

Correlation to Georgia Quality Core Curriculum - Science

Curriculum Resource Guide

Standard #: Course	Topic	Standard	Benchmark	Investigation Level A	Investigation Level B	Investigation Level C
PS01.0 Physical Science	Inquiry, Process and Problem Solving	Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.	Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.	<p><i>Car and Ramp</i> A-1 Time and Distance A-3 Speed A-4 Describing Motion A-5 Gravity</p> <p><i>Electric Circuits</i> A-3 Current and Voltage</p> <p><i>Gravity Drop</i> A-1 Introduction to the Gravity Drop A-3 Falling Motion</p> <p><i>Light and Optics</i> A-1 Introduction to Light A-2 Color A-3 Rules of Reflection</p> <p><i>Marble Launcher</i> A-1 Launch Angle and Distance A-2 Launch Speed and Distance</p> <p><i>Pendulum</i> A-1 The Pendulum</p> <p><i>Rollercoaster</i> A-2 Height on the Roller Coaster</p> <p><i>Ropes and Pulleys</i> A-1 Ropes and Pulleys A-2 What is Work?</p> <p><i>Sound and Waves</i> A-1 Sound</p>	<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion B-5 The Acceleration of a Rocket</p> <p><i>Car and Ramp</i> B-1 Time and Distance B-3 Using a Scientific Model to Predict Speed B-4 Position and Time B-5 Acceleration B-6 Force, Mass, and Acceleration B-7 Weight, Gravity, and Friction</p> <p><i>Electric Circuits</i> B-1 Voltage B-2 Current B-3 Ohm's Law</p> <p><i>Gravity Drop</i> B-1 Introduction to the Gravity Drop B-2 Speed, Acceleration, and Free Fall B-3 Newton's Second Law</p> <p><i>Light and Optics</i> B-1 Seeing an Image B-2 Polarization B-4 Ratios</p> <p><i>Marble Launcher</i> B-1 Launch Angle and Range B-2 Launch Speed and Range</p>	<p><i>Air Rocket</i> C-3 Acceleration and G-forces</p> <p><i>Car and Ramp</i> C-1 Uniform Accelerated Motion C-2 Newton's Second Law and Friction C-3 The Physics of the Inclined Plane</p> <p><i>Electric Circuits</i> C-1 Series Circuits C-3 Compound Circuits</p> <p><i>Electric Motor</i> C-2 Optimizing Performance</p> <p><i>Gravity Drop</i> C-1 Speed, Acceleration, and Free Fall C-2 Measuring Gravity C-3 Interpreting Graphs of Accelerated Motion</p> <p><i>Light and Optics</i> C-1 Light and Color C-4 The Convex Lens C-5 Geometric Optics C-6 The Thin Lens Equation C-7 Wave Properties of Light</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation C-2 Improving the Range Equation C-3 Accuracy, Precision, and Error</p> <p><i>Pendulum</i> C-1 Energy Conservation and the Pendulum</p>

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					B-3 Relating Launch Speed and Range Pendulum B-1 Harmonic Motion B-2 The Five Second Pendulum Rollercoaster B-1 Energy and the Rollercoaster B-2 Conservation of Energy B-3 Mass and Motion Ropes and Pulleys B-1 Forces in Machines B-2 Work and Energy B-3 Efficiency Sound and Waves B-1 Sound	C-2 Newton's Second Law and the Pendulum C-3 The Physical Pendulum Rollercoaster C-1 Motion on the Roller Coaster C-2 Rotational Kinetic Energy C-3 Mass, Motion, and Energy Ropes and Pulleys C-1 Simple and Complex Pulley Systems C-2 Compound Pulley System Sound and Waves C-1 Standing Waves C-3 Natural Frequency and Resonance C-4 Sound

