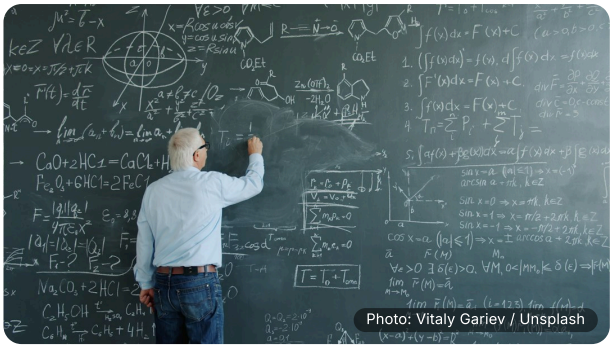
OpenAI says AI made scientific discoveries

LEVEL C1


Photo: Vitaly Gariev / Unsplash

I. WARM-UP

1. What makes a scientific claim convincing to you?
2. How do you usually hear about research news?
3. Should companies or universities publish breakthroughs first? Why?

II. KEY VOCABULARY

conjecture
an unproven idea in mathematics that people try to prove or disprove

dimension
a direction of measurement, such as length, width, height or higher analogues

rigorous
extremely careful and exact, following strict rules

disprove
to show that an idea or theory is false

hypothesis
a suggested explanation that has not yet been proven

asymmetry
an uneven or unequal situation between two sides

consultation
a discussion to get advice or feedback before deciding something

breakthrough
an important and sudden advance in knowledge or technology

III. READING

OpenAI says its AI models have made discoveries in mathematics, computer science and physics. One claim is that the models proved the local smoothing conjecture in every spatial dimension, a result researchers in harmonic analysis had only reached in three.

Alex Iosevich of the University of Rochester called the news a historic development and predicted major changes in theoretical mathematics, while admitting mixed feelings.

OpenAI also said its models disproved the Exponential Time Hypothesis in complexity theory and gave a mathematically rigorous proof of the existence of quantum chromodynamics.

After consultations with three expert “shepherd” groups, the company chose different release paths: the mathematics and computer science groups made the AI-produced data public immediately, while the physics group deferred release to write its own interpretation.

OpenAI noted trade-offs, including who gets involved first and the resulting information asymmetry, and asked for feedback to broaden participation. The announcement follows other AI breakthroughs, such as Anthropic’s enzyme said to resemble CRISPR, which drew mixed reactions from scientists.

Reading text adapted from reporting by **Al Jazeera***: “AI makes discoveries in mathematics, computer...”. Original article linked at theenglishwire.com.*

IV. COMPREHENSION QUESTIONS

1. Which three broad fields does OpenAI say the discoveries are in?
2. What is new about the result on the local smoothing conjecture?
3. Who is Alex Iosevich, and how did he respond?
4. What does OpenAI claim about the Exponential Time Hypothesis?
5. How did the release plans differ between the research groups?

V. DISCUSSION

1. How should claims like these be checked before they are celebrated?
2. Is deferring a release better than publishing raw data at once? Why?
3. What could AI-made proofs mean for human researchers' roles?
4. Do mixed reactions to past AI breakthroughs affect your trust here?

VI. GRAMMAR FOCUS

Adding emphasis - inversion with negative adverbials

Put a negative adverbial first (Never, Rarely, Seldom, Little, Only then/after), then invert: adverbial + auxiliary + subject + main verb. Use for strong emphasis; "Little" goes with know/expect/realise.

> "**Rarely have researchers** *announced findings so quickly.*"
> "**Only then did a committee** *publish its notes.*"

VII. GRAMMAR EXERCISE

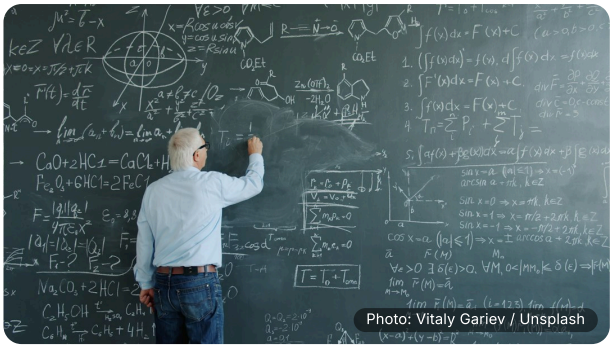
Circle the correct option in each sentence.

