CALIFORNIA elevate science

Explore CA *Elevate Science* Teacher Toolkit
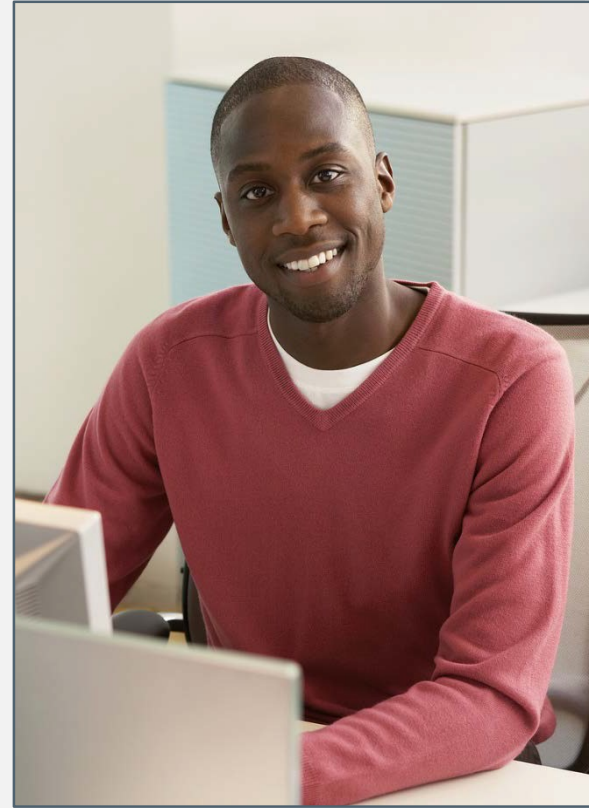
Grades 6–8

My Resources

Smart Start
Wonder what you should do first to train yourself and prepare to teach *Elevate Science*? Follow this Smart Start guide!

Digital Platform Navigation
Would you like to access the digital resources? Check out these hand-picked tutorials!
- Create and Manage Groups
- Review and Score Assignments
- Realize Reader: Assignments
- Build a Test: Writing Your Own Questions
- Discussion Prompts: Create, Edit, or Remove
- My Library

Planning and Pacing Resources
This blackline master and planning guidance will help you plan an entire Instructional Segment!

Assessment Overview
Check out this organized grid to find the perfect combination of assessments for your classroom!

my **SAVVAS** Training

SAVVAS realize™

www.MySavvasTraining.com
A one-stop, 24-hour training website with thousands of Savvas resources

www.SavvasRealize.com
A web-based digital portal with full access to the program digitally

How to Get Support

EMAIL/CHAT
Our Support site conveniently puts you in touch with a Certified Consultant to quickly answer questions.

CALL
1-800-234-5832

ONLINE SUPPORT
https://support.savvas.com

Use this map to start your *Elevate Science* learning journey.

1. DIG into resources.

- ☐ Familiarize yourself with the components.
- ☐ **TE:** Read the **front matter**.
- ☐ **SE:** Check out the **layout** and **structure.**
- ☐ **RLZ:** Explore the **Table of Contents**.

2. TOUR the program.

- ☐ **RLZ:** Review the **Getting Started** folder.
- ☐ **MST:** Go to the On-Demand Training tab and review all resources, including the Program Overview.

3. PREPARE for instruction.

- ☐ **MST:** View the PDF—4 Planning Resources.
- ☐ **MST:** Review the 5E Overview
- ☐ **RLZ:** Review the **Teacher Resources.**

4. COLLABORATE with others.

- ☐ **MST:** Attend a chat/email session.
- ☐ **Observe a colleague** teaching a lesson.
- ☐ **RLZ:** Visit the **PD Modeling video** in the Teacher Resources menu of any Topic Launch folder where you can watch, share, and learn ideas to help your students grow.

Key

TE — Teacher's Edition
SE — Student Edition
MST—My Savvas Training
RLZ — Savvas Realize

Use this map to prep your *Elevate Science* classroom.