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PS01.1 Physical Science	Inquiry, Process and Problem Solving	Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.	Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding, and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.	<p><i>Car and Ramp</i> A-2 Investigations and Experiments A-3 Speed A-4 Describing Motion A-5 Gravity</p> <p><i>Gravity Drop</i> A-3 Falling Motion</p> <p><i>Light and Optics</i> A-1 Introduction to Light A-2 Color A-3 Rules of Reflection</p> <p><i>Marble Launcher</i> A-1 Launch Angle and Distance A-2 Launch Speed and Distance</p> <p><i>Pendulum</i> A-1 The Pendulum A-2 Making a Clock</p> <p><i>Rollercoaster</i> A-1 Speed on the Roller Coaster A-2 Height on the Roller Coaster</p> <p><i>Ropes and Pulleys</i> A-1 Ropes and Pulleys A-2 What is Work?</p> <p><i>Sound and Waves</i> A-1 Sound</p>	<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion</p> <p><i>Car and Ramp</i> B-2 Investigating Speed B-3 Using a Scientific Model to Predict Speed B-4 Position and Time B-5 Acceleration B-6 Force, Mass, and Acceleration B-7 Weight, Gravity, and Friction</p> <p><i>Electric Circuits</i> B-3 Ohm's Law</p> <p><i>Gravity Drop</i> B-1 Introduction to the Gravity Drop B-2 Speed, Acceleration, and Free Fall B-3 Newton's Second Law</p> <p><i>Light and Optics</i> B-1 Seeing an Image B-2 Polarization B-4 Ratios</p> <p><i>Marble Launcher</i> B-1 Launch Angle and Range B-2 Launch Speed and Range B-3 Relating Launch Speed and Range</p> <p><i>Pendulum</i> B-1 Harmonic Motion B-2 The Five Second Pendulum</p>	<p><i>Air Rocket</i> C-3 Acceleration and G-forces</p> <p><i>Car and Ramp</i> C-1 Uniform Accelerated Motion C-2 Newton's Second Law and Friction C-3 The Physics of the Inclined Plane</p> <p><i>Electric Circuits</i> C-1 Series Circuits</p> <p><i>Electric Motor</i> C-2 Optimizing Performance</p> <p><i>Gravity Drop</i> C-1 Speed, Acceleration, and Free Fall C-2 Measuring Gravity C-3 Interpreting Graphs of Accelerated Motion</p> <p><i>Light and Optics</i> C-1 Light and Color</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation C-2 Improving the Range Equation C-3 Accuracy, Precision, and Error</p> <p><i>Pendulum</i> C-1 Energy Conservation and the Pendulum C-2 Newton's Second Law and the Pendulum C-3 The Physical Pendulum</p> <p><i>Rollercoaster</i> C-1 Motion on the Roller Coaster</p>

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					<p><i>Rollercoaster</i> B-1 Energy and the Rollercoaster B-2 Conservation of Energy B-3 Mass and Motion</p> <p><i>Ropes and Pulleys</i> B-1 Forces in Machines B-2 Work and Energy B-3 Efficiency</p> <p><i>Sound and Waves</i> B-1 Sound</p>	<p>C-2 Rotational Kinetic Energy C-3 Mass, Motion, and Energy</p> <p><i>Ropes and Pulleys</i> C-1 Simple and Complex Pulley Systems C-2 Compound Pulley System</p> <p><i>Sound and Waves</i> C-1 Standing Waves C-3 Natural Frequency and Resonance C-4 Sound</p>

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PS01.2 Physical Science	Inquiry, Process and Problem Solving	Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.	Evaluates procedures, data and conclusions to determine the scientific validity of research.	<p><i>Car and Ramp</i> A-2 Investigations and Experiments A-4 Describing Motion A-5 Gravity</p> <p><i>Light and Optics</i> A-1 Introduction to Light</p> <p><i>Marble Launcher</i> A-1 Launch Angle and Distance A-2 Launch Speed and Distance</p> <p><i>Rollercoaster</i> A-1 Speed on the Roller Coaster A-2 Height on the Roller Coaster</p> <p><i>Ropes and Pulleys</i> A-1 Ropes and Pulleys A-2 What is Work?</p>	<p><i>Air Rocket</i> B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion</p> <p><i>Car and Ramp</i> B-2 Investigating Speed B-3 Using a Scientific Model to Predict Speed B-4 Position and Time B-5 Acceleration B-7 Weight, Gravity, and Friction</p> <p><i>Electric Circuits</i> B-3 Ohm's Law</p> <p><i>Gravity Drop</i> B-2 Speed, Acceleration, and Free Fall B-3 Newton's Second Law</p> <p><i>Light and Optics</i> B-2 Polarization B-4 Ratios</p> <p><i>Marble Launcher</i> B-1 Launch Angle and Range B-3 Relating Launch Speed and Range</p> <p><i>Pendulum</i> B-1 Harmonic Motion</p> <p><i>Rollercoaster</i> B-1 Energy and the Rollercoaster B-2 Conservation of Energy B-3 Mass and Motion</p> <p><i>Ropes and Pulleys</i> B-1 Forces in Machines B-2 Work and Energy</p>	<p><i>Air Rocket</i> C-3 Acceleration and G-forces</p> <p><i>Car and Ramp</i> C-1 Uniform Accelerated Motion C-3 The Physics of the Inclined Plane</p> <p><i>Gravity Drop</i> C-1 Speed, Acceleration, and Free Fall C-2 Measuring Gravity</p> <p><i>Light and Optics</i> C-1 Light and Color C-5 Geometric Optics C-6 The Thin Lens Equation</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation C-2 Improving the Range Equation</p> <p><i>Pendulum</i> C-2 Newton's Second Law and the Pendulum</p> <p><i>Rollercoaster</i> C-1 Motion on the Roller Coaster C-2 Rotational Kinetic Energy C-3 Mass, Motion, and Energy</p> <p><i>Ropes and Pulleys</i> C-1 Simple and Complex Pulley Systems</p> <p><i>Sound and Waves</i> C-4 Sound</p>

