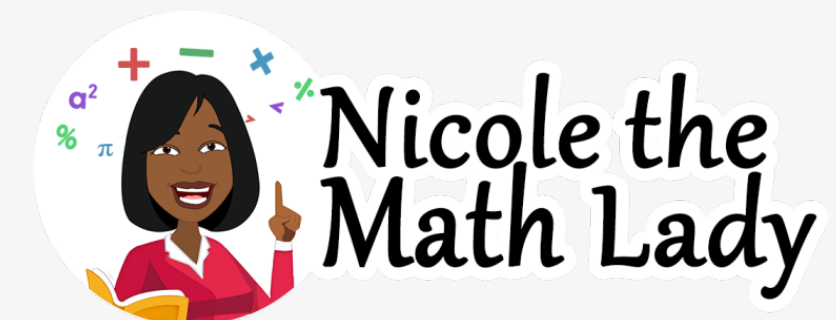




Digital Integrity

How to Ensure Students Use
Technology and AI Responsibly in
Math



Early 1970s,
Invention of the
pocket-size digital
calculator



Objectives

- Understand the benefits and risks of using technology/AI in math.
- Learn the 7 Technology/AI app types students can use
- Learn strategies to promote responsible use among students.



Digital Integrity

The practice of using technology and artificial intelligence responsibly, ethically, and effectively while learning.



**How can the use
of technology/AI
help—or hurt—
students in math?**



Benefits



- Individualized Support
- Efficient Practice
- Instant feedback
- Accessibility
- Engaging and interactive learning experiences



Risks



Over-reliance



Critical Thinking Decline



Cheating/Inappropriate Use



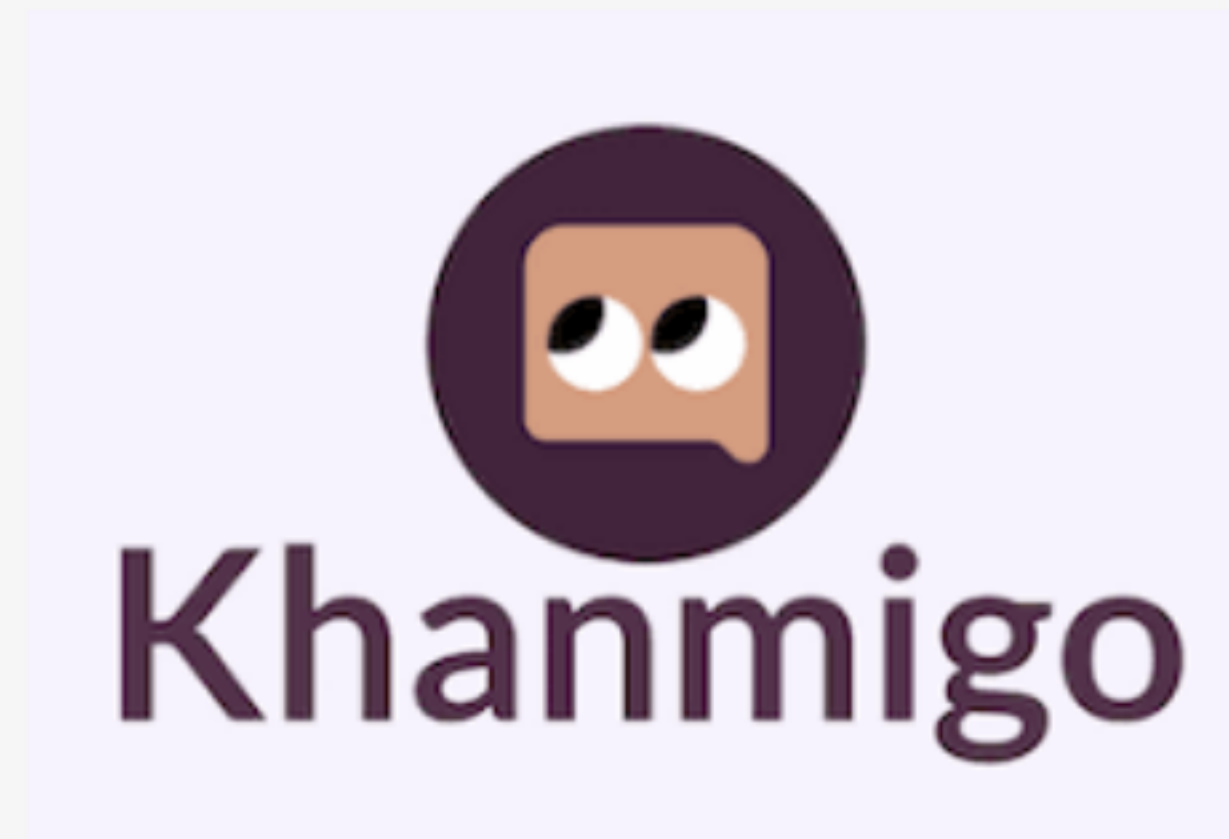


7 Types of Apps/AI Tools for Math

Personalized Learning Paths



Uses AI to tailor learning paths and offer personalized quizzes.