Get Set Up

Configure your classroom:

☐ Create dedicated space and procedures for **labs.**

☐ Create flexible space for different learning arrangements.

☐ Offer easily accessible electronic devices.

Get Organized

Prepare for instruction:

☐ **Create a bulletin board about the California Spotlight.**

☐ **Establish routines** for using devices in class.

Get Planning

☐ Review the **Pacing Guide**, **Topic Table of Contents**, **Topic Planning Guide**, **Lesson Planners,** and **Lesson Planning Guides** for an upcoming Topic.

☐ Review the **Quest Path** for the topic.

☐ Determine the **lesson activities and assessments** you want to use.

☐ Create some **discussion board prompts** for use during your first Topic.

☐ Familiarize yourself with and decide how you will use the **Engineering Design Notebook**.

☐ Watch the **Professional Development Video** for the topic.

☐ Gather materials for any of the topic's **labs** you will be using.

Digital Navigation Training

Are you excited to maximize the power of the digital platform? Here are some features you might be interested in learning about.

You can access the full set of Savvas Realize tutorials and resources on My Savvas Training.

If you want to…	View this tutorial
Assign content to individual students or groups	**Create and Manage Groups**
Manually assign grades to Realize assignments	**Review and Score Assignments**
Manually assign grades to eText assignments	**Realize Reader: Assignments**
Create your own tests	**Build a Test Writing Your Own Questions**
Create a virtual discussion board	**Discussion Prompts: Create, Edit, or Remove**
Create and assign a playlist of related activities	**My Library**

Overwhelmed? Start with this handy digital guide for the basic features!

CALIFORNIA
elevate science

These **planning resources** help you pace and plan your instruction for each Topic.

You can access this tool on My Savvas Training.

Topic Overview

Teacher Edition

TOPIC 1 OVERVIEW
Forces and Motion

California Spotlight TOPICS 1–2 Forces and Motion
Instructional Segment 1

TOPIC/LESSONS	SELECT TOPIC RESOURCES	
TOPIC LAUNCH		
Every experience in everyday life provides an opportunity to develop concepts such as friction, gravity, and balanced forces and unbalanced forces. In this topic, students learn about motion; various forces that cause motion; related concepts such as speed, velocity, and acceleration; Newton's three laws of motion; and friction and gravitational forces all within the context of everyday (and not-so-everyday) experiences.	▶ VIDEO Professional Development ..... 5' ☑ ASSESSMENT Topic Readiness Test ..... 15' 📄 DOCUMENT L1 Topic Remediation Summary ..... 15'	🅐 ᴵⁿConnect Lab ..... 20' Investigative Phenomenon ..... 5' ▶ VIDEO Quest KICKOFF ..... 5'
LESSON 1 Describing Motion and Force		
Students analyze evidence from the world around them to define motion, and they identify and describe forces and motion.	🅐 ᴵⁿInvestigate Lab ..... 15' 🖥 VIRTUAL LAB ..... 20' 🔵 INTERACTIVITY Quest CHECK-IN ..... 20'	📄 DOCUMENTS L1 Remediation ..... 15' L3 Enrichment ..... 15'
LESSON 2 Speed, Velocity, and Acceleration		
Students use mathematical and computational thinking to apply formulas for determining and graphing speed and acceleration.	🅐 ᴵⁿInvestigate Lab ..... 20' HANDS-ON LAB 4 Quest CHECK-IN ..... 40'	📄 DOCUMENTS L1 Remediation ..... 15' L3 Enrichment ..... 15'

⚠ NEXT GENERATION SCIENCE STANDARDS FOR CALIFORNIA PUBLIC SCHOOLS

MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
MS-PS3-2 Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

California Environmental Principles and Concepts
EP&C1a Students should be developing an understanding that the goods produced by natural systems are essential to human life and to the functioning of our economies and cultures.
EP&CIIb Students should be developing an understanding that methods used to extract, harvest, transport, and consume natural resources influence the geographic extent, composition, biological diversity, and viability of natural systems.

