



PLTW Launch Modules CA NGSS

Science Scope and Sequence

PLTW Launch Modules integrate science performance expectations (PEs) with science and engineering practices (SEPs), disciplinary core ideas (DCIs), and crosscutting concepts (CCCs) and focus on one or more of the 3 domains of science outlined in the NGSS:

- Physical Science
- Life Science
- Earth and Space Science

ELA and Math are integrated into all PLTW Launch modules through authentic science and engineering activities, projects, and problems; connections to those bodies of standards are included to support planning. Additional modules, that focus solely on computer science or engineering are not included in this guide, but can be included to enhance STEM learning. There are not prerequisites, so modules can be taught in whatever order works in your classroom.

Most often, PEs are covered in one module per grade level; 1st Grade, 3rd Grade, and 4th Grade contain multiple modules that cover the same standard to provide options for extra instruction and engagement. To support with pacing decisions, *the least amount of modules possible to reach 100% standards coverage* is noted for each grade level with this symbol: ★

The Curriculum Framework for each PLTW Launch module, *found in the Teacher Guide*, is another valuable planning tool. The framework offers a big-picture view of the module that includes the desired results of student learning, an overview of the module's scaffolded approach to learning, and assessment opportunities found in each activity, project, and problem.















PLTW

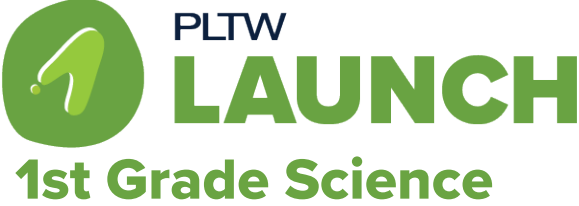






LAUNCH K-5 Science Scope and Sequence

★ All modules have additional standards connections for Engineering Design, Math, and ELA.









	Physical Science 	Life Science 	Earth and Space Science 
K	Pushes and Pulls K-PS2-1, K-PS2-2	Living Things: Needs and Impacts K-LS1-1, K-ESS2-2 K-ESS3-1, K-ESS3-3	Sunlight and Weather K-PS3-1, K-PS3-2, K-ESS2-1, K-ESS3-2
1	Light and Sound 1-PS4.1, 1-PS4-2, 1-PS4-3, 1-PS4-4	Designs Inspired by Nature 1-LS1-1, 1-LS1-2, 1-LS3-1	Animal Adaptations 1-LS1-1, K-2-ETS1-1
2	Materials Science: Properties of Matter 2-PS1-1, 2-PS1-2, 2-PS1-3, 2-PS1-4	Materials Science: Form and Function 2-PS1-2, 2-PS1-3, 2-LS2-2	Living Things: Diversity of Life 2-LS2-1, 2-LS4-1
3	Stability and Motion: Forces and Interactions 3-PS2-1, 3-PS2-2, 3-PS2-3, 3-PS2-4	Stability and Motion: Science of Flight 3-PS2-1, 3-PS2-2	Variation of Traits 3-LS3-1, 3-LS3-2, 3-LS4-2
4	Life Cycles and Survival 3-LS1-1, 3-LS2-1	Environmental Changes 3-LS4-1, 3-LS4-3, 3-LS4-4	Weather: Factors and Hazards 3-ESS2-1, 3-ESS2-2, 3-ESS3-1
5	Energy Exploration 4-PS3-1, 4-PS3-2, 4-PS3-3, 4-PS3-4	Input/Output: Computer Systems 4-PS4-3	Waves and the Properties of Light 4-PS4-1, 4-PS4-2
6	Organisms: Structure and Function 4-LS1-1, 4-LS2-1	Input/Output: Human Brain 4-LS1-1	Earth: Past, Present, and Future 4-ESS1-1, 4-ESS2-1, 4-ESS2-2
7	Earth: Human Impact and Natural Disasters 4-ESS3-1, 4-ESS3-2		
8	Matter: Properties and Reactions 5-PS1-1, 5-PS1-2, 5-PS1-3, 5-PS1-4	Ecosystems: Flow of Matter and Energy 5-PS3-1, 5-LS1-1, 5-LS2-1	Patterns in the Universe 5-ESS1-1, 5-ESS1-2
9			Earth's Water and Interconnected Systems 5-PS2-1, 5-ESS2-1, 5-ESS2-2, 5-ESS1-3

