

SAVVAS

Program Overview

Experience Chemistry



Where **Wonder**
and **Science** Connect

Phenomenal experiences drive learning.

Experience Chemistry®, the four-time EdTech award-winning program from Savvas Learning Company, offers an exciting and innovative way to teach chemistry. It engages students in real-world inquiry through layers of phenomena, including related engineering problems in select storylines. The program structure helps you implement the three dimensions through Anchoring and Investigative Phenomena, and Teacher Demonstrations with Related Phenomena.

Phenomena Organization

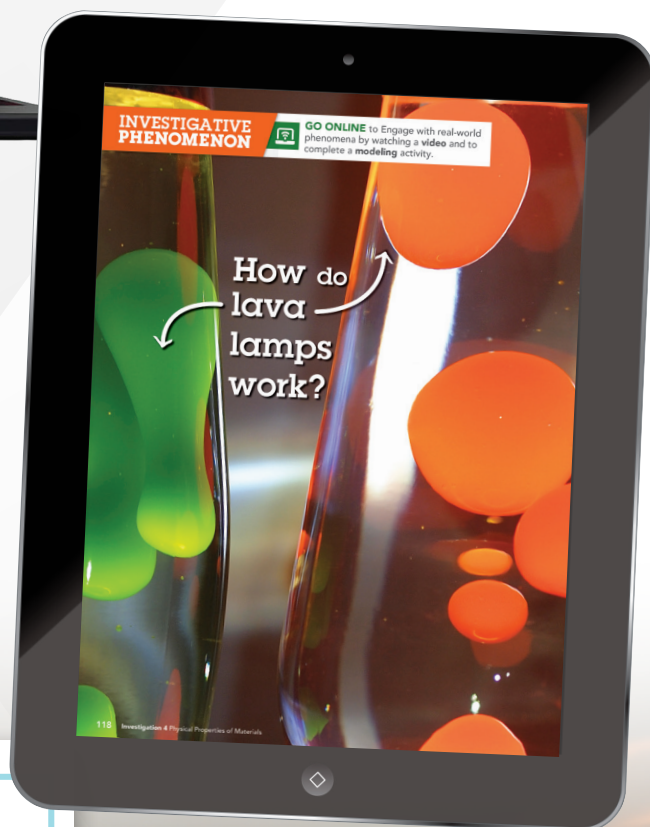




Launch every Storyline with an **ANCHORING PHENOMENON** or an **ENGINEERING PROBLEM** that sets a clear narrative for studying the core concept. Students ask questions, explain the phenomenon, and engage in problem-solving on their sense-making journey.

Introduce every investigation with an **INVESTIGATIVE PHENOMENON** or **ENGINEERING PROBLEM** that gives students another opportunity to explore an engaging event, apply problem-solving, and gather knowledge to make sense of the Anchoring Phenomenon.

Engage students with **TEACHER DEMONSTRATIONS** that pique their interest. From Flinn Scientific® inquiry labs to modeling activities, these demonstrations help students observe, question, and make sense of why and how phenomena happen.



ENGAGE

TEACHER DEMONSTRATION

SEP-3-H2

Frozen Solid   

Engage students with this demonstration to introduce the concept of phase change and its occurrence in everyday life.

Plus RELATED PHENOMENA in the Teacher Guide

Want more ideas? The Teacher Guide offers alternative suggestions for introducing the Anchoring and Investigative Phenomenon and Teacher Demonstrations in every Experience.

Flinn Labs

take inquiry to a higher level.

Experience Chemistry is where wonder and science connect—by doing science! An exclusive partnership with **Flinn Scientific®**, the leading classroom lab solution provider, gives students access to its labs and activities directly in *Experience Chemistry*.

Hands-on Labs

Every learning experience in *Experience Chemistry* includes a hands-on inquiry lab developed by Flinn Scientific. To save you time, each lab is available in four versions to meet your diverse classroom needs.

