

CHEMISTRY



So glad you are here! Feel free to introduce yourself in the chat!



OH, HI THERE!

Welcome to APTeach: Getting to know the Desmos graphing calculator



PLEASE reach out
to join us for
planning sessions!!

AP TEACH
07-24-25



APTeach

ANNOUNCES PARTNERSHIP
WITH



APTeach Partners with ChemEd X

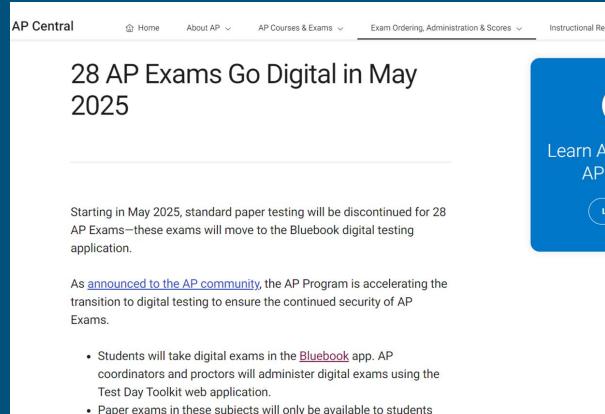
<https://www.chemedx.org/article/apteach-partners-chemed-x>

We can always use YOUR help (and patience)

As we transition to ChemEdX,
Sign up (<https://chemedx.org/user/register>) for free
(not subscribe) on the ChemEd X website to receive updates
via the email Newsletter and Facebook for future sessions!
Coming Soon: ChemEd X updated website!

28 AP Exams Go Digital in May 2025

<https://apcentral.collegeboard.org/exam-administration-ordering-scores/digital-ap-exams/28-exams-digital-2025>



AP Central Home About AP AP Courses & Exams Exam Ordering, Administration & Scores Instructional Resources

28 AP Exams Go Digital in May 2025

Starting in May 2025, standard paper testing will be discontinued for 28 AP Exams—these exams will move to the Bluebook digital testing application.

As announced to the AP community, the AP Program is accelerating the transition to digital testing to ensure the continued security of AP Exams.

- Students will take digital exams in the [Bluebook](#) app. AP coordinators and proctors will administer digital exams using the Test Day Toolkit web application.
- Paper exams in these subjects will only be available to students

Until widespread technology becomes more available for easier drawing of graphs or diagrams and writing equations and formulas, hybrid chemistry exams will allow for better security, yet ease of answering.

How will the hybrid digital exams work?

For the 12 hybrid digital AP Exams, students complete multiple-choice questions and view free-response questions in Bluebook. They handwrite their free-response answers in paper exam booklets that are returned for scoring. More information about these exams will be shared with teachers and AP coordinators in the coming months.

For more info on Bluebook:
<https://bluebook.collegeboard.org/>

To download Bluebook:
<https://bluebook.collegeboard.org/students/download-bluebook>

AP Exam Calculator Policy

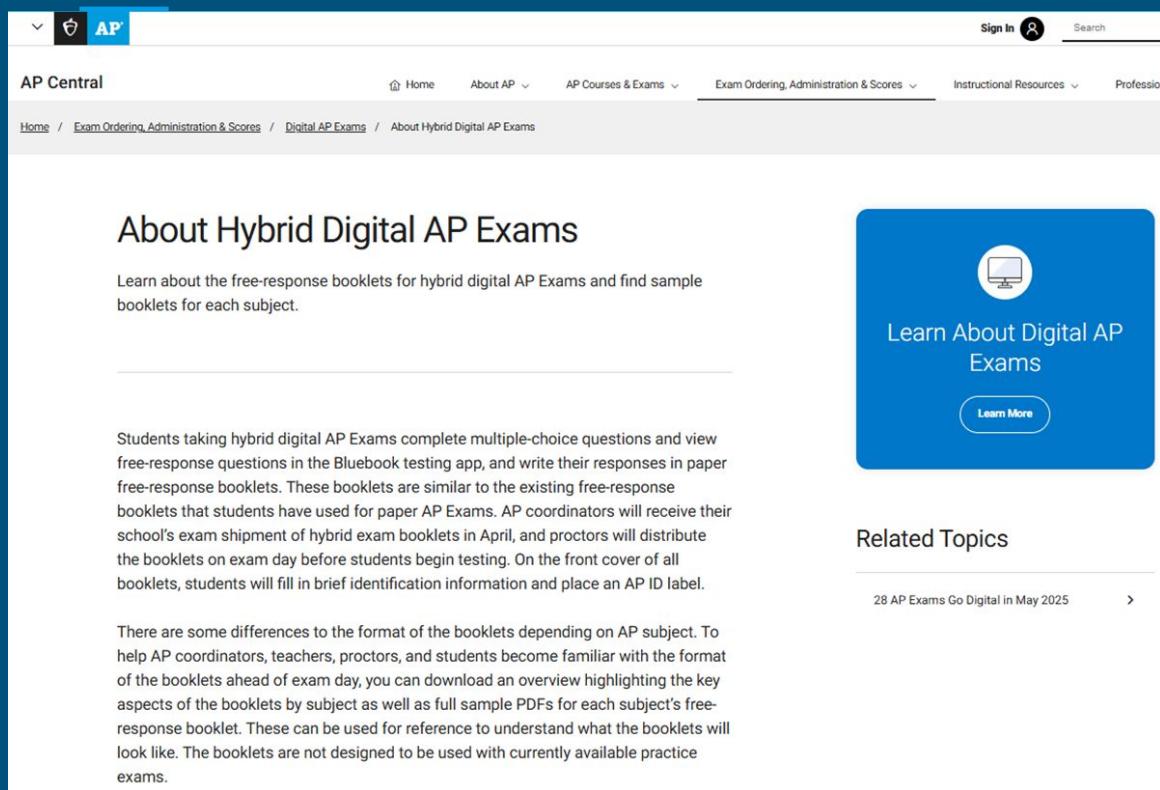
<https://apstudents.collegeboard.org/exam-policies-guidelines/calculator-policies>