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					<i>Sound and Waves</i> B-1 Sound	
PS02.0 Physical Science	Inquiry, Process and Problem Solving	Uses traditional reference materials to explore background and historical information regarding a scientific concept.	Uses traditional reference materials to explore background and historical information regarding a scientific concept.			<i>Light and Optics</i> C-1 Light and Color
PS02.1 Physical Science	Inquiry, Process and Problem Solving	Uses traditional reference materials to explore background and historical information regarding a scientific concept.	Uses current technologies such as CD-ROM, Internet and on-line data search to explore current research related to a science concept.			<i>Light and Optics</i> C-1 Light and Color

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PS03.0 Physical Science	Inquiry, Process and Problem Solving	Learns and uses on a regular basis standard safety practices for laboratory or field investigations.	Learns and uses on a regular basis standard safety practices for laboratory or field investigations.	<p><i>Electric Circuits</i> A-3 Current and Voltage</p> <p><i>Marble Launcher</i> A-1 Launch Angle and Distance A-2 Launch Speed and Distance</p> <p><i>Ropes and Pulleys</i> A-1 Ropes and Pulleys</p>	<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion</p> <p><i>Car and Ramp</i> B-7 Weight, Gravity, and Friction</p> <p><i>Electric Circuits</i> B-1 Voltage B-2 Current</p> <p><i>Marble Launcher</i> B-1 Launch Angle and Range</p> <p><i>Rollercoaster</i> B-3 Mass and Motion</p> <p><i>Ropes and Pulleys</i> B-1 Forces in Machines</p>	<p><i>Electric Circuits</i> C-1 Series Circuits C-2 Parallel Circuits C-3 Compound Circuits</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation</p> <p><i>Ropes and Pulleys</i> C-1 Simple and Complex Pulley Systems</p>

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PS03.1 Physical Science	Inquiry, Process and Problem Solving	Learns and uses on a regular basis standard safety practices for laboratory or field investigations.	Learns and uses safety procedures specific to an investigation or research activity.	<p><i>Electric Circuits</i> A-3 Current and Voltage</p> <p><i>Marble Launcher</i> A-1 Launch Angle and Distance A-2 Launch Speed and Distance</p> <p><i>Ropes and Pulleys</i> A-1 Ropes and Pulleys</p>	<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion</p> <p><i>Car and Ramp</i> B-7 Weight, Gravity, and Friction</p> <p><i>Electric Circuits</i> B-1 Voltage B-2 Current</p> <p><i>Marble Launcher</i> B-1 Launch Angle and Range</p> <p><i>Rollercoaster</i> B-3 Mass and Motion</p> <p><i>Ropes and Pulleys</i> B-1 Forces in Machines</p>	<p><i>Electric Circuits</i> C-1 Series Circuits C-2 Parallel Circuits C-3 Compound Circuits</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation</p> <p><i>Ropes and Pulleys</i> C-1 Simple and Complex Pulley Systems</p>
PS05.0 Physical Science	Matter: Structure and Properties	Quantifies mass, weight, volume, density, conductivity, and temperature as physical properties of objects in the learner's environment.	Quantifies mass, weight, volume, density, conductivity, and temperature as physical properties of objects in the learner's environment.		<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion B-5 The Acceleration of a Rocket</p> <p><i>Car and Ramp</i> B-6 Force, Mass, and Acceleration</p> <p><i>Gravity Drop</i> B-3 Newton's Second Law</p> <p><i>Rollercoaster</i> B-2 Conservation of Energy B-3 Mass and Motion</p>	<p><i>Air Rocket</i> C-3 Acceleration and G-forces</p> <p><i>Gravity Drop</i> C-2 Measuring Gravity</p> <p><i>Rollercoaster</i> C-3 Mass, Motion, and Energy</p>