Khanmigo challenges you to think critically and solve problems without giving you direct answers. Learn new skills anytime, whether it's algebra, SQL, or essay writing.





Equations with parentheses

CCSS.Math: [8.EE.C.7](#), [8.EE.C.7b](#)  Google Classroom

Solve for m .

$$3 - 2(9 + 2m) = m$$

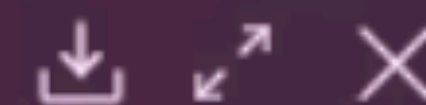
$m =$

Stuck? [Review related articles/videos or use a hint.](#)



Khanmigo beta

AI power



This conversation is recorded and viewable by your teacher.

I'm here to help you with this exercise. Here are a few ideas for things you can ask me:

[Give me a hint](#)


[Try a similar example](#)

[Why should I care about learning this?](#)

[Leave feedback](#)

Rate this response



 Clear chat





Equations with parentheses

CCSS.Math: [8.EE.C.7](#), [8.EE.C.7b](#)  Google Classroom

Solve for m .

$$3 - 2(9 + 2m) = m$$

$m =$

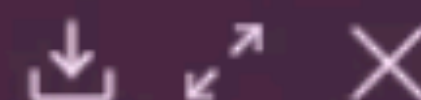
Stuck? [Review related articles/videos or use a hint.](#)

Rep



Khanmigo beta

AI power



This conversation is recorded and viewable by your teacher.

Oh, I see you're eager to find the answer! 😊 But remember, I'm here to help you learn how to solve it on your own. Let's start by looking at the equation:

$$3 - 2(9 + 2m) = m$$

What do you think the first step should be?

[> Related links](#)


[Leave feedback](#)

Rate this response



Type message (do NOT share any personal data)



 Clear chat



AI Learning Tutors



photomath
smart camera calculator

Solves math problems with step-by-step explanations using AI and OCR (optical character recognition).

