Timeline ->	*Quarter One (12 lessons)*
Guiding Questions	***Science:*** What are the steps of the scientific method? What are the characteristics that define matter? How do matter and volume work together? (space and stuff) What is matter composed of? How do we identify atoms, elements and compounds using the Periodic Table of Elements? What are examples of the three states of matter? How can we describe physical changes in matter? How can we describe chemical changes in matter? ***Language Arts:*** What can we learn about the characteristics of matter by reading? How can we use a variety of reading strategies to understand science vocabulary? How can we write to show the steps we have used in the scientific method? How can we use adjectives to help our written science descriptions? ***Math:*** How can we determine which tool to measure specific items with and use it correctly? How can we calculate volume? Mass differences? How is a bar graph drawn to show totals with provided data? What conclusions can we draw from the data portrayed by the graph? What patterns can we see in the Periodic Table and how can we predict the repeating of those patterns for new elements? **Social Studies:** How can we use information to solve a societal problem? i.e. marketing and economics of volume/size, reading about size of pollution in specific areas..≥ Egypt - ***Art:*** How can we draw/illustrate and label sketches for a scientific notebook/portfolio? How can we create 3-D models of atoms (Modeling Atoms AIMS) using different media? How can we use music to remember the components of atoms? (ATOMS FAMILY)

General Learner Outcomes	***GLO#1: Self-Directed Learner:*** Students will be able to complete a series of experiments that helps them explore the characteristics of matter. Students will use the textbook as a resource to complete individual class and homework reading assignments. ***GLO#2: Community Contributor:*** Students will work together in groups or pairs to complete experiments. ***GLO#3: Complex Thinker:*** Students will use their problem solving, math and writing skills to investigate the properties of matter. ***GLO#4: Quality Producer:*** Students will create a final product (poster/model) that illustrates the various parts of atoms for specific elements or compounds. Students will create math products (graphs, data tables, charts) that enhance their lab/experiment reports. ***GLO#5: Effective Communicator:*** Students will listen, discuss and record information from their different lessons through oral, written and math pieces that illustrate concepts they have learned about the properties of matter. ***GLO#6: Effective and Ethical User of Technology:*** Students will use a variety of scientific equipment and tools to safely collect data from their experiments.
Assessments	Vocabulary, multiple choice and constructed response (math, language arts, science) that is based on the unit ideas and concepts on the Chapter 12 and 13 tests. An optional item would be the performance assessments also provided for each chapter. A summative product rubric will be used to assess the final science poster/model that each student produces.

Quarter Two – Sixth Grade – Inquiry & Chemistry

◊ *6.1.1* **Scientific Inquiry**
Formulate a testable hypothesis that can be answered through a controlled experiment

◊ *6.1.2* **Scientific Inquiry**
Use appropriate tools, equipment, and techniques safely to collect, display, and analyze data

· 6.6.5 **Nature of Matter**
Explain how matter can change physical or chemical forms, but the total amount of matter remains constant

· 6.6.6 **Nature of Matter**
Describe and compare the physical and chemical properties of different substances

· 6.6.7 **Nature of Matter**
Describe the organization of the periodic table

· 6.6.8 **Nature of Matter**
Recognize changes that indicate that a chemical reaction has taken place

· 6.6.9 **Nature of Matter**
Describe matter using the atomic model

Big Idea(s) / Major Understanding(s): *Students will understand that...*

Scientists use the process of scientific inquiry to answer questions and build knowledge about the natural world.

All objects and substances are made of matter.

Matter has distinguishing properties.

Atoms are the building blocks of matter and make up all elements, therefore all substances.

Different elements are made of different atoms.

There is a chart called the Periodic Table of Elements that organizes and displays elements according to their properties and atomic number sequence.

Matter is always conserved in all chemical reactions.

Chemical reactions produce physical and chemical properties.