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PS05.1 Physical Science	Matter: Structure and Properties	Quantifies mass, weight, volume, density, conductivity, and temperature as physical properties of objects in the learner's environment.	Measures and records in appropriate units, the quantifiable physical properties identified.		<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion B-5 The Acceleration of a Rocket</p> <p><i>Car and Ramp</i> B-6 Force, Mass, and Acceleration</p> <p><i>Gravity Drop</i> B-3 Newton's Second Law</p> <p><i>Rollercoaster</i> B-2 Conservation of Energy B-3 Mass and Motion</p>	<p><i>Air Rocket</i> C-3 Acceleration and G-forces</p> <p><i>Gravity Drop</i> C-2 Measuring Gravity</p> <p><i>Rollercoaster</i> C-3 Mass, Motion, and Energy</p>
PS07.0 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Describes the basic structure of the atoms as protons, neutrons and electrons in specific arrangements.	Describes the basic structure of the atoms as protons, neutrons and electrons in specific arrangements.	<p><i>Atom Building Game</i> A-1 Building Atoms A-2 Atomic Challenge A-3 Building Molecules</p> <p><i>Light and Optics</i> A-1 Introduction to Light</p> <p><i>Periodic Table Tiles</i> A-2 Groups of Elements</p>	<p><i>Atom Building Game</i> B-1 Comparing Atoms B-2 Nuclear Reactions Game B-3 Bonding and Molecules</p> <p><i>Periodic Table Tiles</i> B-1 Chemical Formulas</p>	<p><i>Atom Building Game</i> C-1 Electrons and the Periodic Table C-2 Photons and Lasers C-3 Valence Electrons and Molecules</p> <p><i>Light and Optics</i> C-1 Light and Color</p> <p><i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table</p>

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PS07.1 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Describes the basic structure of the atoms as protons, neutrons and electrons in specific arrangements.	Identifies relative location, size, and charge of subatomic particles.	<i>Atom Building Game</i> A-1 Building Atoms A-2 Atomic Challenge A-3 Building Molecules <i>Light and Optics</i> A-1 Introduction to Light <i>Periodic Table Tiles</i> A-2 Groups of Elements	<i>Atom Building Game</i> B-1 Comparing Atoms B-2 Nuclear Reactions Game B-3 Bonding and Molecules <i>Periodic Table Tiles</i> B-1 Chemical Formulas	<i>Atom Building Game</i> C-1 Electrons and the Periodic Table C-2 Photons and Lasers C-3 Valence Electrons and Molecules <i>Light and Optics</i> C-1 Light and Color <i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS07.2 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Describes the basic structure of the atoms as protons, neutrons and electrons in specific arrangements.	Relates the relative number of protons and electrons to chemical charge and reactivity.	<i>Atom Building Game</i> A-3 Building Molecules <i>Periodic Table Tiles</i> A-2 Groups of Elements A-3 Chemical Reactions	<i>Atom Building Game</i> B-3 Bonding and Molecules <i>Periodic Table Tiles</i> B-1 Chemical Formulas B-3 Chemical Equations	<i>Atom Building Game</i> C-3 Valence Electrons and Molecules <i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS07.3 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Describes the basic structure of the atoms as protons, neutrons and electrons in specific arrangements.	Defines radioactivity and describe the properties of radioactive elements and isotopes. Relates their importance to everyday life as in medicine, pollution, industry and electrical power.		<i>Atom Building Game</i> B-2 Nuclear Reactions Game	