Course	Type of calculator allowed	Section I Multiple Choice	Section II Free Response
Chemistry	A scientific calculator (must not have unapproved features or capabilities; see list of <u>unapproved calculators and technology</u>) or graphing calculator are recommended; a 4-function calculator is allowed but not recommended. Built-in Desmos graphing calculator through Bluebook.	Allowed	Allowed

Desmos

<https://www.desmos.com/calculator>

Hybrid Digital Exams



The screenshot shows the AP Central website with a blue header. The main navigation bar includes 'AP Central', 'Home', 'About AP', 'AP Courses & Exams', 'Exam Ordering, Administration & Scores' (which is the active tab), 'Instructional Resources', and 'Professional Development'. Below the header, a breadcrumb trail shows 'Home / Exam Ordering, Administration & Scores / Digital AP Exams / About Hybrid Digital AP Exams'. The main content area has a title 'About Hybrid Digital AP Exams' and a sub-section titled 'Learn about the free-response booklets for hybrid digital AP Exams and find sample booklets for each subject.' There is a large blue call-to-action button with the text 'Learn About Digital AP Exams' and a 'Learn More' link. Below this, a section titled 'Related Topics' includes a link '28 AP Exams Go Digital in May 2025'.

About Hybrid Digital AP Exams

Learn about the free-response booklets for hybrid digital AP Exams and find sample booklets for each subject.

Students taking hybrid digital AP Exams complete multiple-choice questions and view free-response questions in the Bluebook testing app, and write their responses in paper free-response booklets. These booklets are similar to the existing free-response booklets that students have used for paper AP Exams. AP coordinators will receive their school's exam shipment of hybrid exam booklets in April, and proctors will distribute the booklets on exam day before students begin testing. On the front cover of all booklets, students will fill in brief identification information and place an AP ID label.

There are some differences to the format of the booklets depending on AP subject. To help AP coordinators, teachers, proctors, and students become familiar with the format of the booklets ahead of exam day, you can download an overview highlighting the key aspects of the booklets by subject as well as full sample PDFs for each subject's free-response booklet. These can be used for reference to understand what the booklets will look like. The booklets are not designed to be used with currently available practice exams.

Sample Free-Response Booklets

Download a full-length sample booklet for each hybrid digital AP subject.

- [AP Biology](#)
- [AP Calculus AB](#)
- [AP Calculus BC](#)
- [AP Chemistry](#)
- [AP Macroeconomics](#)
- [AP Microeconomics](#)
- [AP Physics 1: Algebra-Based](#)
- [AP Physics 2: Algebra-Based](#)
- [AP Physics C: Electricity and Magnetism](#)
- [AP Physics C: Mechanics](#)
- [AP Precalculus](#)
- [AP Statistics](#)

Sample AP Chemistry Free Response Booklet

TEST BOOK SERIAL NUMBER _____

AP® Chemistry

Sample Booklet

SECTION II: FREE-RESPONSE

ENTER YOUR IDENTIFICATION INFORMATION

1. First two letters of your last name

First letter of your first name

2. Date of birth Month Day

3. Six-digit school code

Time: 1 hour, 45 minutes Questions: 7

1. Free-response questions and the section timer are in Bluebook.
2. Write answers in this booklet.
3. Use a pencil or pen with black or dark blue ink.
4. Do not write outside the box. Erased or crossed-out work will not be scored.
5. Reference information is in Bluebook.

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Affix AP ID Label Here

XXXXXX

25

Q562105

Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

Question 1

Part A

Part B

Part C

Page 2

Question 1 is continued on the next page.

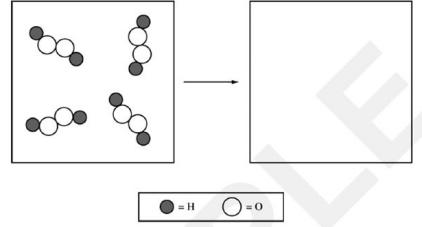
Q562102

Use a pencil or a pen with black or dark blue ink. Do NOT write your name. Do NOT write outside the box.

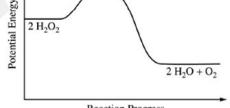
Question 2

Part A

Part B



Part C



Reaction Progress

Potential Energy

2 H₂O₂

2 H₂O + O₂

Page 5

Question 2 is continued on the next page.