Title	Basic goals of lesson – Students will be able to…
Chapter 12 Pretest	Score out of 21 points – Q20 is worth 1 pt for part A and 1 pt for part B Same test will be used for the post test. Scores need to be reported as "raw scores" not percentage
Chapter 14 Lesson 1 – What is the structure of matter?	Science Notebook – Table of Contents (45 min.) • "Matter and Chemistry" unit • Today's Lesson Title "What is Matter?" page p.438-439 a) Students will do Formative assessment – KWL What do I know about matter? What do I want to learn about matter? in science notebook on page 1 b) Chapter 14 – **5th GRADE TEXTBOOK** Matter pp. 438-439 reading about matter. c) Work with main ideas and details from the reading for the workshop portion – have students create notes to cover this section in their science notebook in the L (what I learned) section d) Use the questions for the "interpret visuals" and "inquiry skills" from the teacher's guide. e) Finish period with a final reflection "Clear and foggy" Use icons/symbols for clear and foggy next to the written ideas f) Pocket folder placed in notebook prior to next lesson****
AIMS Marvelous Matter (Rubber Band Book) AIMS Oh Dear What Could this Matter Be? (p. 9 Venn) It's a Matter of Stuff and Space (p11-17) • Types of matter • Solid, liquid, gas	Part II: Setting the Foundation for Labs: Set the tone – Safety, one chance to misbehave …. Excitement is tough to control, students want to jump ahead…use methods to get their attention (3,2,1 -) and move groups forward together. ISSUE some sort of lab safety contract 1) RUBBER BAND book "Marvelous Matter" pp. 5-8 2) Then do the VENN diagram comparing solid, liquids & gasses. 3) Define matter – has mass and takes up space using regular items in the classroom pp. 11-17 AIMS **"It's a Matter of Stuff and Space"** a) Lab: Measure linear volume and mass using a graduated cylinder and balance (60 min.) Use a marble if you have smaller graduated cylinder, otherwise use the golf balls and the beaker. Set up groups of 2-4 students. *take time to teach about meniscus, what tools to use, metrics, … b) VENN diagram at end with after lab – add the lab items to the already been filled in VENN on solids, liquids and gasses. 4) Complete a written reflection "Connected Learning" (p. 10) constructed response in science notebook (15 min.)
AIMS Make Room for Me (p22-29)	SCIENCE BLOCK (90 min): a) Write title of lesson in science notebook Table of Contents and on page 4 b) Teacher presents goals and key questions for lesson and notes for students to write in science notebook (15 min) Equipment and supplies NOTES:

	a) train students with the meniscus to measure accurately with the graduated cylinder – check students for understanding and accuracy. b) Perhaps have students write in numbers on pictures of graduated cylinders – glue in notebook/resource book ****Use the same size baby food jars***** c) Part 2 – use rock salt (Epsom Salt) d) Part 3 – use sand Management idea – spinner and roles done randomly. a) use inquiry skills to combine different liquids and solids and record results (teacher note – be sure to check the meniscus of each grad. Cylinder to be sure that it measures 50/50. b) measure and combine volumes of different substances c) collect results and explain how different materials have spaces between them (use regular salt, round marbles, don't use aquarium marbles, dried round garbanzo beans) d) complete the written reflection "Connected Learning" higher level questions about space between matter was difficult =- perhaps create some analogies in real world -the key idea is about volume (takes up space) i.e. large Tupperware vs. tall narrow Tupperware i.e. both containers are 2 quarts…then using candy/water (measure the amount of water to fill to one up – then compare to the other, should be the same amount of VOLUME (space)
Chapter 12 Lesson 1: What is Matter Composed of? (pp. 450-457)	Individual reading on the structure of matter (text pp. 452-453) to confirm/revise vocabulary definitions. Use the Lesson 1 "What is Matter Composed of" and "Atoms and Elements" worksheet RS-95 for the matter definitions. SCIENCE BLOCK – Black Boxes pp. 217-219 (optional lesson) 1) Use Black Boxes with AIMS worksheet to address making inferences about unseen objects (30 minutes) hint…boxes contain Capital Letter with a marble. Students will answer the Connected Learning questions on the lab worksheet. 2) Compare how atomic models, just like the black boxes, were developed by scientists – knew something was there, collected evidence to show that even though they couldn't see it
Chapter 12 Lesson 2: What are elements and compounds? (pp. 458-467)	Students will read pp. 460-461 in text. Then in science notebook, students will record definitions. • Continue to read pp. 462-463 in text about the Periodic Table and record definition. Have students do the questions in both the Key Science Concepts and the Interpret Visuals for the Table - answer in notebook. 1) Use the Fabulous Periodic Eggs "Key Question and Learning Goals" 2) Read AIMS reading p. 204 "Periodic Table of the Elements" to supplement what they have just read in the text. Have students use the reading to add information to their notes/questions in their notebook about elements and the Periodic Table

Fabulous Periodic Eggs pp.197-204 AIMS	a) In science notebook students will record title "Fabulous Periodic Eggs" as page 6 in Table of Contents. b) Students will record key question and learning goals (p. 199 AIMS) c) sort and classify a set of eggs d) use vertical/horizontal axes to sort "mystery eggs" using classification schema e) explain and defend how they organized their eggs – then teacher will model answer key - students answer the Connected Learning questions on p.6 in their notebook.
(OPTIONAL) It's Elemental My Dear AIMS	Read AIMS "It's Elemental My Dear" together as a class. Hand out worksheet (same title). Students record title of worksheet in their portfolio Table of Contents • Model one example from the first part with elements. Have students complete the other single elements. • Model one example of a compound and have students fill in the rest of the compounds on their own. • Finish period with students answering Connected Learning questions on back of lab worksheet "Its Elemental My Dear"
Modeling Atoms pp. 223-228	AIMS – connected to assessment where students create a model of a specific atoms Teachers Guide pp. 220-223 (lesson plan)
Chapter 12 Lesson 3: What are the states of matter? (pp. 468-475)	1. Students will read pp. 470-471 in text. 2. Then in science notebook, students will work through questions on transparency RS44 by answering in their notebook. 3. Students finish reading section pp. 472-474. 4. *******Students complete worksheet RS100-101 possible assistance from teacher (may want to model answering Q1) Discovery Ed – "What's the matter?"
Kool Kups pp. 87- phase changes condensation	a) observe changes to the three states of matter (water) b) explain that water on the outside came from the air (condensation) not from the glass c) measure temperature d) complete written reflection "Connected Learning" e) Test with other types of cups (Styrofoam, etc.)
Watch it Burn physical properties • phases/states of matter	Create the Reader booklet on states of matter – place reader booklet in Science Portfolio ***use birthday candles that have the holder thingy on the bottom with the pick to go in the cake*** 1. Fire hazard note – halo can also cause the paper to burn 2. Blow out the candle and measure every minute instead of every 30 sec. a) identify basic properties of matter b) identify the three states/phases of matter c) observe/record data on matter changing states d) linear measurement (ruler) and mass e) graph data f) READER "The Candle Flame Exposed" to reinforce Connected Learning