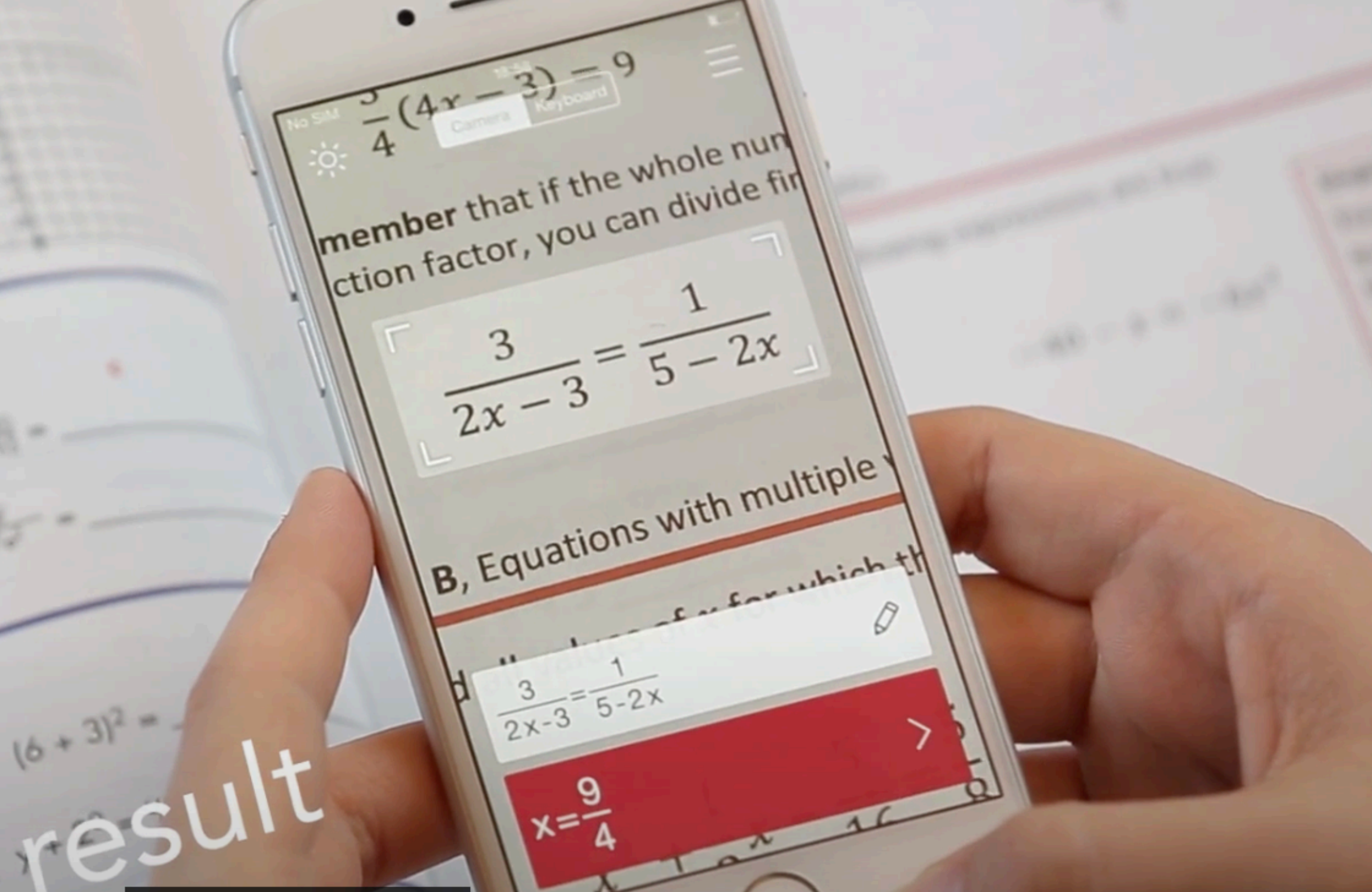


Socratic

Explains solutions to math problems by breaking them into easy-to-understand steps using AI.

