

Unit 3: Energy Transformation

Grade 5: Science (2025-2026)

[Unit Overview]

Tools for Planning		
PLC Process Resources Unit Internalization Protocol TEA TEKS Guide Lead4Ward Resources Lead4Ward Field Guides - Content & SEPs	Year-At-A-Glance/Pacing Calendar GR 5 Science YAAG 2025-2026 GR 5 Science Pacing Guide 2025-2026	Additional Planning Resources: Specially Designed Instruction (SDI) Language Supports Multi-Tiered System of Supports (MTSS)

Unit Description
Description: Students identify transfers of energy by exploring objects in motion, waves in water, and sound. They use their knowledge of forms of energy (mechanical, electrical, light, thermal, sound, and chemical) to investigate and describe the transformation of energy in systems. They demonstrate and explain that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy and identify the requirements of a functioning electrical circuit. Students continue to explore energy by demonstrating and explaining how light travels in a straight line and can be reflected, refracted, or absorbed. Suggested Unit Pacing: 17 Days (17 - 50 minute class periods) Number of Bundles: 3

PLC Q1 - Unit 3 Planning Guidance	
Essential Questions	Enduring Understandings
→ How is energy transferred by objects, waves, and sound? → How do we transform electrical energy into mechanical, light, thermal, and sound energy? → How does light energy travel and what happens when it interacts with different mediums and materials?	→ Energy is transferred between objects when they collide, between water particles as they bounce up and down in waves, and between particles that vibrate against each other in sound. → The flow of electricity, when in a complete, functioning circuit, can be transformed into mechanical, electrical, light, thermal, and sound energy. → Light travels in straight lines and can be reflected, refracted, or absorbed. → Light travels from a source in a straight line and reflects off of matter so that we see it. When light passes into a new medium, it changes angles and refracts, changing how we perceive matter.

TEKS [District Recommended Essentials are in Bold Type; Highlighted are Assessed on STAAR]

TEKS:

- **5.8(B) Demonstrate that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy and identify the requirements for a functioning electrical circuit.**
- **5.8(C) Demonstrate and explain how light travels in a straight line and can be reflected, refracted, or absorbed.**
- 4.8(A) investigate and identify the transfer of energy by objects in motion, waves in water, and sound
- 5.8(A) Investigate and describe the transformation of energy in systems such as energy in a flashlight battery that changes from chemical energy to electrical energy to light energy. (Not assessed on STAAR)

(Note: No additions in 2026-27.)

Recurring Themes & Concepts:

- 5.5(D) examine and model the parts of a system and their interdependence in the function of the system;
- 5.5(E) investigate how energy flows and matter cycles through systems and how matter is conserved;

Scientific & Engineering Practices:

- 5.1(D) use tools, including, microscopes, hand lenses, prisms, concave and convex lenses, laser pointers, mirrors, notebooks, materials for building circuits, and materials to support digital data collection such as computers, tablets, and cameras to observe, measure, test, and analyze information;
- 5.1(E) collect observations and measurements as evidence;
- 5.1(G) develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem
- 5.3(A) develop explanations and propose solutions supported by data and models;

Essential ELPS:

- Learning Strategies 1C - use strategic learning techniques such as concept mapping, drawing, memorizing, comparing, contrasting, and reviewing to acquire grade-level vocabulary
- Listening 2I - demonstrate listening comprehension of increasingly complex spoken English by responding to questions and requests, collaborating with peers, and taking notes based on content and grade-level needs
- Speaking 3J - respond orally to information presented in a variety of ways (print, electronic, visual) to build and reinforce concept attainment
- Reading 4K - demonstrate comprehension by performing critical analyses based on content area needs
- Writing 5G - narrate, describe, and explain with increasing specificity and detail to fulfill content areas' writing needs

PLC Q2 - Unit 3 Assessment Guidance

Unit Assessment Resources

- [\[Unit Assessment\] Energy Transformations - AWARE with Answer Key](#)
- [\[Unit Assessment\] Energy Transformations - Blueprint](#)
- [\[Unit Assessment\] Energy Transformations - Test Booklet](#)

