



Grades 6–8

3.2.6-8.O Physical Science: Energy

Students who demonstrate understanding can *construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.*

Clarifying Statement: Examples of empirical evidence used in arguments could include an inventory or other representation of the energy before and after the transfer in the form of temperature changes or motion of object.

Assessment Boundary: Assessment does not include calculations of energy.

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
<p>Engaging in Argument From Evidence Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed worlds.</p> <ul style="list-style-type: none"> Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon. <hr/> <p>Connections to Nature of Science Scientific Knowledge is Based on Empirical Evidence</p> <ul style="list-style-type: none"> Science knowledge is based upon logical and conceptual connections between evidence and explanations 	<p>Conservation of Energy and Energy Transfer</p> <ul style="list-style-type: none"> When the motion energy of an object changes, there is inevitably some other change in energy at the same time. 	<p>Energy and Matter</p> <ul style="list-style-type: none"> Energy may take different forms (e.g., energy in fields, thermal energy, energy of motion).

Pennsylvania Context: N/A

PA Career Ready Skills: Explain how expressive communication strategies can affect others.

Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Agriculture (AFNR)	CS.01.02.01.a: Research technologies used in AFNR systems.



Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Science, Environmental Literacy and Sustainability (NAAEE)	5-8 Strand 2.1.A. Earth's physical systems: Learners describe the physical processes that shape Earth, including weather, climate, plate tectonics, and the hydrologic cycle. They explain how matter cycles and energy flows among the abiotic and biotic components of the environment. They describe how humans affect and are affected by Earth's physical systems.
PA Core Standards: ELA	CC.3.5.6-8.A: Cite specific textual evidence to support analysis of science and technical texts. CC.3.6.6-8.A: Write arguments focused on discipline-specific content.
PA Core Standards and Practices: Math	MP.2: Reason abstractly and quantitatively. CC.2.1.6.D.1: Understand ratio concepts and use ratio reasoning to solve problems. CC.2.1.7.D.1: Analyze proportional relationships and use them to model and solve real-world and mathematical problems.
PA Standards: Social Studies	N/A
Educational Technology (ISTE)	1.6. Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
Technology and Engineering (ITEEA)	STEL-2M: Differentiate between inputs, processes, outputs, and feedback in technological systems.