Review and test for Chapter 12!!!	Use their notebook and portfolio to review – create a review note sheet… SCIENCE BLOCK: Test – consider using the performance assessment as well…

Chapter 13 – HARCOURT TEXT LESSONS

Lesson #	Title	Basic goals of lesson – Students will be able to…
Harcourt	Pretest Chapter 13	• Give pretest prior to lessons
1 HTEXT	What are the physical properties of matter? LESSON 1	• Calculate density of objects • Identify physical properties that can be measured and observed • Describe physical changes
2 HTEXT	What are mixtures? LESSON 2	• Describe how mixtures are made • Describe how to separate mixtures • Identify mixtures and solutions
3 HTEXT	What are chemical properties of matter? LESSON 3	• Compare chemical and physical changes • Describe different chemical reactions • Describe how to prevent chemical reactions
4 AIMS + MSP Lesson Plan	Change Matters • physical changes • chemical changes	a) define and be able to identify physical & chemical changes b) classify changes in matter by collecting, graphing and analyzing data c) Complete written reflection – Connected Learning
MSP Lesson Plans (2)	1. Things that Change 2. What are Mixtures	Optional
5 AIMS	Mixed Reactions • chemical reaction • gas/temperature changes • testing reactions	a) conduct tests to check for a chemical reaction b) classify the tests – chemical reaction or not c) identify the production of gas or change in temperature as evidence for a chemical reaction d) measure volume in ml and temperature
6 HTEXT	What are acids and bases? LESSON 4	• Classify compounds as acids or bases • Explain how indicators are used • Describe uses of acids and bases
AIMS	It's a Good Indicator	Creating a Model for measuring pH
	CHAPTER 13 TEST	•
	Mystery Reactions *** Performance Assessment***	a) make observations of all substances b) test substances with liquids and observe reactions c) measure pH of substances d) predict components of mystery substance based on prior observations/data collect

Master materials list

Lesson #	Title	
1	It's a Matter of Stuff and Space	12" round balloon, 2 wooden blocks, ruler, golf ball, grad cylinder, 9-oz clear cup, balance w/masses
2	Make Room for Me	Unpopped popcorn, sand, large marbles, 2 100-ml grad cylinders, baby food jar, rock salt, water, rubbing alcohol, eyedropper, safety goggles
3	Watch it Burn	Matches, balance w/masses, birthday candle, clay, foil square, cardboard square (6 cm x 6 cm), rulers, colored pencils
4	Kool Kups •	Ice, 2 9-oz clear cups, drink mix, white paper towel, 2 thermometers, rubber bands
5	Fabulous Periodic Eggs	Cardstock eggs, egg box sheet, scissors, periodic table
6	It's Elemental, My Dear	Reading information, periodic table
7	Modeling Atoms	Dots (red, white, blue), Beads (red, white, blue) Pipe cleaners (15 cm), 3 pieces of different color clay, 1 clear plastic craft ball (xmas ornament), clear plastic wrap (10 sq cm)
8	Change Matters	Ice, 5 clear cups, steel wool, tongs, vinegar, paper towels, plastic spoon, 35 mm film canister, baking soda, plastic knife, apple, match, candle, clay, foil, water, index card
9	Balancing Bottles	Balance w/ masses, 2 9" round balloons, 2 plastic drink bottles, 4 seltzer tablets, 100 ml grad cylinder
10	Mixed Reactions	Timer, hydrogen peroxide, calcium chloride, baking soda, vinegar, sugar, salt, bucket/tub(6 stations), paper towels, trash tub (6 stations), station cards 1 9-oz clear cup, plastic spoon, thermometer
11	Mystery Reactions *** Performance Assessment***	8 of each: film canister, mystery sub, testing card – fill with sugar, salt, flour, baking soda, powdered lime, plaster of paris, baking powder, cornstarch Stations: cup of water, eyedropper, iodine soln, eyedropper, hand lens, ph paper, water, eyedropper, wooden clothespin, aluminum foil, candle (heat source), vinegar, eyedropper