EXCLUSIVE PARTNERSHIP

FLINN
SCIENTIFIC

4

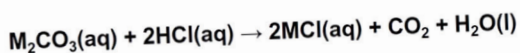
VERSIONS OF EVERY LAB

- Open-Ended
- Guided
- Shortened
- Advanced

Demo Video: Identify Unknowns Through Stoichiometry

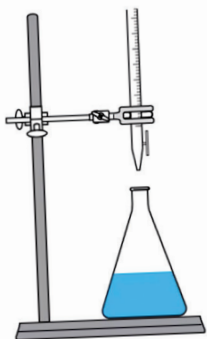
Titration

M = Metal (Li, Na, K)



Can determine moles
of carbonate reacted

Calculate molar mass
identify compound



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NAME _____ DATE _____ CLASS _____

INQUIRY LAB – GUIDED

The Thermodynamics of Hand Warmers

How does energy change when chemical bonds break or form? What causes heat to be released or absorbed when a solid dissolves in water? From instant cold packs to hand warmers, the energy changes accompanying physical and chemical transformations have many consumer applications. Investigate the energy changes that follow the formation of solutions using common laboratory salts, and apply the results to design a hand warmer that is reliable, safe, and inexpensive.

Focus on Science Practices

- SEP 2 Developing and Using Models
- SEP 4 Analyzing and Interpreting Data
- SEP 6 Constructing Explanations and Designing Solutions

Materials Per Group

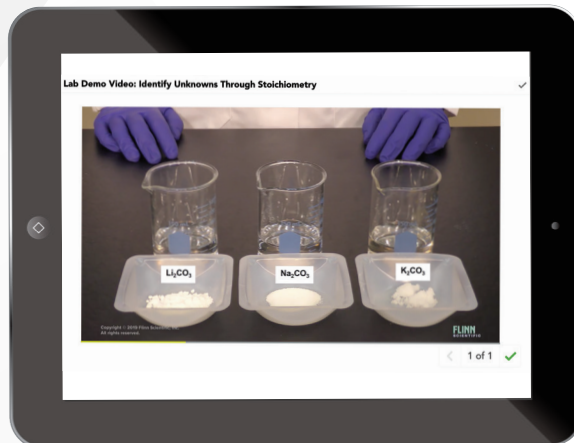
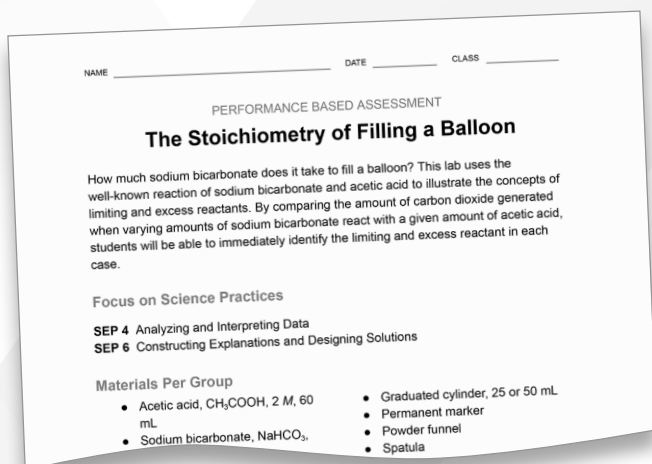
- Ammonium chloride, NH_4Cl , 15 g
- Calcium chloride, CaCl_2 , 15 g
- Sodium chloride, NaCl , 15 g
- Sodium hydroxide, NaOH , 15 g
- Water, distilled or tap
- Balance, 0.01 g precision
- Beaker, 250 mL
- Graduated cylinder, 100 mL
- Heat-resistant gloves
- Magnetic stirrer and stir bar, or stirring rod
- Paper towels
- Solution vessel (two nested polystyrene cups)
- Support stand and ring clamp
- Thermometer, digital
- Timer or stopwatch
- Weighing dishes

Safety



Ready-made Lab Kits

Simplify lab set-up with time-saving kits from **Flinn Scientific**. Foster greater inquiry learning by having readily accessible lab materials.