Topic Planner

Realize: Topic Launch

TOPIC 1 PLANNER
Forces and Motion

This topic applies the crosscutting concepts of *systems and system models* and *stability and change to* students represent interactions within a system and between systems as well as to formulate explana about natural and designed events. By *planning and carrying out investigations* and *developing and using models* students can *engage in argument* about the disciplinary core ideas related to *forces and motion.*

INVESTIGATIVE PHENOMENON

How can you use models to demonstrate how the motion of an object will be affected by forces that act on it?

Explaining Phenomena In this topic, students will explore how different forces can affect the motion of objects. They will apply their knowledge as they plan and carry out investigations and use models to demonstrate how the sum of forces acting on an object influence its motion. Students will develop models to use as evidence to explain this phenomenon.

	LESSON 1	LESSON 2
	Describing Motion and Force 120–210 minutes Students analyze evidence from the world around them to define motion, and they identify and describe forces and motion.	**Speed, Velocity, and Acceleration** 140–210 minutes Students use mathematical and computational thinking to apply formulas for determining and graphing speed and acceleration.
CONNECTION TO INVESTIGATIVE PHENOMENON	Students investigate objects in motion over time using their relative positions.	Students investigate how mass and speed affects bumper car collisions.
ENGAGE	Everyday Phenomenon Connect It!, p. IS1-12 🅐 Hands-On Lab Is the Force With You?	Everyday Phenomenon Connect It!, p. IS1-20 🔵 Interactivity Forces from Motion
EXPLORE	🔵 Interactivity Relative Motion 🅐 uInvestigate Lab Motion Commotion ◐ 🖥 Virtual Lab Launching a Spacecraft into Motion 🔵 Interactivity Balanced and Unbalanced Forces ◐	🅐 uInvestigate Lab Walking the Walk ◐ 🔵 Interactivity Motion Graphs ◐ 🔵 Interactivity Falling for Velocity
EXPLAIN & ELABORATE	🔵 Interactivity Explore Forces ◐ Quest Check-In Define Criteria and Constraints ◐ 📄 Document L3 Enrichment Worksheet: Reducing Friction ▶ Video Teaching Video ◐	🅐 Quest Check-In Mass, Speed, and Colliding Cars ◐ 📄 Document L3 Enrichment Worksheet: Describing Motion
EVALUATE	Lesson 1 Check, p. IS1-19 ☑ Assessment Lesson 1 Quiz ◐ 📄 Document L1 Remediation	Lesson 2 Check, p. IS1-27 ☑ Assessment Lesson 2 Quiz ◐ 📄 Document L1 Remediation

Lesson Planning Guide

Realize: Lessons

LESSON PLAN

Segment 1 ▌ Topic 1 Forces and Motion ▌ Lesson 1 ▌ Describi...
Pacing: 120 - 210 minutes

STUDENT EDITION	TEACHER EDITION
Pages 12–18 or Realize Reader	Pages IS1-12 to IS1-18 or Realize Read...
LESSON OBJECTIVE(S)	**LESSON SUMMARY**
Students will construct an explanation using reasoning that •motion is a change in position relative to a reference frame. Students will describe •how balanced and unbalanced forces affect the motion of an object.	Students analyze evidence from the world around them to define motion, and they identify and describe forces and motion.
VOCABULARY	
reference frame, force, motion, friction, gravity, n...	
STANDARDS	
California Next Generation Science Standards	

MS-PS2-2 Plan an investigation to provide evi depends on the sum of the forces on the obje
DCI PS2.A Forces and Motion The motion of a acting on it; if the total force on the object is r mass of the object, the greater the force need given object, a larger force causes a larger cha
DCI PS2.A Forces and Motion All positions of must be described in an arbitrarily chosen refe In order to share information with other peop
CCC.7 Stability and Change Explanations of st can be constructed by examining the changes the atomic scale.
SEP.3 Planning and Carrying Out Investigation collaboratively, and in the design: identify ind what tools are needed to do the gathering, ho data are needed to support a claim.
NOS.2 Scientific Knowledge Is Based on Empi logical and conceptual connections between e

