SCIENCE

RHINEBECK PRIORITIZED CURRICULUM

Grade 8

The Physical Setting

Standard 4:	**Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.**
Key Idea 1:	**The Earth and celestial phenomena can be described by principles of relative motion and perspective.**

Background:

The universe is comprised of a wide array of objects, a few of which can be seen by the unaided eye. Others can only be observed with scientific instruments. These celestial object, distinct from Earth, are in motion relative to Earth and each other. Measurements of these motions vary with the perspective of the observer. Cyclical changes on Earth are caused by interactions among objects in the universe

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Standard 4: Key Idea 1: Performance Indicator 1.1: Explain daily, monthly, and seasonal changes on Earth.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
1.1e Most object in the solar system have a regular and predictable motion. These motions explain such phenomena as a day, a year, phases of the Moon, eclipses, tides, meteor showers, and comets. 1.1g Moons are seen by reflected light. Our Moon orbits Earth, with Earth orbits the Sun. The Moon's phases as observed from Earth are the result of seeing different portions of the lighted area of the Moon's surface. The phases repeat in a cyclic pattern in about one month. 1.1h The apparent motions of the Sun, Moon, planets, and stars across the sky can be explained by Earth's rotation and revolution. Earth's rotation causes the length of one day to be approximately 24 hours. This rotation also causes the Sun and Moon to appear to rise along the Eastern horizon and to set along the western horizon. Earth's revolution around the Sun defines the length of the year as 365 $\frac{1}{4}$ days.	E E E	• Why does the appearance of the Moon change during the lunar cycle? • What illuminates half of the Moon? • Why does the Moon always rise in the East and set in the West? • Why is a lunar cycle about 29 days long? • At what time does a waxing half moon rise?	• Discussion with notes on overhead projector • Demo • Wipe board example on moon phases • Draw a picture of moon phases • Investigation: What phase rises at what time? • Build a model of the Sun, Earth, and Moon • Poster of Moon phases • Enactment with students playing Sun, Moon, and Earth	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections	

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Standard 4:	**Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.**
Key Idea 2:	**Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.**

Background:

Students should develop an understanding of Earth as a set of closely coupled systems. The concept of systems provides a framework in which students can investigate three major interacting components: lithosphere, hydrosphere, and atmosphere. Processes act within and among the three components on a wide range of time scales to bring about continuous change in Earth's crust, oceans, and atmosphere.

Vocabulary Note: It is understood that scientific vocabulary is an essential part of the study of science. Though not tested as in the past, students should be exposed to this vocabulary in a number of ways. Do not refrain from using this vocabulary in your daily classroom sessions, simply because it may not be tested directly. The assessment may not include the term nucleus, but will certainly ask questions regarding its function. Students need to be aware of the vocabulary to be familiar with for each unit.

Suggested Activities:
Prepare and distribute vocabulary list for each unit
Ask students to keep vocabulary in their journals or notebooks with general descriptions or definitions
Add pictorial representations
Distribute concept maps for students to complete by filling in the missing terms
Have students eventually create their own concept maps linking terms
Vocabulary bingo
Play classroom "Jeopardy"
"Ticket to Leave" – before leaving the classroom must give you (verbally or written) definition for requested term

Guiding Questions:

How do the lithosphere, hydrosphere and atmosphere interact?
How have the lithosphere, hydrosphere and atmosphere changed over time?
How are rocks affected by changes in the lithosphere, hydrosphere and atmosphere?

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Standard 4: Key Idea 2: Performance Indicator 2.1: Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
2.1a Nearly all the atmosphere is confined to a thin shell surrounding Earth. The atmosphere is a mixture of gases, including nitrogen and oxygen with small amounts of water vapor, carbon dioxide, and other trace gases. The atmosphere is stratified into layers, each having distinct properties. Nearly all weather occurs in the lowest layer of the atmosphere. 2.1b As altitude increases, air pressure decreases. 2.1d The majority of the lithosphere is covered by a relatively thin layer of water called the hydrosphere.	E E I	• What is the most common phase of matter on Earth? • What is the most common phase of matter in the universe? • What causes air pressure? • How does a change in air pressure affect the boiling temperature a liquid like water? Why?	• Discussion with notes on overhead projector • Demo- boil water at room temp by reducing pressure • Homework explanation • Draw a picture of water chains at different temperatures	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections	