		Essential Questions	NGSS Science Standards	NGSS Engineering Design Standards	Common Core ELA Standards	Common Core Math Standards
	 Pushes and Pulls	In what ways do forces impact your daily life? How are pushes and pulls related? How can a step-by-step process help you design or improve a solution to a problem?	K-PS2-1 K-PS2-2	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	W.K.2 SL.K.1a SL.K.1b SL.K.2 SL.K.3 SL.K.4 SL.K.5	K.CC.A.3 K.MD.A.2 K.MD.B.3 Math Practices 1, 3,5
	 Living Things: Needs and Impacts	How can plants and animals impact their natural environment to meet their needs? How can humans lessen their negative impact on the natural environment? How can a step-by-step process help you design or improve a solution to a problem?	K-LS1-1 K-ESS2-2 K-ESS3-1 K-ESS3-3	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.K.3 RI.K.1 RI.K.2 W.K.2 W.K.7 SL.K.1 SL.K.2 SL.K.4 SL.K.5	K.CC.A.1 K.CC.A.3 K.CC.B.5 K.MD.B.3 Math Practices 1, 3
	 Sunlight and Weather	How does the Sun affect Earth? How does weather affect our lives? How can a step-by-step process help you design or improve a solution to a problem?	K-PS3-1 K-PS3-2 K-ESS2-1 K-ESS3-2	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.K.1 RL.K.3 RL.K.10 RI.K.1 RI.K.2 RI.K.10	K.CC.A.3 K.MD.A.2 Math Practices 1-3










 *Least amount of modules possible to reach 100% standards coverage*

		Essential Questions	NGSS Science Standards	NGSS Engineering Design Standards	Common Core ELA Standards	Common Core Math Standards
	 Light and Sound	How do light and sound affect your life? Why is understanding cause and effect important to your life? How can collaboration help you solve problems?	1-PS4-1 1-PS4-2 1-PS4-3 1-PS4-4	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.1.1 RL.1.2 RL.1.3 RI.1.1 RI.1.2 W.1.8 SL.1.1 SL.1.2 SL.1.5	Math Practices 1, 3, 5
	 Designs Inspired by Nature	Why do animals communicate as they do? How can nature inspire solutions to human problems? How can a step-by-step process help you design or improve a solution to a problem?	1-LS1-1 1-LS1-2 1-LS3-1	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RI.1.1 RI.1.2 RI.1.10 W.1.7 W.1.8 SL.1.1 SL.1.2 SL.1.5	1.G.A.1 1.G.A.2 Math Practices 1, 3, 5
	Animal Adaptations	How do plants and animals adapt to their environments? How can nature inspire solutions to human problems? How can a step-by-step process help you design or improve a solution to a problem?	1-LS1-1	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.1.1 RI.1.1 W.1.8 SL.1.2 SL.1.5 SL.1.6	1.NBT.C.4 1.MD.C.4 Math Practices 1-6
	 Light: Observing the Sun, Moon, and Stars	How does the Sun affect your life? Why is understanding cause and effect important to your life? What is the relationship between patterns and natural phenomena?	1-ESS1-1 1-ESS1-2	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.1.1 RI.1.1 W.1.8 SL.1.1.C SL.1.5 SL.1.6	1.MD.A.1 1.MD.B.3 1.MD.C.4 Math Practices 1-6












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		Essential Questions	NGSS Science Standards	NGSS Engineering Design Standards	Common Core ELA Standards	Common Core Math Standards
	 Materials Science: Properties of Matter	What properties of materials do you need to consider when designing a product? How can we identify when something is (or is not) a solution to a problem?	2-PS1-1 2-PS1-2 2-PS1-3 2-PS1-4	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RI.2.1 RI.2.3 W.2.7 W.2.8	2.MD.D.10 Math Practices 1, 3-6
	 Materials Science: Form and Function	How does the function of an object influence its form? How does nature influence design? How can a step-by-step process help you design or improve a solution to a problem?	2-PS1-2 2-PS1-3 2-LS2-2	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.2.1 RI.2.1 RI.2.3 W.2.8 SL.2.1 SL.2.2	Math Practices 1, 3-5
	 Living Things: Diversity of Life	How do scientists learn about the world? How do diverse habitats meet the needs of organisms? How can a step-by-step process help you design or improve a solution to a problem?	2-LS2-1 2-LS4-1	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	W.2.7 W.2.8	2.MD.A.1 2.MD.D.10 Math Practices 1-6
	 The Changing Earth	How can something appear stable when it is actually changing? How are system models used to predict and understand real-world situations or scientific phenomena? How can a step-by-step process help you design or improve a solution to a problem?	2-ESS1-1 2-ESS2-1 2-ESS2-2 2-ESS2-3	K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	RL.2.1 RI.2.1 RI.2.3 W.2.7 W.2.8 SL.2.1 SL.2.2	Math Practices 1-6









