

5-PS3-1 Energy

Students who demonstrate understanding can:

- 5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. [Clarification Statement: Examples of models could include diagrams, and flow charts.]**

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Developing and Using Models

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Use models to describe phenomena.

Disciplinary Core Ideas

PS3.D: Energy in Chemical Processes and Everyday Life

- The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).

LS1.C: Organization for Matter and Energy Flow in Organisms

- Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (*secondary*)

Crosscutting Concepts

Energy and Matter

- Energy can be transferred in various ways and between objects.

Observable features of the student performance by the end of the grade:

1	Components of the model	
	a	Students use models to describe a phenomenon that includes the idea that energy in animals' food was once energy from the sun. Students identify and describe the components of the model that are relevant for describing the phenomenon, including:
		i. Energy.
		ii. The sun.
		iii. Animals, including their bodily functions (e.g., body repair, growth, motion, body warmth maintenance).
	iv. Plants.	
2	Relationships	
	a	Students identify and describe the relevant relationships between components, including:
		i. The relationship between plants and the energy they get from sunlight to produce food.
		ii. The relationship between food and the energy and materials that animals require for bodily functions (e.g., body repair, growth, motion, body warmth maintenance).
	iii. The relationship between animals and the food they eat, which is either other animals or plants (or both), to obtain energy for bodily functions and materials for growth and repair.	
3	Connections	
	a	Students use the models to describe causal accounts of the relationships between energy from the sun and animals' needs for energy, including that:
		i. Since all food can eventually be traced back to plants, all of the energy that animals use for body repair, growth, motion, and body warmth maintenance is energy that once came from the sun.
	ii. Energy from the sun is transferred to animals through a chain of events that begins with plants producing food then being eaten by animals.	