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Standard 4:	**Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.**
Key Idea 3:	**Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.**

Background:

Objects in the universe are composed of matter. Matter is anything that takes up space and has mass. Matter is classified as a substance or a mixture of substances.
Knowledge of the structure of matter is essential to students' understanding of the living and physical environments. Matter is composed of elements, which are made of small particles called atoms. All living and nonliving material is composed of these elements.

Guiding Questions:

How is the motion of particles of a substance affected by its phase?
How could beach sand be separated according to the principles of mixtures?
How are different elements used in our everyday life?
How is a human's growth affected by physical and chemical changes?
Where does dry ice go?

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Standard 4: Key Idea 3: Performance Indicator 3.1: Observe and describe properties of materials, such as density, conductivity, and solubility.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
3.1a Substances have characteristic properties. Some of these properties include color, odor, phase at room temperature, density, solubility, heat and electrical conductivity, hardness, and boiling and freezing points. 3.1b Solubility can be affected by the nature of the solute and solvent, temperature, and pressure. The rate of solution can be affected by the size of the particles, stirring, temperature, and the amount of solute already dissolved. 3.1c The motion of particles helps to explain the phases (states) of matter as well as changes from one phase to another. The phase in which matter exists depends on the attractive forces among its particles. 3.1d Gases have neither a determined shape nor a definite volume. Gases assume the shape and volume of al closed container. 3.1e A liquid has definite volume, but takes the shape of a container.	I E E E E	• How do substances dissolve in water? • Why does hot water dissolve more solids, but less gases? • Why does it take so much energy to warm up water, compared to other substances? • How is a solid different from a liquid?	• Discussion with notes on overhead projector • Demo of solubility of solids and gases in water • Draw a picture of water chains at different temperatures • Individual check problem • Homework explanation • Formal lab on the solubility of KNO_3 • Build a model of intermolecular forces • Class worksheet on solubility chart • Formal lab on the density of wood blocks, irregular objects (gravel) and liquids	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab reports	

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Standard 4: Key Idea 3: Performance Indicator 3.1: Observe and describe properties of materials, such as density, conductivity, and solubility.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
3.1f A solid has definite shape and volume. Particles resist a change in position. 3.1g Characteristic properties can be used to identify different materials, and separate a mixture of substances into its components. For example, iron can be removed from a mixture by means of a magnet. An insoluble substance can be separated from a soluble substance by such processes as filtration, settling, and evaporation. 3.1h Density can be described as the amount of matter that is in a given amount of space, If two objects have equal volume, but one has more mass, the one with more mass is denser. 3.1i Buoyancy is determined by comparative densities.	E I E	• How is a solid different from a liquid? • What does density tell you about a substance? • What determines whether an object floats in a liquid? • How is a solubility chart read?	• Discussion with notes on overhead projector • Demo of solubility of solids and gases in water • Draw a picture of water chains at different temperatures • Individual check problem • Homework explanation • Formal lab on the solubility of KNO_3 • Build a model of intermolecular forces • Class worksheet on solubility chart • Formal lab on the density of wood blocks, irregular objects (gravel) and liquids	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab reports	