Performance Task Resources

- [\[Performance Task\] Unit 3 - SCR Practice](#)

Other Assessment Resources

- [TEA 2025-2026 Assessed Curriculum](#)
 - ◆ Note: Gr 3 will not be directly assessed in 2025-2026 school year
- [TEA 2025-2026 STAAR Blueprint](#)
- [SCR Scoring guides from TEA](#)
- [Lead4Ward IQ Released Items Analysis Tool](#)
- [Gr 5 Science Supplemental Aids 2025-2026](#)

[Unit Guide]

Tools for Instruction		
Teacher Resources → TEA TEKS Guide → Lead4Ward Field Guides - Content & SEPs → Lead4Ward Instructional Strategies Playlist → ELLlevation	Student Resources → HMH Resources (link to book) → PhET Lab Simulations → Gr 5 Science Supplemental Aid Resources	Additional Tools → Visual Non Glossary → Science - Digital Resources → MS Science - Internalization Guidance → [Template] PDSA: DO - MiNT Science → [SCI 4.8C] Standard Internalization → [SCI 5.8B] Standard Internalization → [SCI 5.8C] Standard Internalization

Tier One	Bundle 1: Energy Transfers		
	Description: Students investigate and identify the transfer of energy as objects collide, particles bounce up and down in waves, and particles vibrate against each other in sound. (4.8A)		
	Pacing: 4 Days		
	TEKS/I Can Statements (Q1)	Check for Understanding (Q2)	
	Connecting the Content Standards & SEPs I can use pictures, diagrams, and written scenarios to identify and explain transfers of energy in collisions, water waves, and sound. (4.8A, 5.3A) → Students identify and explain transfers of mechanical energy in collisions between objects → Students identify and explain transfers of energy in water as particles bounce up and down creating waves. → Students identify and explain transfers of energy as particles vibrate against each other in sound.	→ [CFU 11] Energy Transfers: Motion, Waves, & Sound - Answer Key	
		→ [CFU 11] Energy Transfers: Motion, Waves, & Sound - Test Booklet	
		Activities (Q1)	Resources (Q1)
→ [Activity] Transfer of Energy in Objects → [Activity] Transfer of Energy in Water → [Activity] Energy Transfer Stations		→ [Resource] Teach: Transfers of Energy → [Resource] Notetaker: Transfers of Energy	
Additional Practice (Q3)	Challenge (Q4)		
→ [Additional Practice] Energy Transfer Card Sort	→ [Challenge] Energy Collides → [Challenge] Hexagonal Thinking Activity 5.8		

Additional Tools	Academic Vocabulary
→ GR5 Materials List by Unit	→ Energy → Motion → Sound → Conservation of Energy Transfer of Energy Waves Collision

Bundle 2: Energy Transformations in Circuits			
Description: Students analyze models and scenarios to identify and explain that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy and describe the requirements for a functioning electrical circuit. (5.8B) Pacing: 5 Days			
TEKS/I Can Statements (Q1)		Check for Understanding (Q2)	
Connecting the Content Standards & SEPs 1 - I can use diagrams and written descriptions to identify the requirements for a functioning electrical circuit (5.8B, 5.1G, 5.3A) → Students draw models and create written descriptions of the requirements for a functioning electrical circuit (source, load, conductor, switch). → Students use diagrams and descriptions to identify components of functioning electrical circuits that are present and those that are missing 2 - I can use models, diagrams, and scenarios to identify and explain a complete electrical circuit. (5.8B, 5.1D, 5.1E, 5.1G, 5.3A) → Students draw and analyze models to identify closed pathways of a complete circuit → Students use models and scenarios to identify loads that will and will not operate in different circuit configurations 3 - I can analyze models and scenarios to identify and explain that electrical energy in complete circuits can be transformed into motion, light, sound, or thermal energy (5.8B, 5.1D, 5.1E, 5.1G, 5.3A) → Students use models and scenarios to identify energy transformations from electrical to mechanical, light, sound, or thermal energy → Students use models and scenarios to explain that electrical energy in complete, functioning circuits can be transformed into motion, light, sound, or thermal energy		→ [CFU 2] Electrical Energy & Circuits - Answer Key → [CFU 2] Electrical Energy & Circuits - Test Booklet	
		Activities (Q1)	Resources (Q1)
		→ [Activity] Lab: Electrical Circuit - Station Cards → [Activity] Lab: Electrical Circuits - Student Sheet → [Activity] Lab: Electrical Circuit - Station Cards → [Activity] Lab: Electrical Circuits - Teacher Set Up	→ [Resource] Teach: Energy Transformations in Circuits → [Resource] Notetaker: Electrical Energy & Circuits → [Resource] Video: Electrical Circuits → [Resource] Video: Forms of Energy → [Resource] Video: Chemical Energy (stop at 2:07)
		Additional Practice (Q3)	Challenge (Q4)
		→ [Additional Practice] Electrical Circuit Folder - Cards → [Additional Practice] Electrical Circuit Folder - Questions → [Additional Practice] Crack The Circuit - online game	→ [Challenge] PhET Simulation Circuit Construction DC- Virtual Lab & Data Sheet → [Challenge] Snap Circuits Lab Activity → [Challenge] Hexagonal Thinking Activity 5.8