Performance Assessments

Students demonstrate standards mastery by applying their understanding to a new situation in a Performance-Based Assessment at the end of every Investigation.

Lab Videos

Short, digestible videos enrich the lab experience. Engaging **Demo Videos** introduce the lab to students while **Summary Videos** connect lab concepts to phenomena.

Engineering Design Challenges

Students design, test, and evaluate solutions which strengthen science and engineering skills.

Virtual Reality

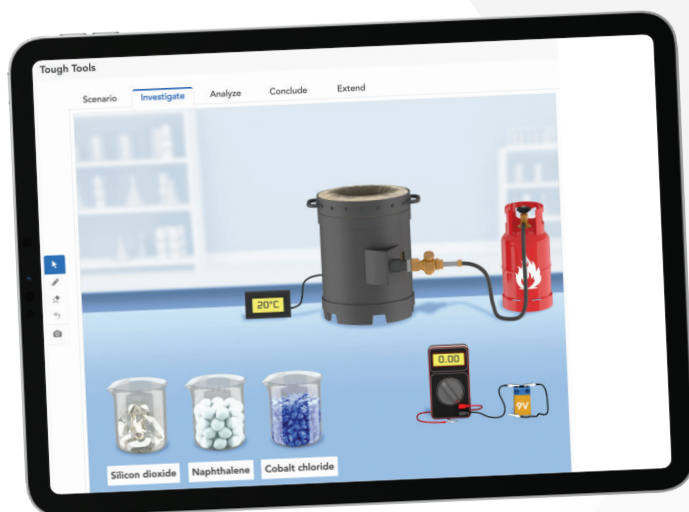
Virtual Reality brings chemistry to life with immersive, risk-free 360° lab simulations.



Experiences

create REAL learning opportunities.

It's authentic...it's compelling...it's REAL science. Ongoing exposure to everyday phenomena allows students to see chemistry in their own lives and in the world around them. Students use the three dimensions as they form connections to the phenomena. This is real science for real learning.



◀ Virtual Labs

Give all students access to phenomena in an engaging, risk-free environment.

Claim-Evidence-Reasoning (CER) Exercises

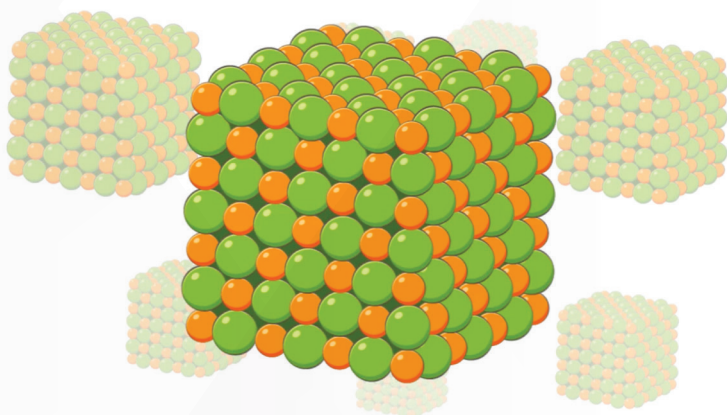
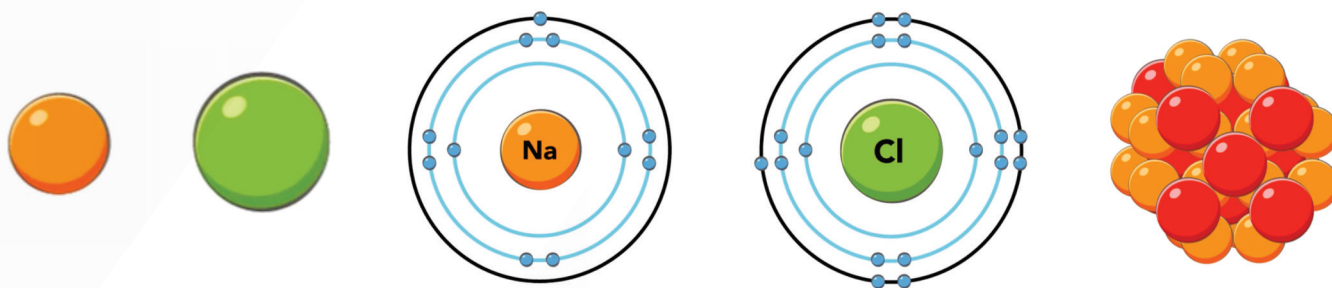
Allow students to write, defend, and revisit arguments.