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		Essential Questions	NGSS Science Standards	NGSS Engineering Design Standards	Common Core ELA Standards	Common Core Math Standards
	 Stability and Motion: Forces and Interactions	In what ways do forces impact your daily life? How do machines make life easier? How can a step-by-step process help you design or improve a solution to a problem?	3-PS2-1 3-PS2-2 3-PS2-3 3-PS2-4	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.3.1 RI.3.3 W.3.7 W.3.8	Math Practices 1, 3, 5
	Stability and Motion: Science of Flight	In what ways do forces impact our world? How do balanced and unbalanced forces affect aircraft flight? How can a step-by-step process help you design or improve a solution to a problem?	3-PS2-1 3-PS2-2	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.3.1 RI.3.3 W.3.7 W.3.8 SL.3.1	3.MD.B.4 Math Practices 1-3, 5-6
	 Variation of Traits	Why do some offspring look like their parents while others do not? How are traits of one generation passed to the next? How can a step-by-step process help you design or improve a solution to a problem?	3-LS3-1 3-LS3-2 3-LS4-2	3-5-ETS1-1 3-5-ETS1-2	RI.3.1 RI.3.2 RI.3.3 RI.3.4 W.3.8 SL.3.1 SL.3.2	3.MD.B.3 Math Practices 1-7
	 Life Cycles and Survival	Why are life cycles of organisms important for life on Earth? How do bees impact our world? How can a step-by-step process help you design or improve a solution to a problem?	3-LS1-1 3-LS2-1	3-5-ETS1-1 3-5-ETS1-2	RI.3.1 RI.3.2 RI.3.3 RI.3.4 W.3.7 W.3.8 SL.3.1	Math Practices 1-3
	 Environmental Changes	How does an animal's habitat affect its survival? How do environmental changes affect organisms? How can a step-by-step process help you design or improve a solution to a problem?	3-LS4-1 3-LS4-3 3-LS4-4	3-5-ETS1-1 3-5-ETS1-2	RI.3.1 RI.3.2 RI.3.3 RI.3.4 W.3.2 W.3.7 W.3.8 SL.3.1 SL.3.4	Math Practices 1-5
	 Weather: Factors and Hazards	How does weather affect our lives? How can a step-by-step process help you design or improve a solution to a problem?	3-ESS2-1 3-ESS2-2 3-ESS3-1	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.3.1 RI.3.2 RI.3.3 RI.3.4 W.3.7 W.3.8 SI.3.1	3.MD.A.2 Math Practices 1-3, 5-6