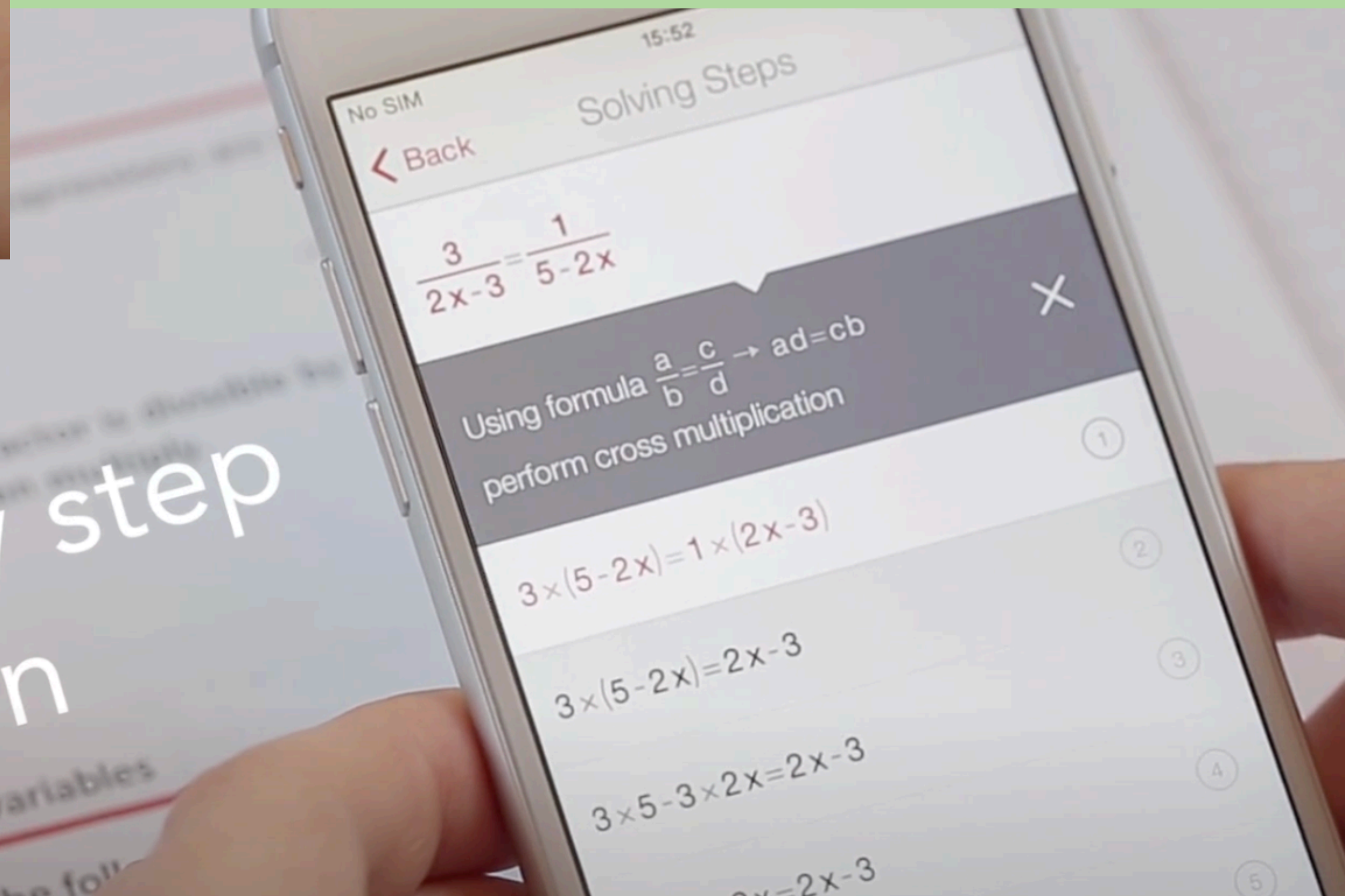


Provides instant solutions for math problems and detailed explanations.



result

Step by step solution



Problem-Solving & Homework Assistance



AI scans math problems and provides step-by-step solutions with graphs and examples.



Community-powered app with AI tools to offer quick answers to math questions.

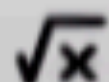


AI solver for algebra, calculus, and basic math problems.



$$21y = 5x^2$$

Point and shoot your math problem



< Math Solver

Your equation

$$21y = 5x^2$$

Solutions

Solve for x

$$x = \frac{\sqrt{105y}}{5}$$
$$x = -\frac{\sqrt{105y}}{5}, y \geq 0$$

SHOW STEP BY STEP >

Solve for y

$$y = \frac{5x^2}{21}$$

Practice and Assessment Tools



Adaptive learning platform for K-8 math that adjusts based on student progress.



Uses AI to generate personalized recommendations and analytics for student progress.



Gamified learning app with AI-driven recommendations for practice areas.