	Additional Tools	Academic Vocabulary	
	→ GR5 Materials List by Unit	→ Circuit → Complete/Closed circuit → Open Circuit/Open path → Insulator → Switch → Source → Transfer of Energy → Motion/Mechanical Energy	Flow Complete/Closed Path Electric Current Conductor Load Electrical Energy Transformation/Transform Light/Sound/Thermal Energy

Tier One	Bundle 3: Light Energy		
	Learning Target: Students analyze pictures, models, and scenarios to identify and explain how light travels in a straight line and can be reflected, refracted, or absorbed. (5.8C)		
	Pacing: 5 Days		
	TEKS/I Can Statements (Q1)	Check for Understanding (Q2)	
	Connecting the Content Standards & SEPs 1 - I can demonstrate and explain how light starts from a source and travels in a straight line. (5.8C, 5.1D, 5.1E, 5.1G, 5.3A) → Students analyze the behavior of light using flashlights, laser pointers, and other light sources to illustrate and explain that light always travels in a straight line. → Students use models to demonstrate how light may or may not be observed in different situations due to its path being straight (including the presence of shadows) 2 - I can use models, diagrams, and scenarios to identify and explain how light can be reflected, refracted, or absorbed when it interacts with matter. (5.8C, 5.1D, 5.1E, 5.1G, 5.3A) → Students create diagrams using arrows to demonstrate and describe how light interacts with matter (reflect, refract, absorb) → Students observe and describe how light behaves as it interacts with transparent, translucent, and opaque matter. → Students record and analyze observations about how light can be reflected, refracted, and absorbed when interacting with different matter/mediums. → Students interpret and analyze information (pictures, images, diagrams, scenarios) to construct explanations about light	→ [CFU 3] Light Energy - Answer Key → [CFU 3] Light Energy - Test Booklet	
		Activities (Q1)	Resources (Q1)
		→ [Activity] Lab: Light Reaction Investigation → [Activity] Lab: Light Reaction Station Cards → [Activity] Lab: Light Reaction Teacher Set up	→ [Resource] Teach: Light Energy → [Resource] Notetaker: Light Energy
		Additional Practice (Q3)	Challenge (Q4)
		→ [Additional Practice] Reflection, Refraction and Absorption Card Sort → [Additional Practice] Laser Maze Activity Board	→ [Challenge] Light Characteristics Right or Wrong Game - Instruction Slides → [Challenge] Light Characteristics Right or Wrong Game - Cards → [Challenge] Light Characteristics Right or

	interactions (reflection, refraction, absorption).		Wrong Game - Student Sheet → [Challenge] Reflection Investigation- Lazer Maze → [Challenge] Hexagonal Thinking Activity 5.8			
	Additional Tools	Academic Vocabulary				
	→ GR5 Materials List by Unit	→ Reflect/Reflection → Absorb → Lens → Light energy → Translucent	Refract/Refraction Bounce Prism Through Opaque	Straight Bend Medium Transmit		