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Standard 4: Key Idea 3: Performance Indicator 3.2: Distinguish between chemical and physical changes.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
3.2a During a physical change a substance keeps its chemical composition and properties. Examples of physical changes include freezing, melting, condensation, boiling, evaporation, tearing, and crushing. 3.2b Mixtures are physical combinations of materials and can be separated by physical means. 3.2c During a chemical change, substances react in characteristic ways to form new substances with different physical and chemical properties. Examples of chemical changes include burning of wood, cooking of an egg, rusting of iron, and souring of milk. 3.2d Substances are often placed in categories if they react in similar ways. Examples include metals, nonmetals, and noble gases. 3.2e The Law of Conservation of Mass states that during an ordinary chemical reaction matter cannot be created or destroyed. In ordinary chemical reaction matter cannot be created or destroyed. In chemical reactions, the total mass of the reactants equals the total mass of the products.	I I E I I	• Why do chemicals react with each other? • What really goes on during a chemical reaction? • How can one tell whether a chemical reaction occurred? • In a chemical reaction, what happens to the number of atoms? • Why do metals and non -metals react differently? • Why are noble gases inactive?	• Discussion with notes on overhead projector • Demo of electrolysis of water and oxidation of hydrogen • Draw a picture • Individual check problem • Homework explanation • Build a model • Class worksheet on atom structure • Class worksheet on molecular structure • Demo on oxidation (complete and incomplete) of fuels like propane)	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes	

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Standard 4: Key Idea 3: Performance Indicator 3.3: Develop mental models to explain common chemical reactions and changes in states of matter.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
3.3a All matter is made up of atoms. 3.3b Atoms and molecules are perpetually in motion. 3.3c Interactions among atoms result and/ or molecules result in chemical reactions. 3.3d Atoms may join together in well-defined molecules or may be arranged in regular geometric patterns. 3.3e The atoms of any one element are different from the atoms of other elements. 3.3f There are more than 100 elements. Elements combine in a multitude of ways to produce compounds that account for all living and nonliving substances that we encounter. Few elements are found in their pure form. 3.3g The periodic table is one useful model for classifying elements. The periodic table can be used to predict properties of elements (metals, nonmetals, noble gases).	I E N E E E E	• How small are atoms? • What really happens to atoms when matter is warmed up? • Why do atoms get together to form molecules? • What makes one element different than another? • How many different molecules (compounds) can be made by combining two kinds of atoms (elements) like hydrogen and oxygen? • How are elements grouped in the periodic table? Why are they grouped this way?	• Discussion with notes on an overhead projector • Demo-Reactions between metals and non-metals • Demo-Activity of alkali metals K, Na and Li • Demo-Zn + Cu++ replacement reaction • Draw a picture of organic molecules like alkanes, alkenes and alkynes • Individual check problem • Homework explanation • Mini lab • Class notes on grouping atoms as metal, non-metal, or inert	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes	

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Standard 4:	**Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.**
Key Idea 4:	**Energy exists in many forms, and when these forms change energy is conserved.**

Background:

An underlying principle of all energy use is the Law of Conservation of Energy. Simply stated, energy cannot be created or destroyed.

Energy can be transformed, one form to another. These transformations produce heat energy. Heat is a calculated value that includes the temperature of the material, the mass of the material, and the type of the material. It should be noted that temperature is not a measurement of heat.

Guiding Questions:

How are the different forms of energy interrelated?
How do you use energy in your life?
How is energy involved in making ice cream?
What happens to energy when it changes from one form to another?
How do the different parts of the electromagnetic spectrum affect our lives?

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Standard 4: Key Idea 4 Performance Indicator 4.1: Describe the sources and identify the transformations of energy observed in everyday life.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
4.1a The Sun is a major source of energy for Earth. Other sources of energy include nuclear and geothermal energy. 4.1b Fossil fuels contain stored solar energy and are considered nonrenewable resources. They are a major source of energy in the United States. Solar energy, wind, moving water, and biomass are some examples of renewable energy resources. 4.1c Most activities in everyday life involve one form of energy being transformed into another. For example, the chemical energy, in gasoline is transformed into mechanical energy in an automobile engine. Energy, in the form of heat, is almost always one of the products of energy transformations. 4.1d Different forms of energy include heat, light, electrical, mechanical, sound, nuclear, and chemical. Energy is transformed in many ways. 4.1e Energy can be considered to be either kinetic energy, which is the energy of motion, or potential energy, which depends on relative position.	E I E E E	• Where does the energy contained in fuel, like gasoline, ultimately come from? • What energy do we have that does not come from the Sun? • What is the difference between renewable and non-renewable energy? • Do we need fossil fuels to run cars? • What are the different forms of energy? • How can one form of energy be converted into another? • In any energy transformation, what happens to: • The total amount of energy? • The amount of heat? • The amount of useful energy?	• Discussion with notes on overhead projector • Demo- electric motor generator • Demo- examples of energy transformation • Draw a picture of energy flow in simple machines • Homework explanation • Ramp lab- Work input, work output, and heat formed • Pulley lab • Class worksheet on energy conversions a) list of energy conversion b) dropping and bouncing ball c) roller coaster d) energy web	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab report	