Math

Fractions
570 - 680
2 recommended skills

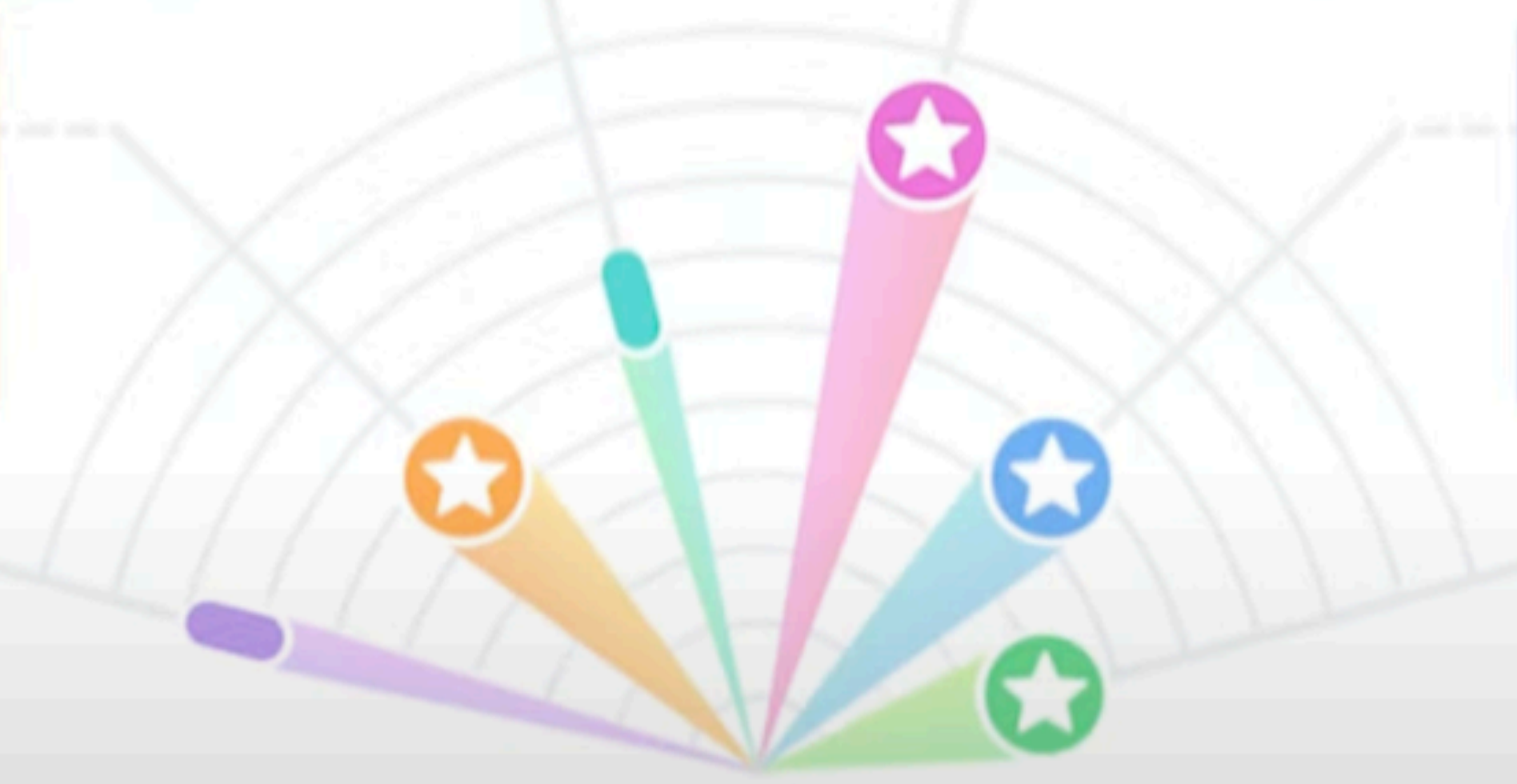
Geometry
780
3 recommended skills

Algebra & Algebraic Thinking
460
2 recommended skills

Measurement
460
3 recommended skills

Numbers & Operations
540 - 590
4 recommended skills

Data, Statistics, & Probability
300
3 recommended skills



overall math level
520 - 570

Overall math level



Math strand levels and recommendations

Numbers & Operations



➔ 2 recommended skills

- Compare decimals using grids (Level G) >> QTG
- Multiply 2-digit numbers by 2-digit numbers (Level G) >> LLJ

Algebra & Algebraic Thinking



➔ 1 recommended skill

- Multiply using the distributive property (Level E) >> 6W7

Games for Math Learning



AI adapts math games for early learners, focusing on foundational skills.



AI-driven platform for grades K-5 that uses gamified activities to teach math concepts.





Visualizing Math Concepts



AI-enhanced graphing calculator that allows users to visualize functions and equations dynamically.



Combines AI-driven dynamic geometry, algebra, and calculus for interactive learning.



Visualizes algebraic, calculus, and graphing problems using AI.