Digital Interactivities

Simulate real-world tasks to solve problems and answer questions.

Problem Based Learning Experiences

Challenge students to define problems and propose design solutions.



▼ PhET Simulations

Engage students in an intuitive game-like experience.



◀ Animations

Improve visual and media literacy with engaging visuals that explain complex topics.

Authentic Readings and Writing About Science Activities

Build science literacy skills.

Peer Review and Discussion Rubrics

Promote collaboration and improve understanding.



Support that saves you time.

Plan lessons efficiently with the built-in 5E planner and on-demand teaching strategies right at your fingertips. Access everything in print or on Savvas Realize®, the award-winning platform for teaching, progress monitoring, and managing your classroom—even add your own content!

Daily
editable lesson
plans also
available on
Realize



Fast Track

Checkmarks help with time management to maximize your instruction.

Differentiated strategies

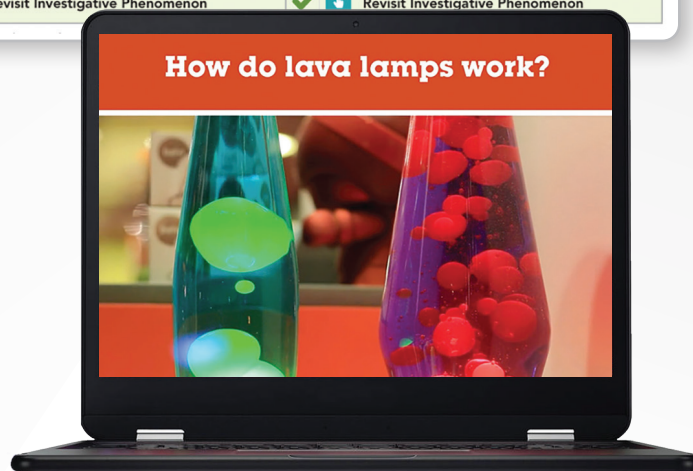
Point-of-need teaching strategies and tips are built into each lesson for easy reference.

	EXPERIENCE 5 Water and Aqueous Systems 2 periods	EXPERIENCE 6 Properties of Solutions 2 periods
NGSS	HS-PS1-3	HS-PS1-3
ELA & Literacy and Math Standards	HSS.ID.B.6	WHST.9-12.7, WHST.11-12.8, WHST.9-12.9
Engage	Teacher Demonstration Hydrophobic Water Drops	Teacher Demonstration Fun With Salt
Explore	Inquiry Lab Investigate Surface Tension	Inquiry Lab* Aqueous Solutions
	Analyzing Data The Density of Freezing Salt Water	Interactivity Dissolution Rate PhET Simulation Concentration
Explain	Modeling Model Surface Tension and Polarity	Modeling Model Concentration's Effect on Conductivity
	Animation Intermolecular Forces and Surface Tension in Water	Experience Handbook
Elaborate	Peer Review Rubric Evaluate Surface Tension-Polarity Models	Peer Review Rubric Ionic Concentration and Conductivity Modeling Rubric
	Analyzing Data Compare Intermolecular Forces in Fresh and Salt Water	Writing About Science Solubility and Temperature
Evaluate	Quiz Water and Aqueous Systems	Quiz Properties of Solutions
	Revisit Investigative Phenomenon	Revisit Investigative Phenomenon

MULTILINGUAL LEARNER SUPPORT

Speaking Students will work in small groups to describe the diagrams about allotropes in the Experience Handbook and explain how they are different.

