THE STANDARD

Kinetic Energy Transfer

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.

DCI — DISCIPLINARY CORE IDEA

PS3.B · Conservation of Energy and Energy Transfer

> *When the motion energy of an object changes, there is inevitably some other change in energy at the same time.*

When an object speeds up or slows down, energy doesn't appear or vanish. It moves. A rolling ball that comes to a stop didn't lose its kinetic energy. The energy transferred somewhere else, usually to thermal energy and sound through friction. **Every change in motion is matched by a change in energy somewhere in the system.**

SEP — SCIENCE & ENGINEERING PRACTICE

Engaging in Argument from Evidence

> *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.*

Students aren't just observing a ball slow down. They're building an argument: claim, evidence, reasoning. The claim is that energy transferred. The evidence is what they measured or observed. The reasoning is how that evidence supports the claim. **They construct it, present it, and defend it.**

CCC — CROSSCUTTING CONCEPT

Energy and Matter

> *Energy may take different forms (e.g., energy in fields, thermal energy, energy of motion).*

Energy shows up in different forms. Kinetic energy in moving objects, thermal energy in warmer surfaces, sound energy in the air. Students track energy as it changes form. The total stays the same. **Only the address changes.**