Q562106

Digital Exams

FAQs

Will reference materials for hybrid digital AP Exams be printed, or provided in Bluebook?

All reference material will be in Bluebook.

Will the free-response booklets contain graphs or diagrams for students to write their responses on?

Free-response booklets for some AP subjects (Biology, Chemistry, the Physics subjects, Precalculus) will contain graphs or diagrams for students to write their responses on.

Will proctors provide directions to students about how to write their responses in the free-response booklets for hybrid digital AP Exams?

Yes. Before beginning testing, proctors will read directions aloud from Test Day Toolkit to give students information about the testing experience, including using the free-response booklets. Before starting Section II, students will read section directions in Bluebook that will reiterate important details about writing their responses in the free-response booklets.

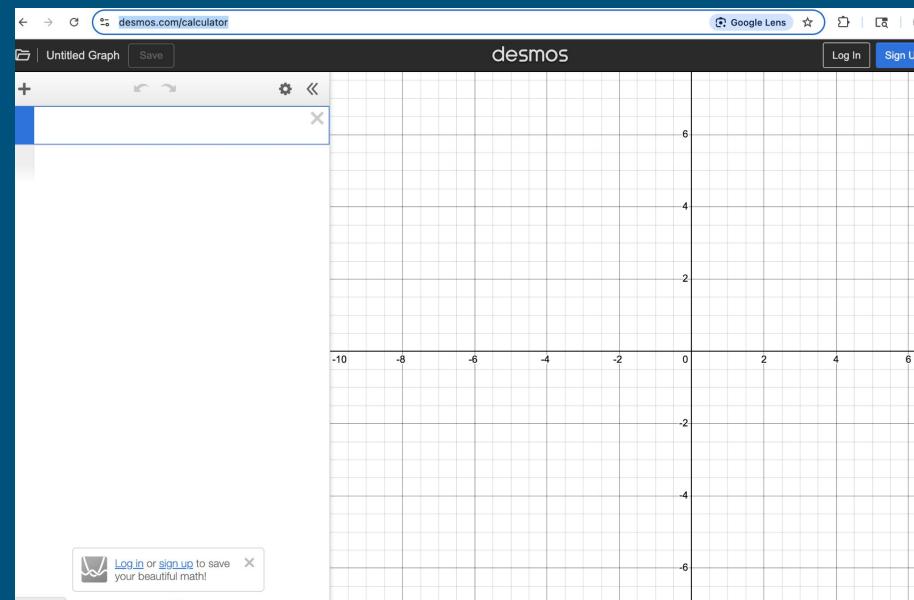
Starting with the 2025 AP exam

The Desmos graphing calculator

<https://www.desmos.com/calculator>

is embedded into Bluebook for the
hybrid exam

(it's not the same calculator that you
find on line)

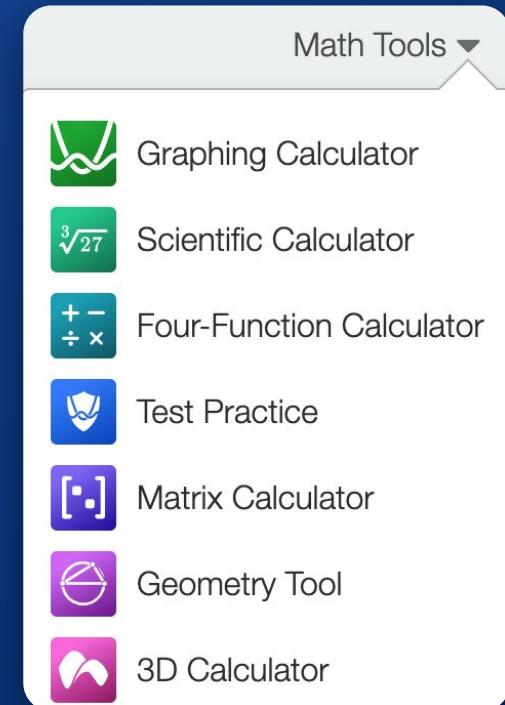


Who Is Desmos Studio?

We're on a mission to help everyone learn math, love math, and grow with math.