- **Substantial** Ask each group to define allotropes in their own words to share with their peers.
- **Moderate** Have each group summarize the diagram, Other Crystalline Forms of Carbon, and explain how it models allotropes. Students should prepare the presentation so that they could present it to another group.
- **Light** Ask each group to develop an oral presentation about allotropes that they could deliver to a middle school class. Remind them that their descriptions should be adapted for people who may not be familiar with chemistry terms.



Presentations

Ready-made facilitator slides in Savvas Realize help you guide students through the lesson Experience.

Savvas Realize®

One login. Seamless LMS integration. Everything you need in one place.

Savvas

realize

Integrations

Assessment Providers	Rostering Tools	Student Information System	Productivity Tools	Learning Management System
 And Many More!	  And Many More!	  	 Google Drive  OneDrive	  

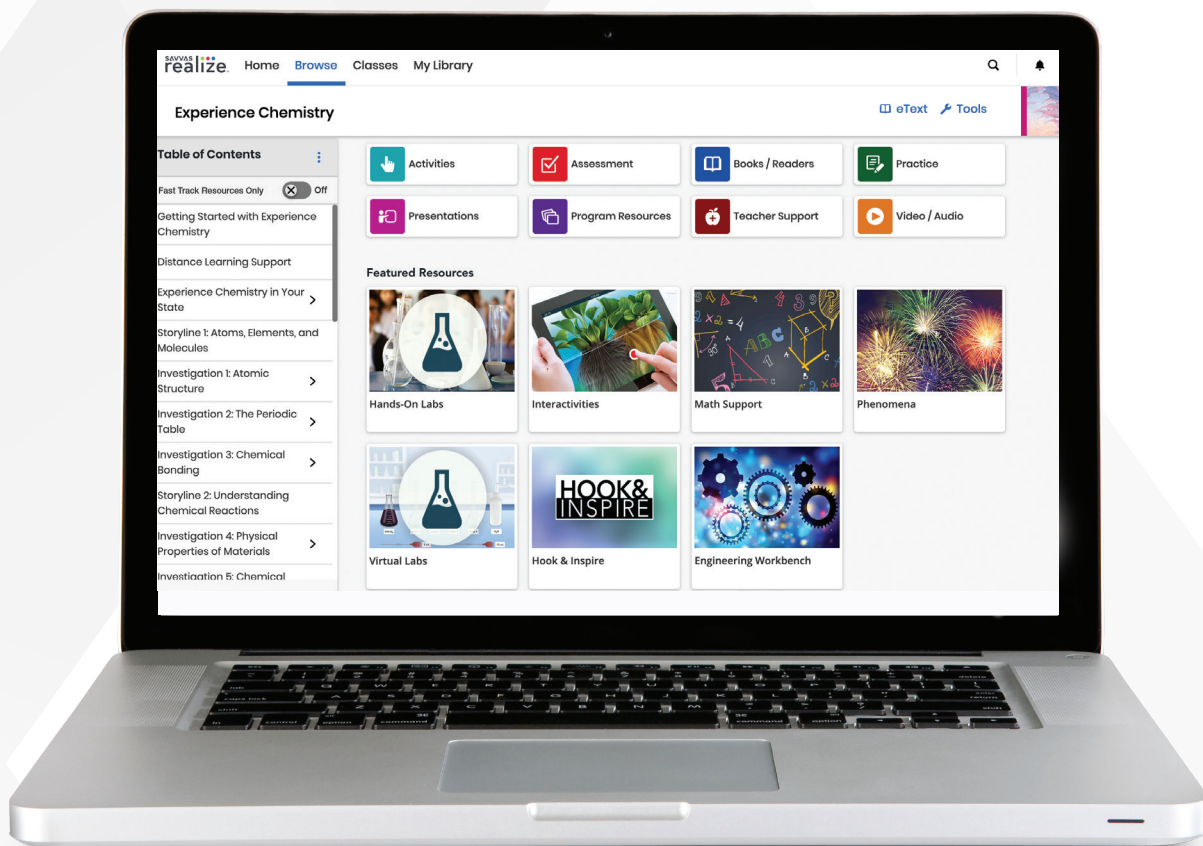
Certifications



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It's Your Course!

Customize lessons, tasks, and assessments.
Assign, score, and track student progress.
And more!



Access 24/7 **On-demand Professional Learning** at MySavvasTraining.com.

Practice makes progress!

Practice builds skills and confidence. Interactive math practice, real-world applications, and hands-on activities help students strengthen their chemistry skills. With multiple assessment options and practice opportunities, students get the support they need at every level.

Find more practice problems in the Student Edition and on Realize

Stepped-Out Problems

Break down sample problems for clarity and guidance.

Additional Math Support

Problem Banks and Math Skills Practice

Worksheets in the Experience Handbook and on Savvas Realize give students extra practice to build mathematical fluency.

Data Analysis Activities

Present students with data sets and real-world situations to analyze and apply math concepts.

Sample Problem Practice

Need a Hint? Support provides just enough guidance to help students solve problems independently.

Virtual Nerd®

Support Videos