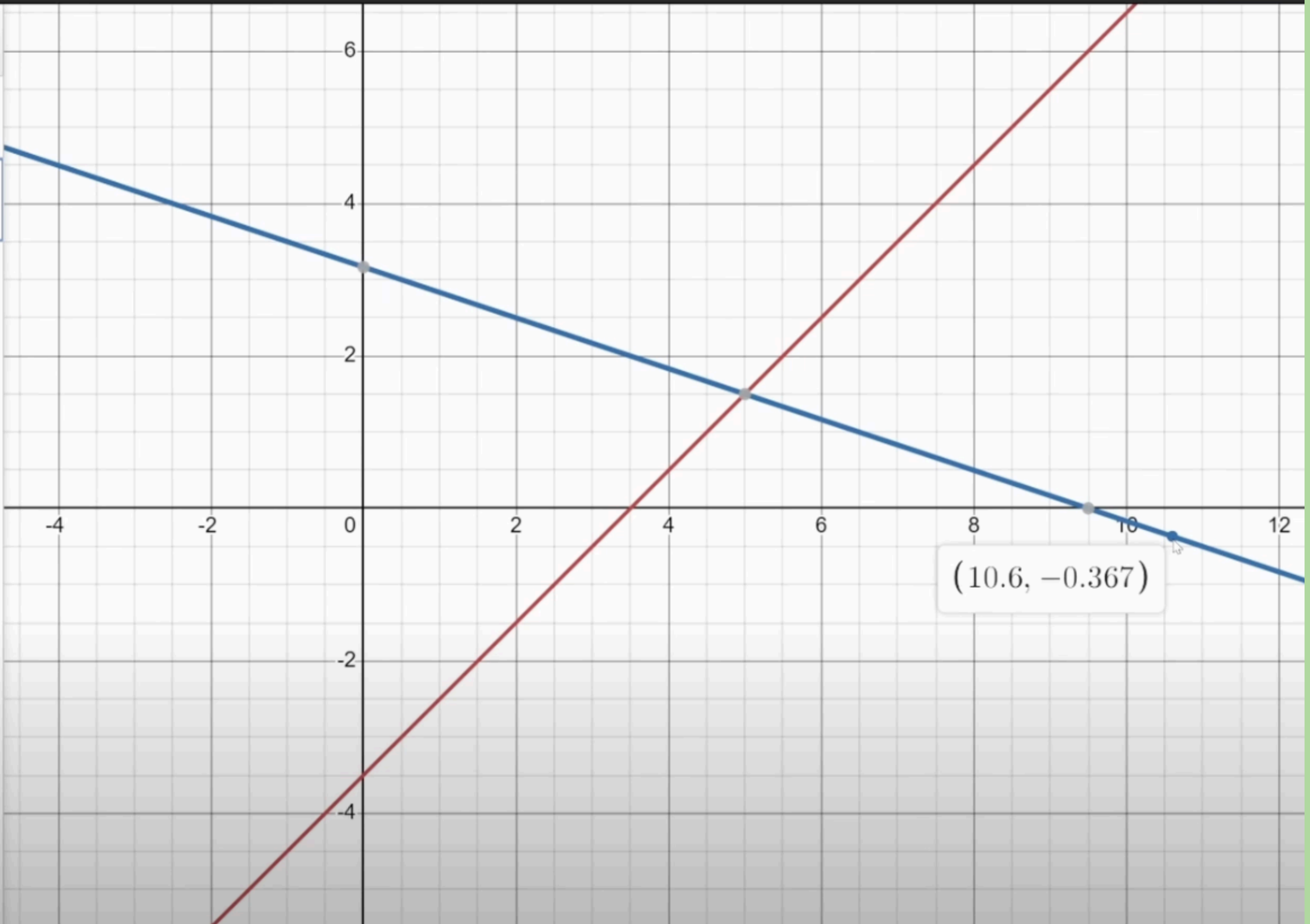


+

1 $-x + y = -3.5$

2 $x + 3y = 9.5$

3



Exam Prep & Analytics



AI identifies knowledge gaps and personalizes test prep for K-12 and higher education.



AI suggests study paths based on performance in math flashcards and quizzes.