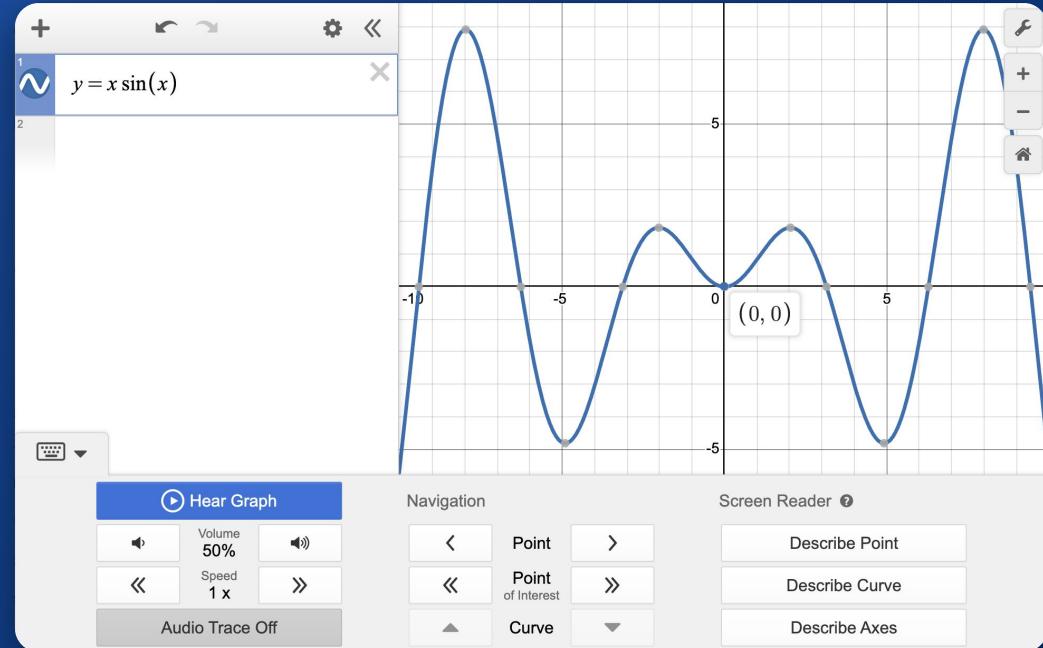
Our Goals:

- Improve access and accessibility
- Reveal the beauty, power, and joy of math
- Help every person see themselves as a mathematician



Accessibility

- Blind and low-vision support
 - Large text
 - Reverse contrast
- Math-aware screen reader
- Audio trace



Desmos on AP® Tests

For the most up-to-date information, refer to the [AP Calculator Policy](#)

Graphing Calculator only:



- Calculus AB/BC
- Precalculus
- Statistics



Scientific and Graphing Calculators:

- Chemistry
- Physics 1 & 2
- Physics C: Mechanics
- Physics C: Electricity & Magnetism

Scientific only:



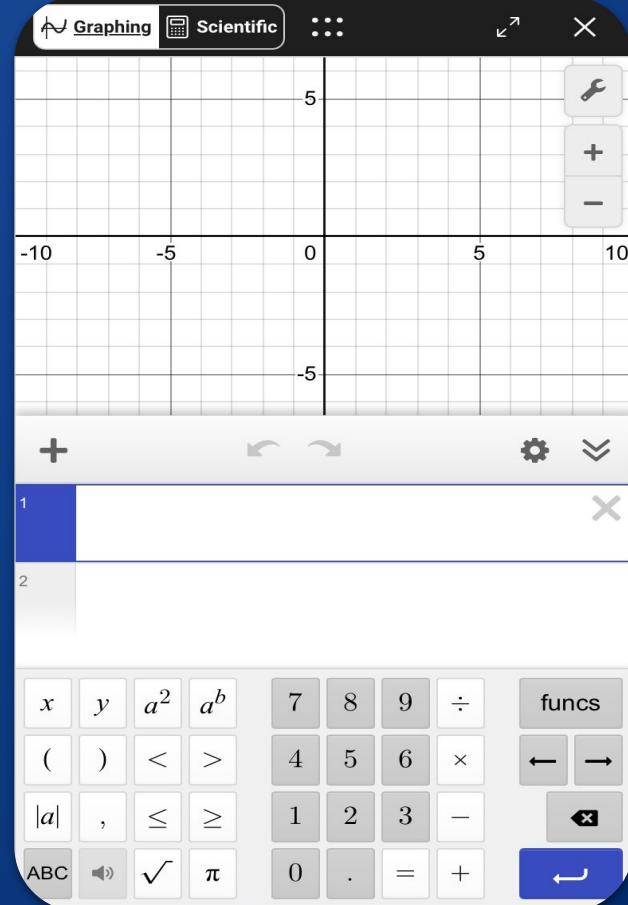
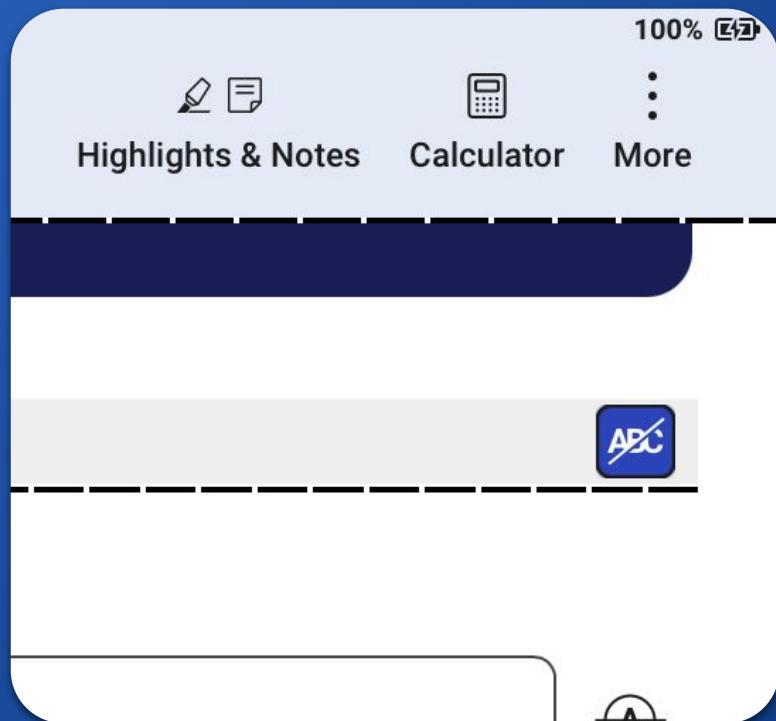
- Biology
- Environmental Science

