Timeline ->	***Quarter Three (12 lessons)***
Guiding Questions	***Science:*** How can we see where light travels and what it travels through? What are transparent, translucent and opaque materials and how do they affect light? How can you use mirrors and a light source to solve a problem? What can various materials insulate from or conduct heat? How is sound made and how does it travel? ***Language Arts:*** What can we learn about the Egyptian's built the interior chambers of the pyramids by using reflected light by reading? How can we write to show the steps we have used in the scientific method? How can adjectives help our written science descriptions? ***Math:*** How can Venn diagrams help sort items that are the same or different? How is a bar graph drawn to show totals with provided data? What conclusions can we draw from the data portrayed by the graph? How can we use mathematics processes to solve problems? ***Social Studies:*** How can we use information to solve a societal problem? What are the cultural connections to the use of light and sound? ***Art:*** How can we draw/illustrate and label sketches for a science notebook? How can we create 3-D models to showcase sound?
General Learner Outcomes	***GLO#1: Self-Directed Learner:*** Students will create ……. ***GLO#2: Community Contributor:*** Students will share ***GLO#3: Complex Thinker:*** Students will use their problem solving, math and writing skills to investigate ***GLO#4: Quality Producer:*** Students will create a final product (poster/diorama/model) that illustrates the Students will create math products (graphs, data tables, charts) that enhance posters and diorama.

	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. Students will orally share with younger students their final products.
Assessments	Formative and summative textbook assessments. Constructed response (math, language arts, science) that is based on the unit ideas and concepts A summative product rubric will be used to assess the final science poster/diorama/model that each student produces. The rubric criteria will include assessment of the presentation of concepts learned, as well as the written and drawn presentation quality. Oral communication of final project

Standards & Benchmarks

Topic	Scientific Inquiry		
Benchmark SC.3.1.1	Pose a question and develop a hypothesis based on observations		
Sample Performance Assessment (SPA)	The student: Brainstorms different types of questions and develops a question and hypothesis based on observations.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Pose a question and develop a hypothesis based on logical inferences and observations	Pose a question and develop a hypothesis based on observations	Pose a question or develop a hypothesis partially based on observations	With assistance, pose a question or develop a hypothesis
Benchmark SC.3.1.2	Safely collect and analyze data to answer a question		
Sample Performance Assessment (SPA)	The student: Safely collects and organizes data using tables, charts, and/or graphs to explain what happens in an experiment.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Summarize and share analysis of data collected safely to answer a question	Safely collect and analyze data to answer a question	With assistance, safely collect and analyze data	With assistance, safely collect data and attempt to analyze data
Topic	Energy and its Transformation		
Benchmark SC.3.6.1	Define energy and explain that the sun produces energy in the form of light and heat		
Sample Performance Assessment (SPA)	The student: Defines energy and gives examples of the effects of sun energy (e.g., appearance and temperature of an object placed in the sun and shade).		
Rubric			

Advanced	Proficient	Partially Proficient	Novice
Explain how energy from the sun provides heat and light for the Earth and compare that energy to other forms of energy	Define energy and explain that the sun produces energy in the form of light and heat	With assistance, give examples of the sun producing energy in the form of light and heat	Recognize that the sun provides energy for the Earth in the form of light and heat
Topic	Waves		
Benchmark SC.3.6.2	Explain how things make sound through vibrations		
Sample Performance Assessment (SPA)	The student: Describes how musical instruments (e.g., guitar, violin, and trumpet) create vibrations in objects to produce sound.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Compare, explain, and give examples that demonstrate how different things make sound through vibrations	Explain how things make sound through vibrations	List things that make sound through vibrations	Recall that things make sound through vibrations
Benchmark SC.3.6.3	Explain how light traveling in a straight line changes when it reaches an object		
Sample Performance Assessment (SPA)	The student: Uses examples of light traveling in a straight line (using shadows or flashlights) to explain how it changes when it reaches an object.		
Rubric			
Advanced	**Proficient**	**Partially Proficient**	**Novice**
Predict how light traveling in a straight line will change when it reaches an object	Explain how light traveling in a straight line changes when it reaches an object	Provide examples of what happens when light traveling in a straight line reaches an object	Recall ways that light traveling in a straight line will change when it reaches an object