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PS08.0 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Identifies the symbol, atomic number and mass of each of the first 20 elements in the periodic table.	Identifies the symbol, atomic number and mass of each of the first 20 elements in the periodic table.	<i>Atom Building Game</i> A-1 Building Atoms A-2 Atomic Challenge A-3 Building Molecules <i>Periodic Table Tiles</i> A-1 The Periodic Table A-2 Groups of Elements	<i>Atom Building Game</i> B-1 Comparing Atoms B-2 Nuclear Reactions Game B-3 Bonding and Molecules <i>Periodic Table Tiles</i> B-2 A Tour of the Periodic Table	<i>Atom Building Game</i> C-3 Valence Electrons and Molecules <i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS08.1 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Identifies the symbol, atomic number and mass of each of the first 20 elements in the periodic table.	Compares trends of chemical properties of periods and groups in the periodic chart.	<i>Periodic Table Tiles</i> A-3 Chemical Reactions	<i>Periodic Table Tiles</i> B-3 Chemical Equations	<i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS09.0 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Applies the law of definite proportions to predict mole quantities of chemicals that combine.	Applies the law of definite proportions to predict mole quantities of chemicals that combine.		<i>Periodic Table Tiles</i> B-3 Chemical Equations	<i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS09.1 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Applies the law of definite proportions to predict mole quantities of chemicals that combine.	Predicts whether two elements will chemically combine based on their position in the periodic chart.	<i>Periodic Table Tiles</i> A-3 Chemical Reactions	<i>Periodic Table Tiles</i> B-3 Chemical Equations	<i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS09.2 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Applies the law of definite proportions to predict mole quantities of chemicals that combine.	Applies rules for writing formulas of simple chemical compounds.	<i>Periodic Table Tiles</i> A-2 Groups of Elements	<i>Periodic Table Tiles</i> B-1 Chemical Formulas	<i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table

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PS09.3 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Applies the law of definite proportions to predict mole quantities of chemicals that combine.	Applies rules for naming simple chemical compounds.	<i>Periodic Table Tiles</i> A-2 Groups of Elements	<i>Periodic Table Tiles</i> B-1 Chemical Formulas	<i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS09.4 Physical Science	Atomic Theory and Patterns of Reactivity in the Periodic Table	Applies the law of definite proportions to predict mole quantities of chemicals that combine.	Classifies compounds as ionic or covalent.			<i>Periodic Table Tiles</i> C-1 Electrons and the Periodic Table
PS10.2 Physical Science	Chemical Reactions	Classifies common chemical reaction types as syntheses, decomposition, or single or double displacement.	Writes balanced chemical equations giving names of reactants and products.	<i>Periodic Table Tiles</i> A-3 Chemical Reactions	<i>Periodic Table Tiles</i> B-3 Chemical Equations	<i>Periodic Table Tiles</i> C-2 Challenging Chemical Equations C-3 Classifying Reactions
PS12.2 Physical Science	Energy	Analyze different types of energy in terms of sources, limits and uses, and environmental impact.	Describes the law of conservation of energy	<i>Rollercoaster</i> A-2 Height on the Roller Coaster	<i>Air Rocket</i> B-3 Pressure and Speed <i>Rollercoaster</i> B-1 Energy and the Rollercoaster B-2 Conservation of Energy <i>Ropes and Pulleys</i> B-2 Work and Energy	<i>Air Rocket</i> C-4 Energy and Power <i>Pendulum</i> C-1 Energy Conservation and the Pendulum <i>Rollercoaster</i> C-1 Motion on the Roller Coaster <i>Ropes and Pulleys</i> C-2 Compound Pulley System

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PS12.3 Physical Science	Energy	Analyze different types of energy in terms of sources, limits and uses, and environmental impact.	Compares the effectiveness of various methods of energy conversion.			<i>Air Rocket</i> C-4 Energy and Power
PS13.0 Physical Science	Interaction of Force and Motion	Identifies gravity as a force that is dependent upon mass and the distance between objects.	Identifies gravity as a force that is dependent upon mass and the distance between objects.		<i>Gravity Drop</i> B-1 Introduction to the Gravity Drop	