Four-Function only:



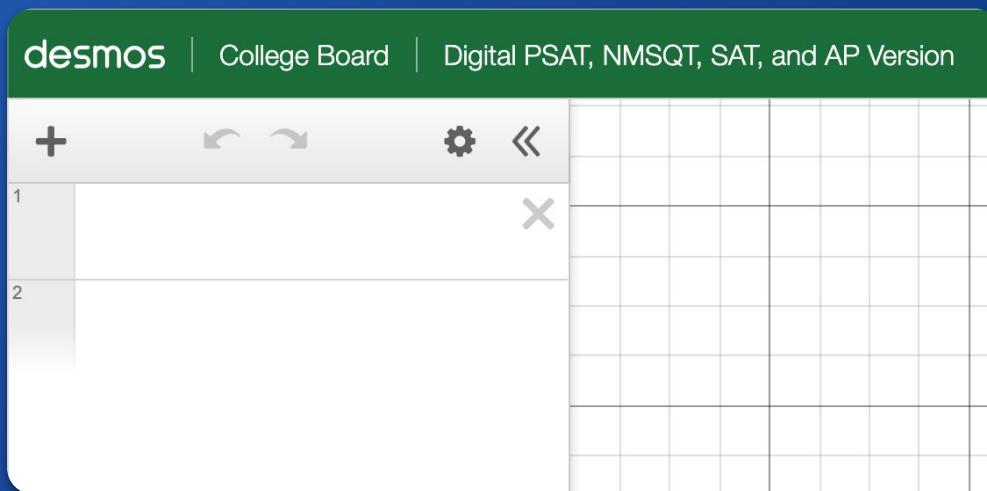
- Macroeconomics
- Microeconomics
- Networking

Desmos in Bluebook



Desmos on AP® Tests con't

- AP Exam Calculator Policy
- Desmos Assessments page and Assessment FAQ

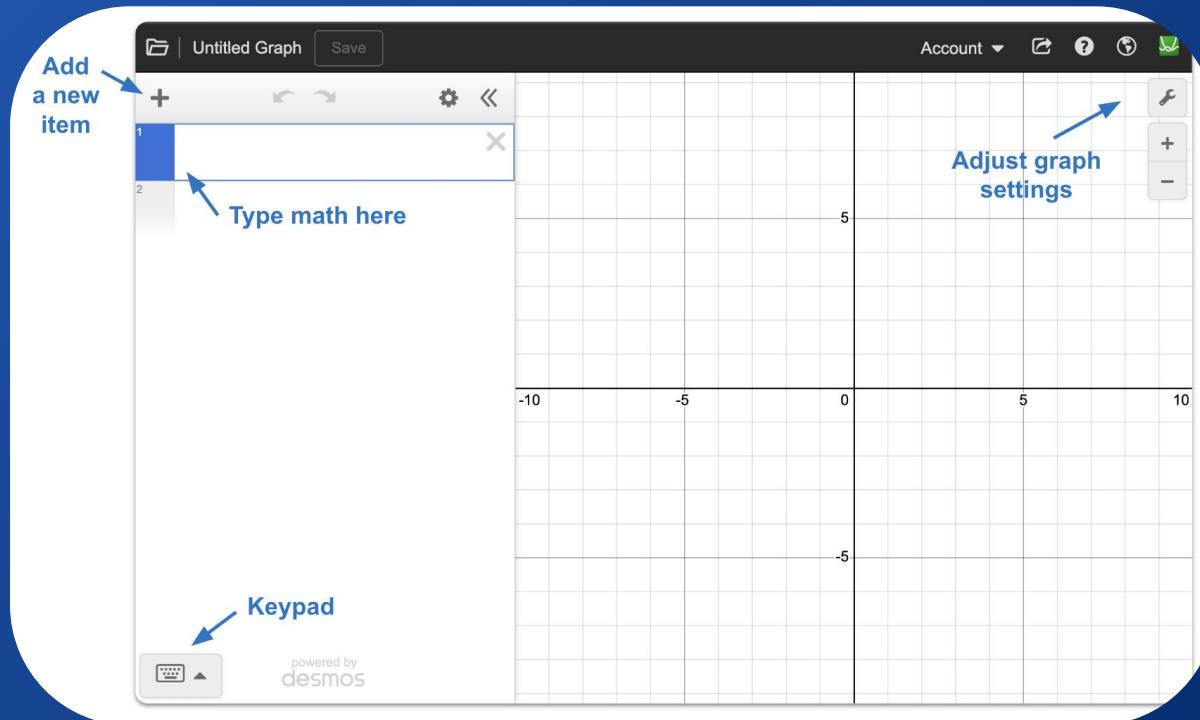


Digital SAT® Suite, AP® Exams, and Pre-AP® Exams

[SAT and AP Overview PDF](#)
[Pre-AP Overview PDF](#)

Practice with the sample Graphing Calculators for [the Digital SAT Suite](#) and [AP Exams](#) or [Pre-AP Exams](#).