Lessons Summary

Lesson Day #	Lesson Title	What students will be able to know, do & understand
	Harcourt Text	**Pretest** "Heat, Light and Sound"
		Vocabulary Sheet – students build along the way (spelling homework folder or portfolio) Check teacher resources for the "vocabulary cards with words/pictures
LIGHT		
1	Evan Moore Corp: Light Travels in a Straight Line	WHAT IS LIGHT? Simple demo – flashlight, cardboard pieces with circles in the middle Exploring how light travels in a straight line unless it encounters a block (like an opaque item)
	Harcourt Text Chapter 14 - Lesson 2	What is Light? Textbook pp. 467-471 Questionnaire "What is Light?" based on the textbook Lab/demo Where does Light Go?
AIMS	Light Sources	
option	Pete's Powerpoint	Light ppt games etc.
2	How Much Light Passes Through	Worksheet - "How Much Light?" Test a variety of objects and a light to see how much light passes through. Students list items in the 3 categories (opaque, translucent, transparent) on the recording sheet
AIMS	Just Passing Through	What happens when light strikes these objects? Shadows
	Harcourt Text	Light & Color – "Making Rainbows" p. 473 Lesson Quick Study RS106-107 Magic School Bus (Discovery Ed) "Makes a Rainbow"
AIMS	Light Rays Slow Down	Refraction (bending of light)
AIMS	What Does a Mirror Do?	What can a mirror do? Pp.6-8 Ray's Reflections Key Question – Learning Goals to start Student recording worksheet "What Does a Mirror Do? P. 9 Class discusses, teacher records answers and Students copy answers (sped all together to get help)
	READING + DVD (optional) ENGAGE	Connection to Egyptian's – pyramid and light and building inside Indiana Jones (1st one) or 5th Element with shining light scene (beginning)
4	Pharaoh's Chamber pp. 11-27	Groups of 3-4 students – have students build the model together (15 min.) 1st lesson, draw the path of the light with a pen Students work collaboratively to shine the light and aim the mirror

5	Pharaoh's Chamber	Debrief and discussion – pick and choose the appropriate questions Student worksheet "The Pharaoh's Chambers – plan & discuss Hieroglyphics Decoding – Extension
6	Optional Activity: Mirror Twins pp. 161-170	Math: vertical and horizontal symmetry Student experiment and recording results in a VENN diagram
SOUND		
	What is Sound? Chapter 14 – Lesson 4	What is Sound? Worksheet All About Sound – video Magic School Bus "In the Haunted House"
AIMS	Musical Instruments	Learning Center with real instruments and materials to make Simple instruments
AIMS	Sound is Vibration	How sound is made….
AIMS	Crowing Cups	Worksheets from AIMS Option – use parent helpers at two stations with glue guns to assist students put on eyes Tray with pieces of tape all around the edge and the beaks, eyes, head Give some teaching time to allow glue to dry. P. 106
AIMS	The Lion that Roars (optional)	Can sound travel on a string
AIMS	Traveling Sounds (optional)	How do sounds traveling through solids, liquids and gas compare?
	Summative Assessment	Light & Sound Quiz Mirror Writing – performance assessment
HEAT		
	Harcourt Text	Lesson 1 – What is Heat Lesson Quick Study RS102-103 Vocabulary Power
AIMS	What is Temperature?	Reading and using a thermometer
AIMS	Melt an Ice Cube	How fast does an ice cube melt? What is the best insulating material that can be used to keep ice from melting?
AIMS	Heat and Color	What colors – dark or light – absorb heat better?
	Harcourt Text	**Post test** "Heat, Light and Sound"
	SOLAR OVEN Optional	Cumulative project (heat energy to cook)