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		Essential Questions	NGSS Science Standards	NGSS Engineering Design Standards	Common Core ELA Standards	Common Core Math Standards
	 Energy Exploration	Why is energy necessary? How does energy transfer affect your life? How can a step-by-step process help you construct an explanation or design a solution to a problem?	4-PS3-1 4-PS3-2 4-PS3-3 4-PS3-4	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.4.1 W.4.7 RI.4.2 W.4.9 RI.4.3 SL.4.1 RI.4.4 SL.4.3 RI.4.7 SL.4.4 W.4.2 SL.4.5	Math Practices 1, 3, 5-6
	 Input/Output: Computer Systems	How does technology impact our lives? In what ways do computing systems work together to accomplish tasks? How can a step-by-step process help you design or improve a solution to a problem?	4-PS4-3	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.4.3 W.4.2 RI.4.4 W.4.4 SL.4.1 SL.4.2	Math Practices 1-5, 8
	 Waves and the Properties of Light	How are waves used to predict results and solve problems? How do the properties of light allow us to see? How can we use patterns to make sense of the world? How can a step-by-step process help you design or improve a solution to a problem?	4-PS4-1 4-PS4-2	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	SL.4.5	4.MD.C.5 4.MD.C.6 4.G.A.1 Math Practices 1-6
	 Organisms: Structure and Function	How are organisms structured to support and sustain life? How do scientists and engineers understand the world around them? How can a step-by-step process help you design or improve a solution to a problem?	4-LS1-1 4-LS1-2	3-5-ETS1-1 3-5-ETS1-2	RI.4.2 W.4.8 RI.4.3 SL.4.1 RI.4.4 SL.4.2 W.4.1.B SL.4.4 W.4.2.D SL.4.5	Math Practices 1, 3, 5-6
	Input/Output: Human Brain	How does technology impact our lives? In what ways do computing systems work together to accomplish tasks? How can a step-by-step process help you design or improve a solution to a problem?	4-LS1-2	3-5-ETS1-1 3-5-ETS1-2	RI.4.1 W.4.7 RI.4.2 W.4.9 RI.4.3 SL.4.1 RI.4.4 SL.4.3 RI.4.7 SL.4.4 W.4.2 SL.4.5	Math Practices 1,3, 5-6
	 Earth: Past, Present, and Future	How has Earth changed over time? Why is Earth constantly changing? How can a step-by-step process help you design or improve a solution to a problem?	4-ESS1-1 4-ESS2-1 4-ESS2-2	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.4.3 W.4.8 RI.4.4 W.4.9 RI.4.7 SL.4.4 W.4.2 SL.4.5 W.4.7	Math Practices 1, 3, 5-6
	 Earth: Human Impact and Natural Disasters	In what ways do human interactions impact Earth? How do natural hazards impact Earth? How can a step-by-step process help you design or improve a solution to a problem?	4-ESS3-1 4-ESS3-2	3-5-ETS1-1 3-5-ETS1-2	RI.4.1 W.4.7 RI.4.3 W.4.8 RI.4.4 W.4.9 RI.4.9 SL.4.1 W.4.2 SL.4.4	Math Practices 1-4


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		Essential Questions	NGSS Science Standards	NGSS Engineering Design Standards	Common Core ELA Standards	Common Core Math Standards
	 Matter: Properties and Reactions	How do the structures and properties of matter help us solve real-world problems? How do mechanical properties impact engineering design? How can a step-by-step process help you design or improve a solution to a problem?	5-PS1-1 5-PS1-2 5-PS1-3 5-PS1-4	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.5.7 SL.5.1 W.5.8 SL.5.2 W.5.9 SL.5.4	5.MD.C.3 5.MD.C.4 Math Practices 1-6
	 Ecosystems: Flow of Matter and Energy	How do matter and energy flow through an ecosystem? How does a change in an ecosystem affect its balance? How can a step-by-step process help you design or improve a solution to a problem?	5-PS3-1 5-LS1-1 5-LS2-1	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.5.1 W.5.7 RI.5.3 W.5.8 RI.5.4 W.5.9 RI.5.7 SL.5.1 RI.5.9 SL.5.2 W.5.2.D SL.5.5	5.MD.B.2 Math Practices 1-6
	 Patterns in the Universe	What is Earth's place in the universe? How do the predictable patterns of Earth impact our lives? How can a step-by-step process help you design or improve a solution to a problem?	5-ESS1-1 5-ESS1-2	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.5.1 W.5.7 RI.5.4 W.5.8 RI.5.7 SL.5.1 RI.5.8 SL.5.2 RI.5.9 SL.5.4 W.5.1 SL.5.5 W.5.2	Math Practices 1-4, 6
	 Earth's Water and Interconnected Systems	How do Earth's major systems interact? Is there enough fresh water on Earth? How can a step-by-step process help you design or improve a solution to a problem?	5-PS2-1 5-ESS2-1 5-ESS2-2 5-ESS3-1	3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	RI.5.3 W.5.8 RI.5.4 W.5.9 RI.5.7 SL.5.1 RI.5.9 SL.5.2 SL.5.4 SL.5.5	5.NBT.B.5 Math Practices 1-6

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