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Standard 4: Key Idea 4: Performance Indicator 4.2: Observe and describe heating and cooling events.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
4.2a Heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature. 4.2b Heat can be transferred through matter by the collisions of atoms and /or molecules (by conduction) or through space by (radiation). In a liquid or gas, currents will facilitate the transfer of heat (convection). 4.2c During a phase change, heat energy is absorbed or released. Energy is absorbed when a solid changes to a liquid and when a liquid changes to a gas. Energy is released when a gas changes to a liquid and when a liquid changes to a solid. 4.2d Most substances expand when heated and contract when cooled. Water is an exception, expanding when changing to ice. 4.2e Temperature affects the solubility of some substances in water.	I I E E E	• How and why does heat flow when hot air is in contact with a cold window? • How do the three modes of heat transfer, conduction, convection and radiation work? • How are the three modes similar to sending a message? • What happens to energy when a bond is • Broken (i.e., melting) • Formed (i.e., freezing) • Why does hot water dissolve more solid? • Why does hot water dissolve less gas?	• Discussion with notes on overhead projector • Demo- Sending heat (a message) three different ways • Demo- Cooling curve of paradichlorobenzine • Homework explanation • Draw a picture of the melting/freezing and boiling/condensing of water • Lab- Solubility of KNO_3 as a function of temperature • Class worksheet on calorie problems	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab report	

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Standard 4: Key Idea 4: Performance Indicator 4.3: Observe and describe energy changes as related to chemical reactions.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
4.3a In chemical reactions, energy is transferred into or out of a system. Light, electricity, or mechanical motion may be involved in such transfers in addition to heat.	E	• Why do some chemical reactions give off heat (or energy) (exothermic), while others absorb heat (or energy)? • What are some examples when energy is released in a chemical reaction? • What are some examples when energy is absorbed in a chemical reaction? • What happens to the strength of bonds in the above reactions?	• Discussion with notes on overhead projector • Demo- Oxidation of hydrogen • Homework explanation	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes	

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Standard 4: Key Idea 4: Performance Indicator 4.4: Observe and describe the properties of sound, light, magnetism, and electricity.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
4.4a Different forms of electromagnetic energy have Different wavelengths. Some examples of electromagnetic energy are microwaves, infrared light, visible light, ultraviolet light, X-rays and gamma rays. 4.4b Light passes through some materials, sometimes refracting in the process. Materials absorb and reflect light, and may transmit light. To see an object, light from that object, emitted by or reflected from it, must enter the eye. 4.4c Vibrations in materials set up wave-like disturbances that spread away from the source. Sound waves are an example. Vibrational waves move at different speeds in different materials. Sound cannot travel in a vacuum. 4.4d Electrical energy can be produced from a variety of energy sources and can be transformed into almost any other form of energy. 4.4e Electrical circuits provide a means of transferring electrical energy. 4.4f Without touching them, material that has been electrically charged attracts uncharged material, and may either attract or repel other charged material. 4.4g Without direct contact, a magnet attracts certain materials and either attracts or repels other magnets. The attractive force of a magnet is greatest at its poles.	E E E I I E I	• What are the different kinds of electromagnetic (E+M) radiation? • How are the different forms of E&M radiation similar? Different? • Is E&M radiation good or bad? • Why is grass green? • What color results if a white beam of light is passed through a red filter and then through a green filter? Why? • If a red beam of light is mixed with a green beam, what color results? Why? • How does sound travel? • How are sounds and heat similar? Different? • Why does a positive or negative charge attract a neutral piece of material? • Why do like magnetic poles repel each other? • Why does a current carrying wire in a magnetic field get pushed?	• Discussion with notes on overhead projector • Demo- Color mixing • Demo- Retinal fatigue • Demo- How filters work • Demo- Wire in magnetic field • Homework explanation • Static electricity lab • Class worksheet on how light is formed • Class worksheet – Size of electron jump determines color • Build a model and let students represent molecules. Show how "sound" gets passed on	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab reports	

