

Component Idea	Scope	Performance Expectation (PE)	Disciplinary Core Idea (DCI)	Science and Engineering Practice(s) (SEP)	Crosscutting Concepts (CCC)
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 **PS1: Matter and Its Interactions**

Structures and Properties of Matter	<b>Structure of Matter</b>	MS-PS1-1	PS1.A	Developing and Using Models	Scale, Proportion, and Quantity
	<b>Chemical Properties and Interactions</b>	MS-PS1-2   MS-PS1-3	PS1.A	Analyzing and Interpreting Data   Obtaining, Evaluating, and Communicating Information	Patterns
	<b>Changes in Energy on the Molecular Level</b>	MS-PS1-4	PS1.A	Developing and Using Models	Cause and Effect
Nuclear Processes	<b>Introduction to Fusion</b>	n/a	n/a	n/a	n/a
Chemical Reactions	<b>Characteristics of Chemical Reactions</b>	MS-PS1-2   MS-PS1-3   MS-PS1-5	PS1.B	Analyzing and Interpreting Data   Obtaining, Evaluating, and Communicating Information   Developing and Using Models	Patterns   Energy and Matter   Structure and Function
	<b>Modeling Conservation of Matter</b>	MS-PS1-5	PS1.B	Developing and Using Models	Energy and Matter
	<b>Energy in Chemical Reactions</b>	MS-PS1-6	PS1.B	Constructing Explanations and Designing Solutions	Energy and Matter
Definition of Energy	<b>Heat and Matter</b>	MS-PS1-4	PS3.A	Developing and Using Models	Cause and Effect

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## PS2: Motion and Stability: Forces and Interactions

Forces and Motion	<b>Newton's Third Law of Motion</b>	MS-PS2-1	PS2.A	Constructing Explanations and Designing Solutions	Systems and System Models
	<b>Changes in Motion, Force and Direction</b>	MS-PS2-2	PS2.A   PS2.A	Planning and Carrying Out Investigations	Stability and Change
Types of Interactions	<b>Electromagnetic Forces</b>	MS-PS2-3	PS2.B	Asking Questions and Defining Problems	Cause and Effect
	<b>Gravitational Forces</b>	MS-PS2-4	PS2.B	Engaging in Argument from Evidence	Systems and System Models
	<b>Force Fields</b>	MS-PS2-5	PS2.B	Planning and Carrying Out Investigations	Cause and Effect



## PS3: Energy

Definitions of Energy	<b>Kinetic Energy</b>	MS-PS3-1	PS3.A	Analyzing and Interpreting Data	Scale, Proportion, and Quantity
	<b>Potential Energy</b>	MS-PS3-2	PS3.A	Developing and Using Models	Systems and System Models
	<b>Thermal Energy Transfer</b>	MS-PS3-3   MS-PS3-4	PS3.A	Constructing Explanations and Designing Solutions   Planning and Carrying Out Investigations	Scale, Proportion, and Quantity   Energy and Matter
Conservation of Energy and Energy Transfer	<b>Energy Transfer in Motion</b>	MS-PS3-5	PS3.B	Engaging in Argument from Evidence	Energy and Matter
	<b>Energy Transfer in Temperature</b>	MS-PS3-4	PS3.B	Planning and Carrying Out Investigations	Scale, Proportion, and Quantity
	<b>Energy Transfer Optimization</b>	MS-PS3-3	PS3.B	Constructing Explanations and Designing Solutions	Energy and Matter
Definitions of Energy	<b>Kinetic Energy</b>	MS-PS3-1	PS3.A	Analyzing and Interpreting Data	Scale, Proportion, and Quantity

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## PS4: Waves and Their Applications in Technologies for Information Transfer

Wave Properties	<b>Introduction to Properties of Waves</b>	MS-PS4-1	PS4.A	Using Mathematics and Computational Thinking	Patterns
	<b>Modeling Waves through Various Mediums</b>	MS-PS4-2	PS4.A	Developing and Using Models	Structure and Function
Electromagnetic Radiation	<b>Properties of Visible Light</b>	MS-PS4-2	PS4.B	Developing and Using Models	Structure and Function
	<b>Modeling Electromagnetic Waves</b>	MS-PS4-2	PS4.B	Developing and Using Models	Structure and Function
Technologies and Instrumentation	<b>Digital vs. Analog Signals</b>	MS-PS4-3	PS4.C	Obtaining, Evaluating, and Communicating Information	Structure and Function