Explore the Graphing Calculator



Change the opacity, width, or outline of the point

Points

1
 8



Show/hide point

Color options



Change size, angle, or text outline of the label

Label

A 1
 \angle 0 rad



Show/hide label

Make your point draggable or clickable

Text outline

Drag

Clickable

Change the position of the label

Explore the Graphing Calculator

Example

$H_2(g) + CO_2(g) \rightleftharpoons H_2O(g) + CO(g)$				
ICE	$H_2(g)$	$CO_2(g)$	$H_2O(g)$	$CO(g)$
Initial	0.570	0.632	0	0
Change	$-x$	$-x$	$+x$	$+x$
Equilibrium	$(0.570 - x)$	$(0.632 - x)$	x	x

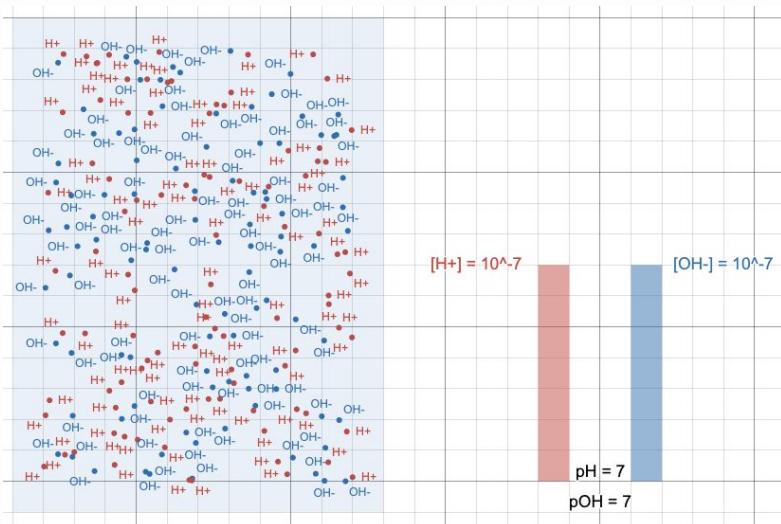
$$K = \frac{[H_2O][CO]}{[H_2][CO_2]} = \frac{x^2}{(0.570 - x)(0.632 - x)} = 0.106$$

<https://www.desmos.com/calculator/4slujd5uun>

Desmos for Teaching and Learning

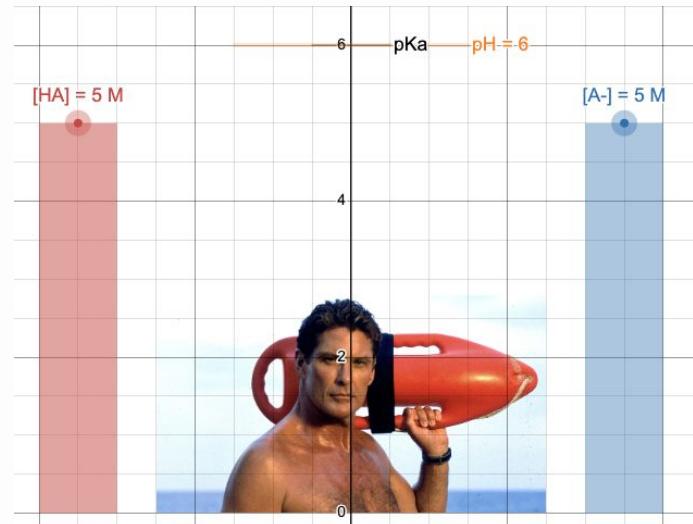
pH

<https://www.desmos.com/calculator/k72e8mkowe>



pH of a Buffer

<https://www.desmos.com/calculator/sszt6jphuc>



Graphs created by Luca Preziati
(Associate Professor, University of Hawaii, Leeward College)

Desmos for Teaching and Learning



Nernst Equation

<https://www.desmos.com/calculator/gspdhxuste>

Graphs created by Luca Preziati
(Associate Professor, University of Hawaii, Leeward College)

Using Desmos Instructionally

- **Computations and Calculations**
 - How do we evaluate expressions and functions?
- **Graph Visualizations**
 - How can a graph communicate ideas and information?
- **Connect Representations**
 - How can the relationship between representations offer insights and feedback?

Breakout Room Discussions

Open the Desmos Graphing Calculator and play...