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PS13.1 Physical Science	Interaction of Force and Motion	Identifies gravity as a force that is dependent upon mass and the distance between objects.	Distinguishes among mechanical, atomic, gravitational, and electromagnetic forces.	<p><i>Atom Building Game</i> A-2 Atomic Challenge</p> <p><i>Car and Ramp</i> A-5 Gravity</p> <p><i>Gears and Levers</i> A-1 The Lever A-2 Gears A-3 Compound Gear Machines A-4 Designing Gear Machines</p> <p><i>Gravity Drop</i> A-2 Speed and the Gravity Drop A-3 Falling Motion</p> <p><i>Ropes and Pulleys</i> A-1 Ropes and Pulleys A-2 What is Work?</p>	<p><i>Air Rocket</i> B-5 The Acceleration of a Rocket</p> <p><i>Atom Building Game</i> B-1 Comparing Atoms B-2 Nuclear Reactions Game</p> <p><i>Car and Ramp</i> B-7 Weight, Gravity, and Friction</p> <p><i>Gears and Levers</i> B-1 Levers, Torque and Mechanical Advantage B-2 Gears and Rotating Motion</p> <p><i>Gravity Drop</i> B-1 Introduction to the Gravity Drop B-3 Newton's Second Law</p> <p><i>Marble Launcher</i> B-1 Launch Angle and Range</p> <p><i>Ropes and Pulleys</i> B-1 Forces in Machines B-2 Work and Energy B-3 Efficiency</p>	<p><i>Car and Ramp</i> C-3 The Physics of the Inclined Plane</p> <p><i>Gravity Drop</i> C-2 Measuring Gravity C-3 Interpreting Graphs of Accelerated Motion</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation</p> <p><i>Ropes and Pulleys</i> C-1 Simple and Complex Pulley Systems</p>

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PS13.2 Physical Science	Interaction of Force and Motion	Identifies gravity as a force that is dependent upon mass and the distance between objects.	Identifies and measures everyday forces such as gravity, rolling and sliding frictions, and other mechanical forces using common laboratory devices.	<i>Car and Ramp</i> A-5 Gravity <i>Gravity Drop</i> A-2 Speed and the Gravity Drop A-3 Falling Motion	<i>Air Rocket</i> B-5 The Acceleration of a Rocket <i>Car and Ramp</i> B-7 Weight, Gravity, and Friction <i>Gravity Drop</i> B-1 Introduction to the Gravity Drop B-3 Newton's Second Law <i>Marble Launcher</i> B-1 Launch Angle and Range <i>Pendulum</i> B-1 Harmonic Motion	<i>Car and Ramp</i> C-2 Newton's Second Law and Friction C-3 The Physics of the Inclined Plane <i>Gravity Drop</i> C-2 Measuring Gravity C-3 Interpreting Graphs of Accelerated Motion <i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation

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PS14.0 Physical Science	Interaction of Force and Motion	Measures and compares relationships among speed, velocity and acceleration.	Measures and compares relationships among speed, velocity and acceleration.	<p><i>Car and Ramp</i> A-3 Speed A-4 Describing Motion A-5 Gravity</p> <p><i>Gravity Drop</i> A-2 Speed and the Gravity Drop A-3 Falling Motion</p> <p><i>Rollercoaster</i> A-1 Speed on the Roller Coaster A-2 Height on the Roller Coaster</p>	<p><i>Air Rocket</i> B-1 The Air Rocket B-2 Motion of the Air Rocket B-3 Pressure and Speed B-4 The Rocket and Newton's Laws of Motion B-5 The Acceleration of a Rocket</p> <p><i>Car and Ramp</i> B-2 Investigating Speed B-3 Using a Scientific Model to Predict Speed B-4 Position and Time B-5 Acceleration B-6 Force, Mass, and Acceleration</p> <p><i>Gravity Drop</i> B-1 Introduction to the Gravity Drop B-2 Speed, Acceleration, and Free Fall B-3 Newton's Second Law</p> <p><i>Marble Launcher</i> B-2 Launch Speed and Range</p> <p><i>Rollercoaster</i> B-1 Energy and the Rollercoaster B-2 Conservation of Energy B-3 Mass and Motion</p>	<p><i>Air Rocket</i> C-3 Acceleration and G-forces C-5 Conservation of Momentum</p> <p><i>Car and Ramp</i> C-1 Uniform Accelerated Motion</p> <p><i>Electric Motor</i> C-2 Optimizing Performance</p> <p><i>Gravity Drop</i> C-1 Speed, Acceleration, and Free Fall C-2 Measuring Gravity C-3 Interpreting Graphs of Accelerated Motion</p> <p><i>Marble Launcher</i> C-1 Projectile Motion and the Range Equation C-2 Improving the Range Equation C-3 Accuracy, Precision, and Error</p> <p><i>Pendulum</i> C-2 Newton's Second Law and the Pendulum</p> <p><i>Rollercoaster</i> C-1 Motion on the Roller Coaster C-2 Rotational Kinetic Energy C-3 Mass, Motion, and Energy</p> <p><i>Ropes and Pulleys</i> C-2 Compound Pulley System</p> <p><i>Sound and Waves</i> C-2 The Speed of a Wave Pulse</p>