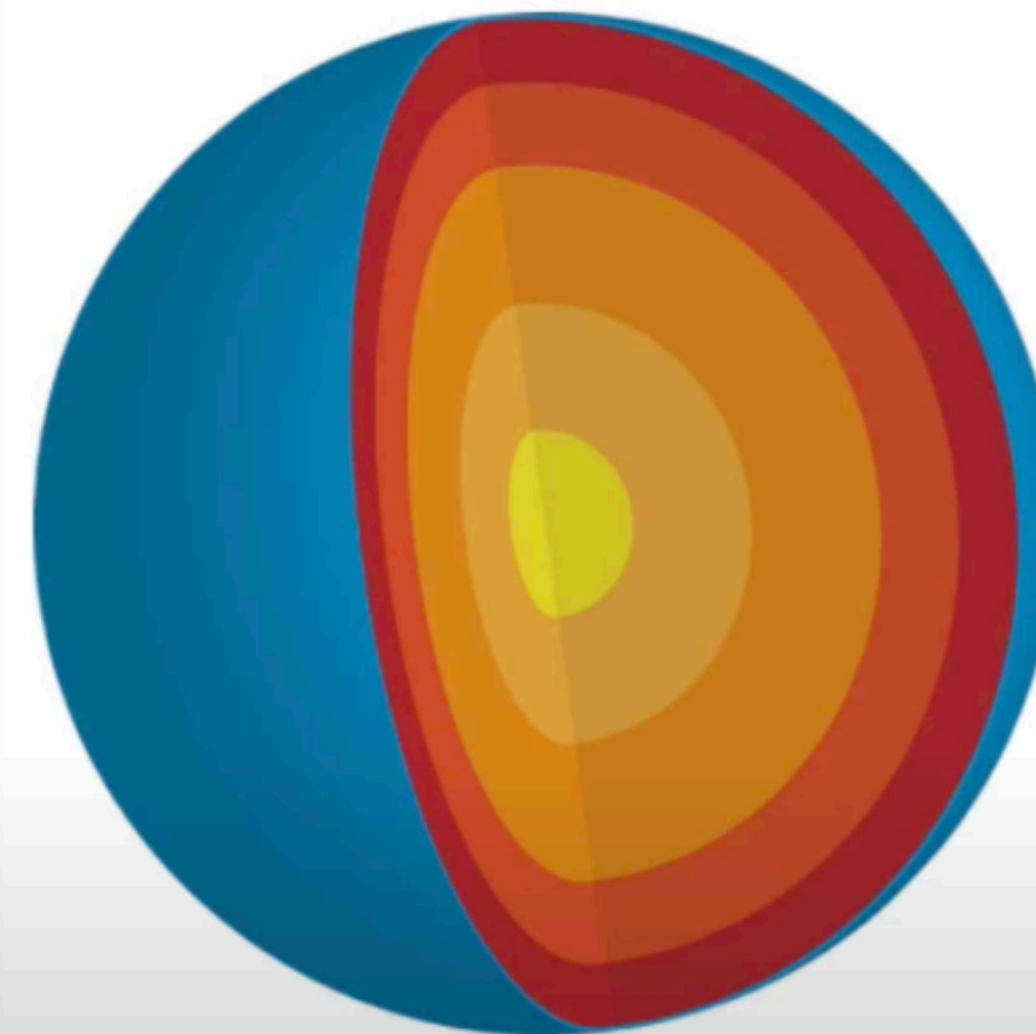




Composition



↻ PRESS **SPACE** OR CLICK THE CARD TO FLIP IT



The nature of something's ingredients or constituents; the way in which a whole or mixture is made up



PRESS **→** OR CLICK THE ARROWS BELOW TO ADVANCE

Strategies for Using Technology Responsibly, Ethically, and Effectively



Educate Students on Responsible and Ethical Use



- **AI Literacy:** Educate students on how AI tools work, their limitations, and when it's appropriate to use them.
- **Honesty and Integrity in Learning:** Encourage a culture where students understand that AI is a tool for assistance, not a shortcut for learning.





Activity

Have students analyze different AI-generated answers and discuss whether they are ethical, biased, or misleading.

Establish Clear Guidelines

- **Technology Use Policies:** Set clear expectations on how students should use AI tools, search engines, and online resources.
- **Guided AI Use:** Specify when AI-generated content is allowed (e.g., brainstorming or checking work) and when it's prohibited (e.g., completing assignments for them).





Activity

Give students different scenarios:

- "Is it OK to use AI to write a book report?"
- "Can I use AI to explain a complex math problem?"

Have them decide what is ethical and unethical based on the guidelines.

Promote Critical Thinking and AI Transparency



- **Encourage Fact-Checking:** Train students to critically evaluate AI responses, cross-referencing information with reliable sources.
- **Emphasize Human Oversight:** Stress that AI is prone to errors and biases and should not be blindly trusted.





Activity

Give students a math question and have AI generate an answer.

Then, they must:

1. Explain whether the AI answer is correct.
2. Provide evidence supporting or refuting the answer.
3. Write a reflection on how AI helped or hindered their learning.



Use AI Tools for Personalized Learning Without Over-Reliance

- **Adaptive Learning Platforms:** Encourage the use of AI tools like Khan Academy and Mathway for personalized learning paths.
- **AI for Practice & Feedback:** Use AI for instant feedback on assignments while ensuring students understand the reasoning behind corrections.





Activity

Give students an AI-generated math solution with missing steps and have them **fill in the gaps manually** before checking the AI's answer.