1. Rarely (do models prove / models do prove) such results. _____
2. Never (have researchers seen / researchers have seen) this mix. _____
3. Seldom (data are released / are data released) immediately. _____
4. Only after consulting experts (OpenAI acted / did OpenAI act). _____
5. Little (did reviewers / reviewers did) expect such claims. _____

Teacher's Notes

TEACHERS ONLY

These notes are designed to help you get the most out of this lesson. Please do not share this page with students.


Photo: Vitaly Gariev / Unsplash

I. LESSON GUIDE

- Timing: 8–10 minutes warm-up, 10 minutes vocabulary, 12–15 minutes reading and comprehension, 8–10 minutes grammar, 10–12 minutes discussion.
- Pre-teach: harmonic analysis (as a maths field), quantum chromodynamics (as a physics theory), conjecture vs hypothesis, and what a proof is.
- Run the reading: skim for the three fields first, then scan for the three specific claims; set pairs to compare summaries before whole-class feedback. The topic may feel personal to researchers in the room; allow answers about the news rather than about their own work.
- Differentiation: stronger students summarise Iosevich's position in one sentence; others underline sentences that show uncertainty or trade-offs before paraphrasing them.

II. DISCUSSION FACILITATION TIPS

1. Elicit concrete checks (peer review, replications); then push for who should lead and why.
2. Have students choose a side, then swap partners and defend the other approach with reasons.
3. Prompt for benefits and risks (speed, insight, skills); ask for examples from the text.
4. List reasons for trust and doubt from the article; ask which carries more weight and why.

III. EXTENSION ACTIVITIES

Debate: In teams, prepare 90-second opening statements for or against immediate data release, then rebut.

Writing: In pairs, draft a 120-word press note summarising the three claims and the release choices.

IV. ANSWER KEY OVERVIEW

Comprehension questions: short factual answers from the text.

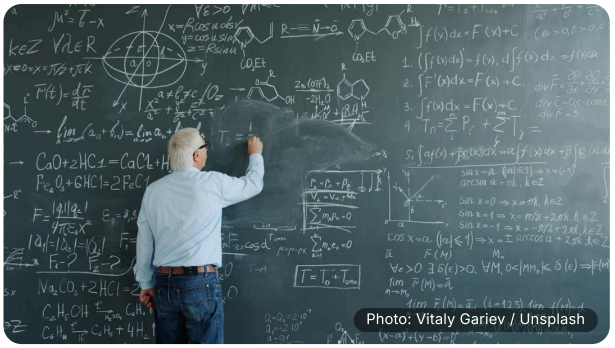
Grammar exercise: Adding emphasis - inversion with negative adverbials

Discussion: open-ended. Accept any reasonable ideas supported by examples and reasoning.

Answer Key

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These answers are for teachers only. Please do not share this page with students.


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IV. COMPREHENSION QUESTIONS

1. Which three broad fields does OpenAI say the discoveries are in?
   Mathematics, computer science and physics.
2. What is new about the result on the local smoothing conjecture?
   It was proved in every spatial dimension, not just in three.
3. Who is Alex Iosevich, and how did he respond?
   A University of Rochester mathematician; he called it historic but had mixed feelings.
4. What does OpenAI claim about the Exponential Time Hypothesis?
   That its models disproved it in complexity theory.
5. How did the release plans differ between the research groups?
   Maths and computer science released data immediately; physics deferred to write an interpretation.

V. DISCUSSION

Open answers. Accept any reasonable ideas supported by examples and reasoning.

VII. GRAMMAR EXERCISE

Circle the correct option in each sentence.

1. Rarely (do models prove / models do prove) such results. **do models prove**
2. Never (have researchers seen / researchers have seen) this mix. **have researchers seen**
3. Seldom (data are released / are data released) immediately. **are data released**
4. Only after consulting experts (OpenAI acted / did OpenAI act). **did OpenAI act**
5. Little (did reviewers / reviewers did) expect such claims. **did reviewers**

VI. GRAMMAR FOCUS

Key point: Put a negative adverbial first (Never, Rarely, Seldom, Little, Only then/after), then invert: adverbial + auxiliary + subject + main verb. Use for strong emphasis; "Little" goes with know/expect/realise. (Examples constructed.)

> "**Rarely have researchers** *announced findings so quickly.*"
>
> "**Only then did a committee** *publish its notes.*"