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Standard #: Course	Topic	Standard	Benchmark	Investigation Level A	Investigation Level B	Investigation Level C
PS14.1 Physical Science	Interaction of Force and Motion	Measures and compares relationships among speed, velocity and acceleration.	Describes experimentally the effect of unbalanced forces in overcoming inertia, including the effect of sliding, static and rolling friction.	Ropes and Pulleys A-1 Ropes and Pulleys	Air Rocket B-2 Motion of the Air Rocket B-4 The Rocket and Newton's Laws of Motion Car and Ramp B-6 Force, Mass, and Acceleration B-7 Weight, Gravity, and Friction Gravity Drop B-1 Introduction to the Gravity Drop B-3 Newton's Second Law Pendulum B-1 Harmonic Motion Ropes and Pulleys B-1 Forces in Machines B-3 Efficiency	Car and Ramp C-2 Newton's Second Law and Friction C-3 The Physics of the Inclined Plane Gravity Drop C-2 Measuring Gravity Ropes and Pulleys C-1 Simple and Complex Pulley Systems
PS15.0 Physical Science	Work and Power	Measures and/or calculates work and power using several examples from the learner's environment.	Measures and/or calculates work and power using several examples from the learner's environment.	Ropes and Pulleys A-2 What is Work?	Air Rocket B-3 Pressure and Speed Ropes and Pulleys B-2 Work and Energy B-3 Efficiency	Air Rocket C-4 Energy and Power Ropes and Pulleys C-1 Simple and Complex Pulley Systems C-2 Compound Pulley System
PS15.1 Physical Science	Work and Power	Measures and/or calculates work and power using several examples from the learner's environment.	Calculates the work done by simple machines and compares the force or direction of force applied.	Ropes and Pulleys A-2 What is Work?	Air Rocket B-3 Pressure and Speed Ropes and Pulleys B-2 Work and Energy B-3 Efficiency	Ropes and Pulleys C-1 Simple and Complex Pulley Systems C-2 Compound Pulley System

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PS15.2 Physical Science	Work and Power	Measures and/or calculates work and power using several examples from the learner's environment.	Calculates mechanical advantage and efficiency of simple machines.	<i>Gears and Levers</i> A-1 The Lever A-2 Gears A-3 Compound Gear Machines A-4 Designing Gear Machines <i>Ropes and Pulleys</i> A-1 Ropes and Pulleys A-2 What is Work?	<i>Gears and Levers</i> B-1 Levers, Torque and Mechanical Advantage B-2 Gears and Rotating Motion B-4 Machines with Gears and Levers <i>Ropes and Pulleys</i> B-1 Forces in Machines B-2 Work and Energy B-3 Efficiency	<i>Air Rocket</i> C-4 Energy and Power <i>Ropes and Pulleys</i> C-1 Simple and Complex Pulley Systems
PS15.3 Physical Science	Work and Power	Measures and/or calculates work and power using several examples from the learner's environment.	Identifies compound machines as combinations of simple machines and describes how the work is done.			<i>Air Rocket</i> C-4 Energy and Power
PS16.0 Physical Science	Waves and Energy Transfer	Relates frequency and energy of the electromagnetic spectrum.	Relates frequency and energy of the electromagnetic spectrum.	<i>Light and Optics</i> A-2 Color		
PS16.1 Physical Science	Waves and Energy Transfer	Relates frequency and energy of the electromagnetic spectrum.	Uses wave and particle theory to describe transmission, absorption, reflection, and refraction of light in the visible spectrum.	<i>Light and Optics</i> A-3 Rules of Reflection	<i>Light and Optics</i> B-3 Optical Technology	
PS16.2 Physical Science	Waves and Energy Transfer	Relates frequency and energy of the electromagnetic spectrum.	Experimentally develops how light interacts with lenses, mirrors, prisms, lasers and optical fibers.	<i>Light and Optics</i> A-3 Rules of Reflection	<i>Light and Optics</i> B-1 Seeing an Image B-3 Optical Technology B-4 Ratios	<i>Light and Optics</i> C-2 The Law of Reflection C-3 Refraction and Snell's Law C-4 The Convex Lens C-5 Geometric Optics C-7 Wave Properties of Light