Monitor and Guide Student Use

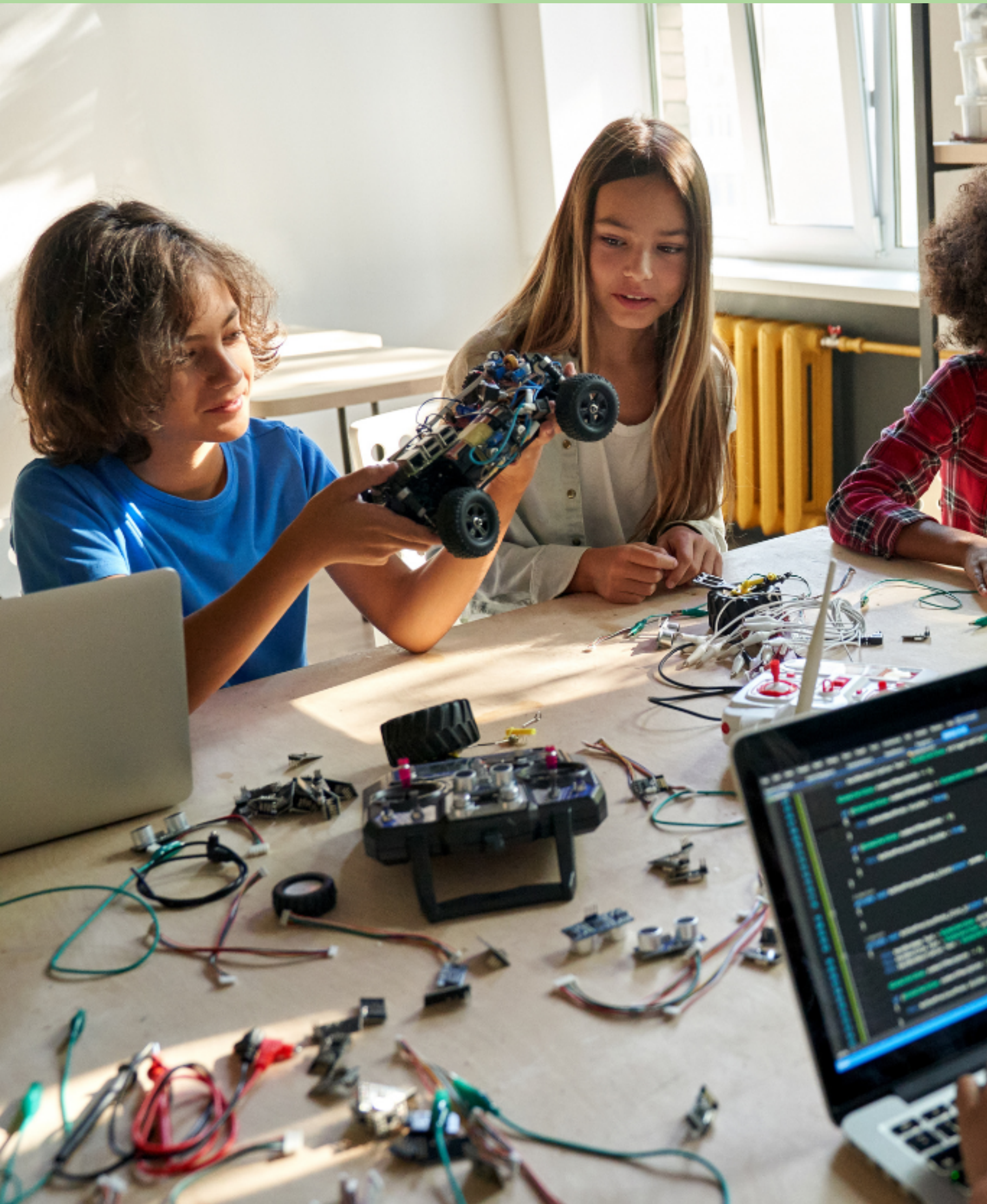
- **AI Detection and Anti-Plagiarism Tools:** Use tools like Turnitin and GPTZero to ensure AI is not being misused for plagiarism.
- **Self-Reflection Activities:** Have students reflect on their use of AI—did it help them understand better or just complete the work faster?





Activity

Do a **"tech check"** collaboratively with your student.
Review work that has been done on AI to ensure ethical use.



Foster Engagement Beyond AI Tools

- **Hands-on Learning Activities:** Ensure students are still engaging in discussions, experiments, and real-world applications of what they learn.
- **Project-Based Learning:** Encourage students to create, analyze, and synthesize knowledge rather than just retrieving information.





Activity

"Explain to a 5-year-old" challenge – After using an AI tool, students must explain the topic **without using AI** in the simplest way possible.



Model Ethical Technology Use


- **Lead by Example:** Model ethical AI use by demonstrating how to use AI responsibly in lesson planning and research.
- **Parental Involvement:** Be aware of AI tools your children use and discuss digital responsibility.





Activity

Teacher vs. AI Challenge – Show an AI-generated response and a teacher-written response. Have students **compare the depth, accuracy, and effectiveness** of both.



"AI is like a calculator—
it's powerful, but only
when used
appropriately."



- Saxon Math Videos & Grading
- Singapore Math Videos & Grading
(Coming this Fall)
- Average annual price: \$79 per student

SIGNUP FOR A FREE TRIAL

You don't have to have the
books for the free trial!



- Learn Addition & Subtraction Math Facts in 60 days
- Learn Multiplication & Division Facts in 90 days
- \$21.99 for a single student



Workshop Handouts