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Standard 4: Key Idea 4: Performance Indicator 4.5: Describe situations that support the principle of conservation of energy.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
4.5a Energy cannot be created or destroyed, but only changed from one form into another. 4.5b Energy can change from one form to another, although in the process some energy is always converted to heat. Some systems transform energy with less loss of heat than others.	E E	• What happens to the energy in any energy transformation? • Since we have hydrogen in almost limitless quantities (in the oceans), do hydrogen powered cars solve our energy problem? Why not? • What happens to the work put into a simple machine like a ramp or a pulley?	• Discussion with notes on overhead projector • Demo – ramp and pulley • Homework explanation • Ramp lab • Pulley lab	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab reports	

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Standard 4:	**Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.**
Key Idea 5:	**Energy and matter interact through forces that result in changes in motion.**

Background:

Examples of objects in motion can be seen all around us. These motions result from an interaction of energy and matter. This interaction creates forces (pushes and pulls), which produce predictable patterns of change. In studying motion, it is important for students to have the ability to observe, describe, and compare effects of forces on the motion of objects. Common forces would include gravity, magnetism, and electricity. Friction is a force that should always be considered in a discussion of motion.

When the forces acting on an object are unbalanced, changes in object's motion occur. The changes could include a change in speed or a change in direction. When the forces are balanced, the motion will remain unchanged. Understanding the laws that govern motion allow us to predict these changes in motion.

Guiding Questions:

How do changes in motion occur?
How different parts of electromagnetic spectrum affect our lives?
How can we be slowed down?
What causes an object to accelerate/decelerate?

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Standard 4: Key Idea 5: Performance Indicator 5.1: Describe different patterns of motion of objects.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
5.1a The motion of an object is always judged with respect to some other object or point. The idea of absolute motion or rest is misleading. 5.1b Its position, direction of motion, and speed can describe the motion of an object. That motion can be measured and represented on a graph. 5.1c An object's motion is the result of the combined effect of all forces acting on the object. A moving object that is not subjected to a force will continue to move at a constant speed in a straight line. An object at rest will remain at rest. 5.1d Force is directly related to an object's mass and acceleration. The greater the force, the greater the change in motion. 5.1e For every action there is an equal and opposite reaction.	I E E E I	• How can motion be described? • Why does an object change its motion? • What do the three Newton's Laws of Motion tell us? • Why does a big rock drop at the same rate as a smaller rock?	• Discussion with notes on overhead projector • Demo- Inertia Hoop • Homework explanation • Mini lab- How does friction affect Motion? • Class worksheet - Forces on a wagon	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes	

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Standard 4: Key Idea 5: Performance Indicator 5.2: Observe, describe, and compare effects of forces (gravity, electric current, and magnetism) on the motion of objects.					
Essential Knowledge/Skills (Major Understandings)	***Priority Code***	***Essential Questions***	***Classroom Ideas***	***Assessment Ideas***	***Time/Notes***
5.2a Every object exerts gravitational force on every other object. Gravitational force depends on how much mass the objects have and how far apart they are. Gravity is one of the forces acting on orbiting objects and projectiles. 5.2b The motion of an object can be described by its position, direction of motion, and speed 5.2c Machines transfer mechanical energy from one object to another. 5.2d Friction is a force that opposes motion. 5.2e A machine can be made more efficiently reducing friction. Some common ways of reducing friction include lubrication or waxing surfaces. 5.2f Machines can change the direction or amount of force, or the distance or speed of force required to do work. 5.2g Simple machines include a lever, a pulley, a wheel and axle, and an inclined plane. A complex machine uses a combination of interacting simple machines, e.g., a bicycle.	E I I E E E E	• What is the common name for "Force of Gravity"? • What determines the weight of an object? • Is there a force of gravity between any two objects? • How does friction affect motion? • How can we measure the amount of friction objects experience? • Why is a two-stranded pulley more efficient than a 6-stranded one?	• Discussion with notes on overhead projector • Demo- Cavendish experiment • Draw a picture of a peanut butter gun to show inverse square law • Ramp Lab • Pulley Lab • Class worksheet on ramps • Class worksheet on pulleys • Class worksheet on motion of a thrown object • Homework explanation	• Class participation • Quick quiz • Crossword puzzle • Homework (graded) • Chapter test • Test corrections • Class notes • Lab reports	

