percentages:

### Profit and Loss:

1. The cost price of a book is \$50. What is the profit if the book is sold at:  
(a) \$58?  
(b) A profit of 18%? [1]
2. A photo frame is sold at a profit of 30%. What is the cost price of the photo frame if the profit is \$24? [1]
3. Kitty bought a rabbit for \$220 and sold it for \$250. She also sold a hamster at a profit of 60%. Find the overall profit percentage that Kitty made by selling the two animals. [4]
4. A wholesaler bought eggs at \$12 a dozen and sold them to a supermarket at \$14.4 a dozen. The supermarket then sold the eggs to customers at \$18 a dozen. Who earned a higher profit percentage: the wholesaler or the supermarket? [1]
5. A factory sold a sofa to a furniture shop at a profit of 5%. The shop owner then sold the sofa to a customer at a profit of 25% for \$5250.  
(a) How much did the shop owner pay the factory for the sofa?  
(b) What was the cost price of the sofa for the factory?  
(c) If the factory sold the sofa directly to the customer for \$4500, find its profit percentage. [4][5]

創新知識  
管理系統

出題目一流  
只係冇圖片

# 建立你的 GPT 團隊

Q Search for more bots



**TLHK ICT Compulsory**

PRIVATE

S4-S6 students ICT study buddy



**TLHK ICT P2A Advisor**

PRIVATE

Public exam past papers advisor



**TLHK ICT P2D Advisor**

PRIVATE

Public exam past papers advisor



**TLHK S1 Comp Buddy**

PRIVATE

S1 students computer study buddy

# 巨浪已到 做好準備 乘風破浪

出題

畫圖

出卷

知識管理

改簿

解難





歡迎加入翻協 🙌



FLiPEdu  
- HONG KONG -

<https://bit.ly/FlipEduMember>