Here are some typical questions from recent AP Chemistry exams

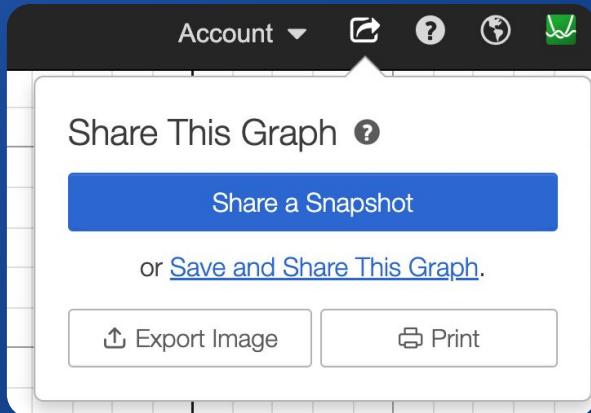
Think about how you might use Desmos instructionally in your classes:

- How do we evaluate expressions and functions?
- How can a graph communicate ideas and information?
- How can the relationship between representations offer insights and feedback?

Saving and Sharing

Skills to know:

- Sign in to save and organize your graphs
- Access your saved graphs from the icon
- Share URLs for your saved graph or snapshot



A screenshot of a "Saved Graphs" section in a graphing application. At the top, there is a button for "New Graph" with a dropdown arrow. Below it, there are two tabs: "Saved Graphs" (which is underlined and currently selected) and "Examples". The "Saved Graphs" tab shows a list of saved graphs in a grid format. Each graph is represented by a thumbnail image, a title, and a "More Options" (three dots) icon. The graphs include:

- Algebra I: A 2D graph of a linear equation. Title: "Algebra I". Subtitle: "2 graphs".
- Geometry: A 2D graph of geometric shapes. Title: "Geometry". Subtitle: "2 graphs".
- Vector Field: A 3D graph showing a vector field in a 3D coordinate system. Title: "Vector Field". Subtitle: "2 weeks ago".
- Derivatives: A 2D graph showing a function and its derivative. Title: "Derivatives". Subtitle: "2 weeks ago".
- Fibonacci: A 2D graph showing a Fibonacci sequence pattern. Title: "Fibonacci".
- Complex Roots: A 2D graph showing complex roots on a complex plane. Title: "Complex Roots".

Additional Resources



[Help Center](#)



[User Guide](#)



[Tutorials & Webinars](#)



[Scavenger Hunts](#)

The screenshot shows the Desmos mobile application interface. At the top, there are buttons for 'Log In' and 'Sign Up', along with icons for refresh, help, and settings. Below this is a navigation bar with the word 'Tours' underlined. The main content area displays four circular icons representing different features: 'Sliders' (a graph with a slider), 'Tables' (a grid with data points), 'Restrictions' (a set of inequalities), and 'Regressions' (a scatter plot with a regression line and statistics). Below these are sections for 'Resources' and 'Contact Us', each with two links. The 'Resources' section includes 'User Guide' and 'Keyboard Shortcuts'. The 'Contact Us' section includes 'Email Our Support Team'.

Explore more:



[Desmos Art](#)



[What's New](#)

Help Center: [Learn \(With\) Desmos](#)