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Resource Materials

Title	Source	Title	Source
ADAM software	1600 River Edge Park 3800 Atlanta, GA 30328	Science Experiments in Chemistry & Physics By T.K. Williams	Mark Twain Media, 1995
Science 2000 software	BOCES Center for Instructional Support (CIS) 361-5660	Science Super Sleuths By Wood & Walker	Instructional Fair ISBN 1-56822-843-0
Life Science Enrichment Activities	Merrill	Science & Technology: How Things Work By D. Crotts	Frank Schaffer ISBN 0-86734-799-6
Teaching Resources Cells & Heredity	Prentice Hall Explorer	Hands On Science	Instructional Fair ISBN 1-56822-131-2
Doing Science by Neal Glasgow	Corwin Press, Inc. ISBN 0-8-39-6477-3	GEMS (Great Explorations in Math & Science)	Lawrence Hall of Science, University of California Berkeley, Ca. 94720
Assessing Student Outcomes By Marzano, Pickering, and McTighe	ASCD 1-800-933-2723 (ISBN 0-87120-225-5)	Exploring Physical Science Text and Resource Book	Prentice Hall ISBN 0-13-422833-2
Assessing Hands-On Science	Corwin Press ISBN 0-8039-6443-9	How to Assess Thoughtful Outcomes By Kay Burke	IRI/Skylight ISBN 0-932935-58-3
Investigate & Connect Physical Science	Instructional Fair ISBN 1-56822-479-6	Interdisciplinary Thematic Unit- "Energy"	Teacher Created Materials, Inc. ISBN 1-55734-569-4
50 Terrific Science Experiments Grade 5-8	Instructional Fair ISBN 1-56822-658-6	Physical Science By Marshall & Jacobs	American Guidance Service, Inc. ISBN 0-7854-1018-X
Earth Science for Every Kid By Janice Van Cleave	Wiley & Sons ISBN 0-471-53010-7	Physical Science-Discovering Science Series By Connie Blood	Frank Schaffer ISBN 0-86734-561-6
Our World	Usborne Publications (ISBN 0-590-92186-X) (usually available through Scholastic, Inc.)	Mr. Wizard's 400 Experiments in Science By Don Herbert	Book Lab Prism Productions, 1968 ISBN 87594-012-9
Creative Sciencing By Devito & Krockover	Scott Foresman ISBN 0-673-52008-0	333 Science Tricks & Experiments	TAB Books, 1984 ISBN 0-8306-1825-2

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Exploring Earth Science Lab Manual	Prentice Hall ISBN 0-113-80-7652-9	More Science Tricks & Experiments	TAB Books, 1984 ISBN 0-8306-1835-X
Integrated Science Activity Book	Prentice Hall ISBN 0-13-402199-1	100 Blackboard Science Activities	Fearon Teaching Aids ISBN 0-86653-920-4
Global Science Lab Manual	Kendall/Hunt ISBN 0-8403-7485-2	Concepts & Challenges in Physical Science	Globe Fearon ISBN 0-835-92253-7
Investigations in Science Chemistry	Creative Teaching Press	Science Plus-Tech & Society	HBJ ISBN 0-03-074958-1
Big Blast of Science By Bill Nye	Addison-Wesley ISBN 0-201-60864-2	Science Up to Standards	Instructional Fair ISBN 1-56822-748-5