Offer approachable mathematics explanations delivered by on-screen instructors.



VirtualNerd™

SAMPLE PROBLEM

Atomic Mass Estimations

Element X has two naturally occurring isotopes. The isotope with a mass of 10 amu (^{10}X) has a relative abundance of 20 percent. The isotope with a mass of 11 amu (^{11}X) has a relative abundance of 80 percent. What is the atomic mass of element X?

1. **ANALYZE** List the knowns and the unknown.

Knowns	Unknown
mass of ^{10}X = 10 amu	atomic mass of X = ? amu
relative abundance of ^{10}X = 20%	
mass of ^{11}X = 11 amu	
relative abundance of ^{11}X = 80%	

2. **CALCULATE** Solve for the unknown.

Use the mass and the decimal form of the percent abundance to find the mass contributed by each isotope.

for ^{10}X : $10 \text{ amu} \times 0.20 = 2.0 \text{ amu}$
for ^{11}X : $11 \text{ amu} \times 0.80 = 8.8 \text{ amu}$

Add the atomic mass contributions for the two isotopes.

atomic mass of X = $2.0 \text{ amu} + 8.8 \text{ amu} = 10.8 \text{ amu}$

3. **EVALUATE** Does the result make sense?

The calculated value is closer to the mass of the more abundant isotope, as would be expected.



GO ONLINE for more practice.

- Sample Problem Tutorial Video
- Sample Problem Practice

20 Use the information in the table to estimate the atomic masses for carbon and bromine.

NEED A HINT? Go online to your eText Sample Problem for stepped-out support.

Natural Percent Abundance of Stable Isotopes of Some Elements				
Name	Symbol	Natural percent abundance	Mass (amu)	Atomic mass
Hydrogen	^1_1H	99.985	1.0078	~1
	^2_1H	0.015	2.0141	
	^3_1H	negligible	3.0160	
Carbon	$^{12}_6\text{C}$	98.89	12.000	?
	$^{13}_6\text{C}$	1.11	13.003	
Nitrogen	$^{14}_7\text{N}$	99.63	14.003	~14
	$^{15}_7\text{N}$	0.37	15.000	
Bromine	$^{79}_{35}\text{Br}$	50.69	78.92	?
	$^{81}_{35}\text{Br}$	49.31	80.92	

Formative Assessments

- Driving Question Discussion Board
- Worksheets, Labs, and Digital Activities
- Formative Assessment prompts in Teacher Guide

FORMATIVE ASSESSMENT

SEP-3-H2, SEP-6-H2,
PS1.A-H3, CCC-1-H1

Ask students to write a response to the following prompt:

How plan and conduct an investigation to identify ionic, molecular, and covalent network solids?