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Standard #: Course	Topic	Standard	Benchmark	Investigation Level A	Investigation Level B	Investigation Level C
PS16.3 Physical Science	Waves and Energy Transfer	Relates frequency and energy of the electromagnetic spectrum.	Relates color to frequency of light.	<i>Light and Optics</i> A-2 Color		<i>Light and Optics</i> C-1 Light and Color
PS16.4 Physical Science	Waves and Energy Transfer	Relates frequency and energy of the electromagnetic spectrum.	Relates frequencies of the electromagnetic spectrum outside the visible range to technological advances (e.g. microwave, radiowave).			<i>Sound and Waves</i> C-1 Standing Waves
PS16.5 Physical Science	Waves and Energy Transfer	Relates frequency and energy of the electromagnetic spectrum.	Describes and varies properties of sound by changing temperatures or medium.		<i>Sound and Waves</i> B-2 Musical Sounds B-3 Standing Waves on a String B-5 Resonant Sounds	<i>Sound and Waves</i> C-5 Interference and Diffraction of Sound
PS17.1 Physical Science	Electricity and Magnetism	Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.	Demonstrates production of electrical charge in a chemical reaction (e.g. simple cell).	<i>Electric Circuits</i> A-1 What is a Circuit? A-3 Current and Voltage		
PS17.2 Physical Science	Electricity and Magnetism	Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.	Evaluates different methods of generating electricity such as electric induction or a simple, peizoelectric, thermoelectric or photoelectric cell.	<i>Electric Motor</i> A-3 How a Motor Works A-4 Designing Motors A-5 Measuring Current and Voltage	<i>Electric Motor</i> B-2 Electromagnets B-3 The Electric Motor B-4 Current, Voltage, and Power B-5 Generators	<i>Electric Motor</i> C-1 Introduction to the Electric Motor C-2 Optimizing Performance C-3 Generators and Faraday's Law of Induction

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Standard #: Course	Topic	Standard	Benchmark	Investigation Level A	Investigation Level B	Investigation Level C
PS17.3 Physical Science	Electricity and Magnetism	Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.	Builds series and parallel circuits to perform specific tasks.	<i>Electric Circuits</i> A-1 What is a Circuit? A-2 Types of Circuits A-3 Current and Voltage		<i>Electric Circuits</i> C-1 Series Circuits C-2 Parallel Circuits
PS17.4 Physical Science	Electricity and Magnetism	Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.	Measures and/or calculates current, voltage, and resistance at various points in series or parallel circuits.	<i>Electric Circuits</i> A-2 Types of Circuits A-3 Current and Voltage <i>Electric Motor</i> A-5 Measuring Current and Voltage	<i>Electric Circuits</i> B-1 Voltage B-3 Ohm's Law <i>Electric Motor</i> B-4 Current, Voltage, and Power	<i>Electric Circuits</i> C-1 Series Circuits C-2 Parallel Circuits C-3 Compound Circuits <i>Electric Motor</i> C-1 Introduction to the Electric Motor
PS17.5 Physical Science	Electricity and Magnetism	Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.	Illustrates the interactions of electricity and magnetism by using electricity to create a magnetic field and magnetic induction to create an electric field.	<i>Electric Motor</i> A-3 How a Motor Works A-4 Designing Motors A-5 Measuring Current and Voltage	<i>Electric Motor</i> B-2 Electromagnets B-3 The Electric Motor B-4 Current, Voltage, and Power B-5 Generators	<i>Electric Motor</i> C-1 Introduction to the Electric Motor C-2 Optimizing Performance C-3 Generators and Faraday's Law of Induction
PS17.6 Physical Science	Electricity and Magnetism	Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.	Describes the interplay of electric and magnetic forces as the basis for electric motors, generators, radio, television, computers, and other modern technologies.	<i>Electric Motor</i> A-3 How a Motor Works A-4 Designing Motors A-5 Measuring Current and Voltage	<i>Electric Motor</i> B-3 The Electric Motor B-4 Current, Voltage, and Power	<i>Electric Motor</i> C-1 Introduction to the Electric Motor C-2 Optimizing Performance