LESSON PLAN

CORE INSTRUCTION	ADDITIONAL INSTRUCTION
ENGAGE **CORE INSTRUCTION**	**ENGAGE** **ADDITIONAL INSTRUCTION**
Hands-On Lab: Is the Force With You? Students will use a skateboard and a spring scale to investigate motion and balanced and unbalanced forces. *Realize*	**CONNECT IT!** Students analyze a photograph and determine which parts are moving and why. Student Edition, p. 12 Teacher Edition, p. IS1-12
EXPLORE **CORE INSTRUCTION**	**EXPLORE** **ADDITIONAL INSTRUCTION**
uInvestigate Lab: Motion Commotion Students conclude that an object's motion can only be measured by an observer if the object is in a frame of reference that is moving relative to the observer. **Materials (per group):** 2-m-by-30 cm paper strip, small windup or battery-powered toy, meter stick, masking tape, marker *Realize* **Interactivity: Balanced and Unbalanced Forces** After students complete the interactivity, present pictures that show balanced and unbalanced forces. Poll students to determine that they can distinguish between balanced and unbalances forces. *Realize*	**Interactivity: Relative Motion** Students will watch a video and discover that a description of the motion of people or objects is based on comparison with different reference frames. *Realize* **Virtual Lab: Launching a Spacecraft into Motion** Students learn about the relationships between speed and net force, speed and mass, acceleration and net force, and acceleration and mass. *Realize*

Lesson Planner

Teacher Edition

LESSON 1 PLANNER
Describing Motion and Force

OBJECTIVES

Students will construct an explanation using reasoning that
• motion is a change in position relative to a reference frame.

Students will describe
• how balanced and unbalanced forces affect the motion of an object.

ENGAGE
0.5 class period

🅐 HANDS-ON LAB ..... 15'
Is the Force With You?

⚠ CA NEXT GENERATION SCIENCE STANDARDS

MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
DCI PS2.A Forces and Motion The motion of an object is determined by the sum of the forces acting on it; if the total force on the object is not zero, its motion will change. The greater the mass of the object, the greater the force needed to achieve the same change in motion. For any given object, a larger force causes a larger change in motion.
DCI PS2.A Forces and Motion All positions of objects and the directions of forces and motions must be described in an arbitrarily chosen reference frame and arbitrarily chosen units of size. In order to share information with other people, these choices must also be shared.

CCC.7 Stability and Change Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and forces at different scales, including the atomic scale.
SEP.3 Planning and Carrying Out Investigations Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.
NOS.2 Scientific Knowledge Is Based on Empirical Evidence Science knowledge is based upon logical and conceptual connections between evidence and explanations.

The **Instructional Segment Planning Template** helps you pace and plan your instruction for each Instructional Segment.

Instructional Segment #_____ CA Spotlight:

Standards: NGSS CA

Standards: Other content areas

CA Spotlight: Before the Topics

	Day 1:	Day 2:	Day 3:

Topic 1:

Quest Kickoff/ Topic Launch	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Quest Findings/ Topic Close

The **Instructional Segment Planning Template** helps you pace and plan your instruction for each Instructional Segment..

Topic 2:

Quest Kickoff/ Topic Launch	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Quest Findings/ Topic Close

CA Spotlight: After the Topics

Day 1:	Day 2:	Day 3:

Assessment Overview

The **Assessment Overview** provides a categorized list of the suite of assessments available for *Elevate Science*. Choose the ones that will best meet your instructional needs. Resources with an asterisk are available only on Savvas Realize.

	Formative	Informal	Summative	Alternative	PBL
Lesson	• Scaffolded Questions • Quiz*	• Interactivity* • Check Point • Lesson Check • uInvestigate Lab			• Quest Check-In
Topic	• Diagnostic Test*	• Topic Review	• Evidence-Based Assessment • Topic Test	• uDemonstrate Lab • Virtual Lab*	• Quest Findings
Instructional Segment			• Benchmark Assessment*	• Performance-Based Assessment	• CA Spotlight
Program			• End-of-Year Assessment*		

Notes