Have students exchange notecards with a partner providing feedback on the clarity, accuracy, and completeness of the explanations.

In their response, students should describe the key characteristics and properties of each type of solid, such as bonding type, electrical conductivity, melting point, and solubility.

Guide and Advance Learning If students demonstrate confusion—such as mixing up the properties of ionic and covalent network solids or incorrectly using the electrical conductivity of molecular solids—plan a targeted intervention. Use visual aids, like diagrams of crystal structures, to clarify the differences between these types of solids. After the peer feedback and discussion, ask students to revisit their original responses and make any revisions. This reflection helps reinforce their understanding of the differences between ionic, molecular, and covalent network solids and how these relate to their physical properties.

NAME _____ DATE _____ CLASS _____

INVESTIGATIVE PHENOMENON: CLAIM-EVIDENCE-REASONING

Connect the Structures of Materials to Their Properties

Think about the Investigative Phenomenon Video you watched. What was the science behind the phenomenon you observed? To help you build an understanding of the phenomenon, you will construct and revise a scientific argument.

Build Your Argument Through Claim, Evidence, and Reasoning

- 1. SEP Ask Questions** Write a question about the Investigative Phenomenon that you would like to discuss with your classmates. (Your teacher may also provide you with one.)
- 2. SEP Construct Written Arguments** Use the Claim-Evidence-Reasoning framework below to build a scientific argument about the phenomenon. After stating your claim, support it with evidence and scientific reasoning.

Make a Claim Your claim should be a response to the question stated above.

Cite Evidence Identify data or knowledge that support your claim.

Summative Assessments

- Revisit Investigative and Anchoring Phenomena
- Quizzes
- Investigation Tests with remediation
- Three-Dimensional Transfer Tasks
- Downloadable Test Bank
- And more!

Real-Time Data Drives Instruction

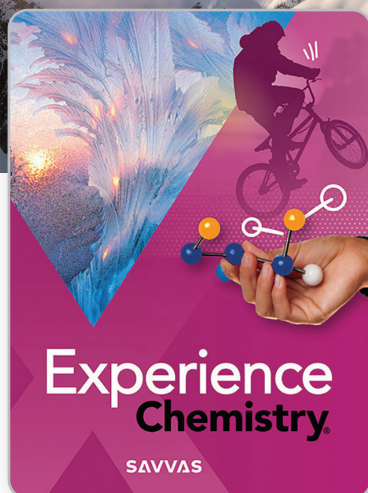
Use data reports to target instruction and monitor student progress with insights on mastery, performance, and usage at both the teacher and administrator levels.

Standards Progress	SCA.13	SCA.15
Class Performance	80%	80%
Students Name	Standards Progress	
• Curtis, Mario	80%	80%
• Estroff, Albert	80%	80%
• Howling, Stephen	80%	80%
• Jamison, Mike	80%	80%
• Johnson, Katherine	80%	80%
• Maynard, Dory, Marie	80%	80%
• Newton, Isaac	80%	80%
• Rodriguez, Tiana, Helen	80%	80%

**Assign
and Edit
Assessments
on Savvas
Realize**

Where Wonder and Science Connect

Experience Chemistry is an exciting phenomena-based curriculum that helps you deliver NGSS-designed instruction. An exclusive partnership with Flinn Scientific® offers the highest quality labs and clear pathways for differentiation. Speak to your Savvas representative to learn more.



Learn more!
savvas.com/experiencechemistry

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