

		Chapter 1: What Physics and Chemistry are About	Chapter 2: Science and Measurement	Chapter 3: Motion	Chapter 4: Forces	Chapter 5: Newton's Laws of Motion	Chapter 6: Energy and Machines	Chapter 7: Gravity and Space	Chapter 8: Electricity and Magnetism	Chapter 9: Waves and Sounce	Chapter 10: Light and Color	Chapter 11: Temperature, Heat, and the Phases of Matter	Chapter 12: The Physical Properties of Matter	Chapter 13: The Atom	Chapter 14: Elements and the Periodic Table	Chapter 15: Molecules and Compounds	Chapter 16: Acids, Bases, and Solutions	Chapter 17: Chemical Reactions	Chapter 18: Chemistry and Living Systems	Explore Further (Appendix)
Physical Science Core Ideas																				
PS1	Matter and Its Interactions											✓	✓	✓	✓	✓	✓	✓		✓
PS2	Motion and Stability: Forces and Interactions			✓	✓	✓		✓	✓											
PS3	Energy				✓	✓	✓			✓		✓								
PS4	Waves and Their Applications in Technologies for Information Transfer						✓			✓	✓									
Structure and Properties of Matter																				
PS1.A.1	Develop models to describe the atomic composition of simple molecules and extended structures																			✓
PS1.A.2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.																			✓
PS1.A.3	Gather, analyze, and present information to describe that synthetic materials come from natural resources and how they impact society.																			✓
PS1.A.4	Develop a model that describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.											✓								
Chemical Reactions																				
PS1.B.1	Develop and use a model to describe how the total number of atoms remains the same during a chemical reaction and thus mass is conserved.																			✓
PS1.B.2	Construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.																			
Forces and Motion																				
PS2.A.1	Apply physics principles to design a solution that minimizes the force of an object during a collision and develop an evaluation of the solution.					✓														
PS2.A.2	Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.			✓	✓	✓														
Types of Interactions																				
PS2.B.1	Analyze diagrams and collect data to determine the factors that affect the strength of electric and magnetic forces.								✓											
PS2.B.2	Create and analyze a graph to use as evidence to support the claim that gravitational interactions depend on the mass of interacting objects.							✓												
PS2.B.3	Conduct an investigation and evaluate the experimental design to provide evidence that electric and magnetic fields exist between objects exerting forces on each other even though the objects are not in contact.								✓											

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Definitions of Energy																				
PS3.A.1	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	✓	✓																	✓
PS3.A.2	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system																			
PS3.A.3	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.																			
PS23.A.4	Plan and conduct an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the temperature of the sample.																			
Conservation of Energy and Energy Transfer																				
PS3.B.1	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.					✓	✓			✓										
Wave Properties																				
PS4.A.1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	✓	✓																	✓
PS4.A.2	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.									✓										
Defining Possible Solutions																				
ETS1.B.1	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	✓	✓																	✓
ETS1.B.2	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	✓	✓										✓							✓
ETS1.B.3	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved	✓	✓										✓							✓

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Science and Engineering Practices

Developing and Using Models			✓	✓			✓				✓		✓				✓	✓	
Planning and Carrying Out Investigations	✓					✓													
Asking Questions and Defining Problems					✓											✓			✓
Analyzing and Interpreting Data	✓	✓					✓			✓	✓					✓			✓
Constructing Explanations and Designing Solutions								✓		✓			✓	✓					✓
Engaging in Argument From Evidence						✓						✓			✓				✓

Crosscutting Concepts

Patterns	✓										✓		✓					✓	✓
Energy and Matter			✓	✓			✓												
Stability and Change					✓					✓					✓				✓
Cause and Effect						✓							✓	✓	✓				✓
Systems and System Models			✓				✓										✓		
Structure and Function									✓	✓	✓	✓		✓					
Scale, Proportion, and Quantity	✓	✓						✓	✓	✓	✓								