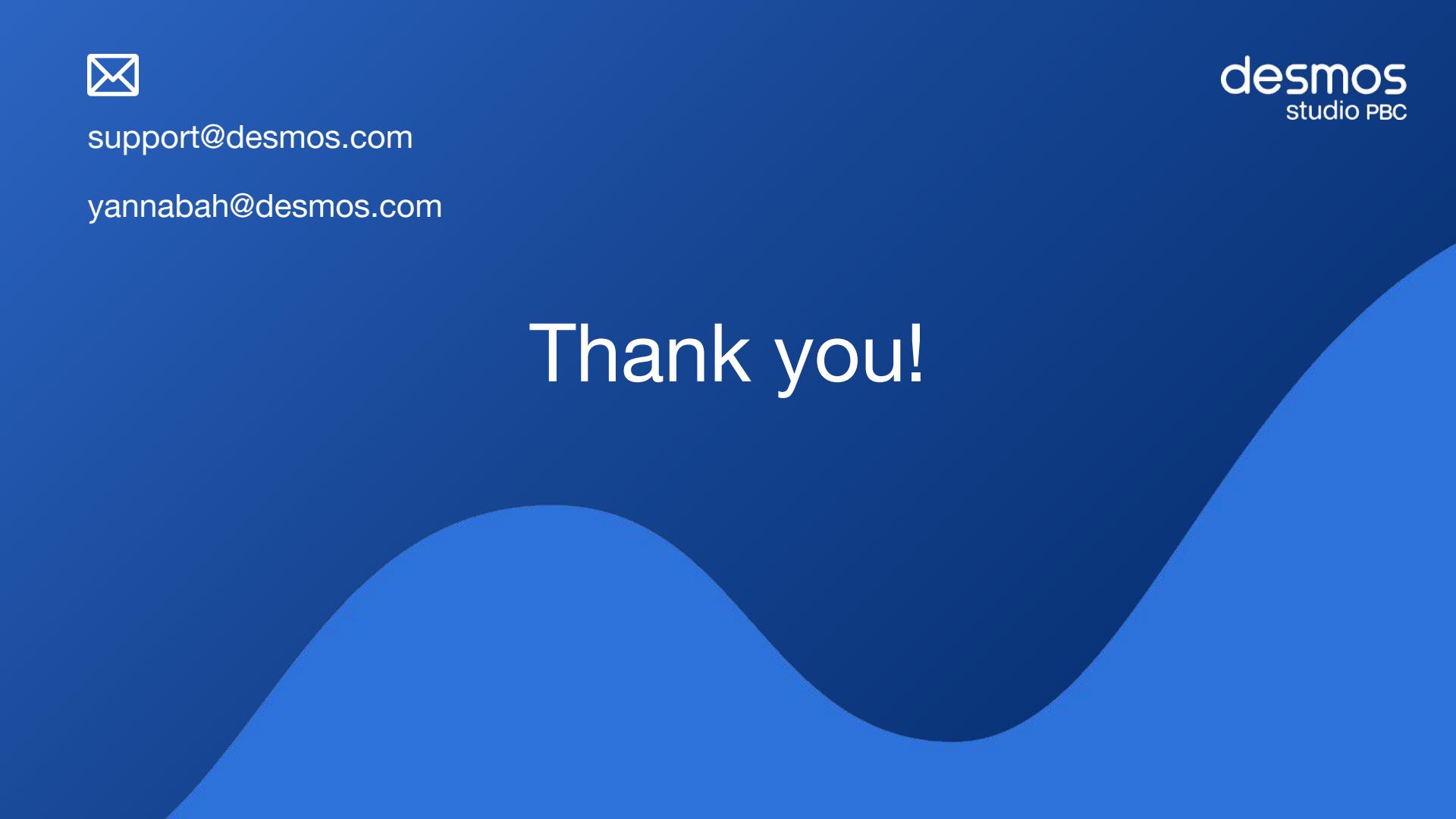


support@desmos.com

yannabah@desmos.com

desmos
studio PBC

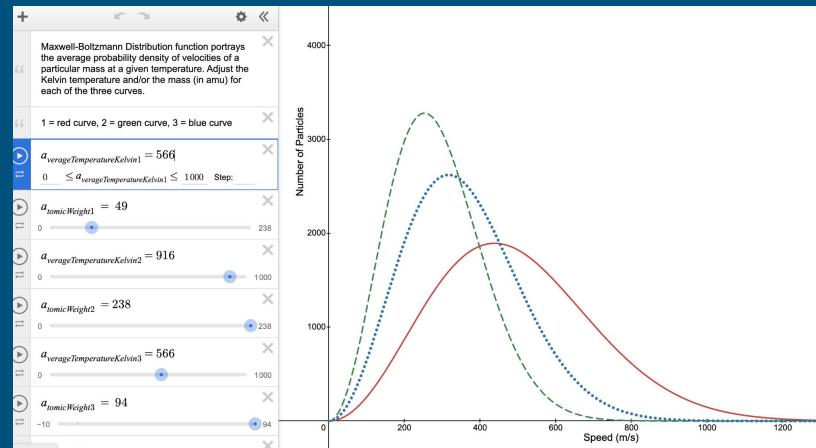
Thank you!

The background of the slide features a large, abstract graphic element consisting of two overlapping, rounded blue shapes. One shape is a lighter shade of blue and is positioned in the lower-left quadrant, while the other is a darker shade and is positioned in the upper-right quadrant. The two shapes overlap, creating a sense of depth and motion.

Using the graphing calculator to show Maxwell-Boltzmann distributions

Jamie Benigna made these graphs using the Desmos graphing calculator

- Single curve
- Slider for the activation energy
- Slider for the activation energy AND highlights the area under the curve after the Ea
- Two curves
- Three curves



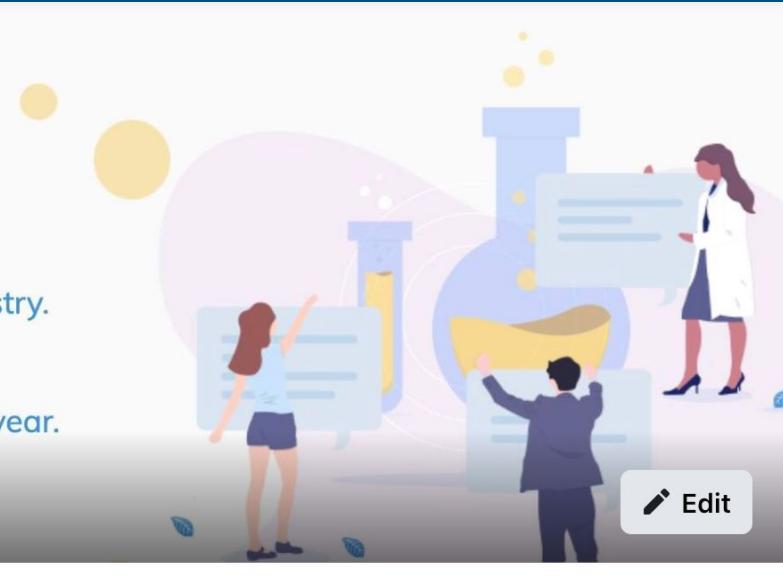
Find APTeach on Facebook and ChemEdX

Welcome to APTeach!

APTeach is a community dedicated to helping teachers with the most challenging aspects of teaching AP Chemistry.

We offer **online live discussions** in response to current issues, including distance learning and planning for next year.

Come join a live discussion!



A.P. Teach For A.P. Chemistry Teachers

🔒 Private group · 6 members



Joined

Invite

