CRM 1 Inquiry	**Pacing** • **14 days** • **Aug. 27-Sept.14** • **Weeks 1-3**

DESIRED RESULTS

Making Meaning

The study of elementary science is multifaceted and requires a variety of student experiences to build understanding of the nature of science including the following:

- Understanding the nature and development of scientific knowledge.
- Participating safely and productively in scientific inquiry and discourse in lab and field experiences at varying degrees of independence.
- Knowing, using and interpreting scientific explanations of the natural world.
- Using scientific observations and tools to collect data to generate and evaluate evidence and explanations.

Transfer: Scientific literacy is established in learning to conduct an investigation and collect evidence from a variety of sources, develop an explanation from the data, and communicate and defend conclusions.

Enduring Understandings:

- Scientists raise questions about the world around them and seek answers by careful observation and investigation.
- Scientists give reasons (evidence) for their claims and conclusions and consider reasons suggested by others.
- Scientists keep a notebook as a thinking tool and use questions, diagrams, charts, graphs, conclusions, and wonderings to record and share their thinking.
- Scientists use tools and safety measures to investigate the natural world.

Essential Questions:

- How do we raise questions and seek answers about the world around us?
- How do we record and share our observations, thinking, and conclusions in science?
- What tools and safety measures do scientists use to investigate the natural world?

Essential Vocabulary

- compass / brújula
- conclusion /conclusion
- data / datos
- electricity/electricidad
- electrical charges/corriente electrica
- evaluate / evaluar
- evidence / evidencia
- graduated cylinder / cilindro graduado
- hypothesis/hipótesis
- inference / inferencia
- inquiry/pregunta/cientifica
- limitation /limitatión
- microscope/ miscroscopio
- predict / predecir
- property/ propiedad
- reasonable/razonable
- reliable / confiable
- represent / representar
- results/resultado
- safety rules/ procedimientos de seguridad
- spring scale / bascule de resorte
- static/estático
- thermometer/termómetro
- valid / válido
- variables/ variables

Supporting Vocabulary Link

- Elementary School Supporting Vocabulary

Student Prerequisite Knowledge

Students should know:

- safe practices, apparel, and procedures in the classroom and out of doors.
- questioning the world around us is natural.
- there is more than one way to answer a question.
- descriptive investigations involve data collection and analysis.

- pictures, numbers, graphs, and words can be used to record data.
- explanations are justified by evidence.
- predictions are based on observable patterns.
- many types of tools can be used to collect, record, and compare information.
- properties of matter may be observed and identified.
- patterns exist in the natural world.
- organisms and objects can be measured and compared.

Resources: AISD Module Kit, Model Lesson Portfolio, STEMscopes, eBooks: Envisions Science Leveled Readers, Scott Foresman Text, Science Notebook Resources

ELPS: Mandated by Texas Administrative Code (19 TAC §74.4), click on the link for English Language Proficiency Standards (ELPS) to support English Language Learners.

TEKS Knowledge & Skills	**Acquisition**	
STAAR: RC = Reporting Category; DC = Dual Coded Skills; **Readiness Standard**; ***Supporting Standard*** ~~Concepts~~ are addressed in another unit.	**Students Will Know**	**Students Will Be Able To**
3.1: Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:		
3.1A: demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat.	• Know safety procedures and tools to use, environmentally appropriate and ethical practices during science investigations.	• Practice safety during investigations. • Use safety, tools and equipment as needed during lab and investigations.
3.1B: make informed choices in the use and conservation of natural resources by recycling or reusing materials such as paper, aluminum cans, and plastics.	• Know appropriate procedures for disposal, recycling, and conservation of materials.	• Make informed decisions in the use of materials.
3.2: Scientific investigation and reasoning. The student uses scientific methods during laboratory and outdoor investigations. The student is expected to:		
3.2A: plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world.	• Know scientific equipment uses. • There are different types of investigations (comparative, descriptive, and experimental). • There is more than one way to answer a question. • A hypothesis contains an if/then statement.	• Describe, plan, and implement investigations. • Ask testable questions. • Describe, plan, and implement investigations to answer questions and solve problems. • Select and use equipment and technology appropriately.
3.2B: collect data by observing and measuring using the metric system and recognize differences between observed and measured data.	• Know metric units of measurement. • Know different tools measure properties of matter. • Know metric standards of measurement	• Use appropriate tools to collect information. • Understand the difference between observed and measured data.
3.2C: construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data.	• Know which graph is appropriate to evaluate data. • Tables, charts and graphs are used to communicate results and measured data.	• Use collected data to construct maps, graphic organizers, simple tables, charts, and bar graphs in Interactive Notebooks and using computers.
3.2D: analyze and interpret patterns in data to construct reasonable explanations based on evidence from	• Patterns exist in data. • Evidence is documented in pictures, drawings, and recorded data.	• Analyze and interpret patterns in data. • Construct reasonable explanations

investigations.		based on evidence collected from investigations.
3.2E: demonstrate that repeated investigations may increase the reliability of results.	• Detailed observation records must be recorded for accuracy to be repeated.	• Record and compare data from several repeated investigations. • Repeat investigations to increase reliability.
3.2F: communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.	• Evidence supports conclusions. • Conclusions are based on documented evidence. • Scientific vocabulary is necessary to communicate findings and results.	• Document evidence in writing, data collection tables, pictures, and measurements. • Communicate valid conclusions. • Use collected evidence to support conclusions and claims.
3.3: Scientific investigation and reasoning. The student knows that information, critical thinking, scientific problem solving, and the contributions of scientists are used in making decisions. The student is expected to:		
3.3A: in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.	• Scientists evaluate and critique the work of other scientists. • Evidence must be evaluated from all points of view.	• Analyze, evaluate, and critique scientific explanations. • Question and examine all sides of scientific evidence.
3.3B: draw inferences and evaluate accuracy of product claims found in advertisements and labels such as for toys and food.	• Product claims are sometimes made that are not based on scientific data. • Understand the need to evaluate the accuracy of promotional materials.	• Conclude the accuracy of product claims by making inferences and evaluating.
3.3C: draw or develop a model that represents how something works or looks that cannot be seen such as how a soda dispensing machine works.	• Know the limitations of a model.	• Draw or develop a model that represents how something works or looks. • Draw to scale.
3.3D: connect grade-level appropriate science concepts with the history of science, science careers, and contributions of scientists.	• Scientific thought is refined as technology increases. • Know the contributions scientists have made over time.	• Connect classroom and field investigations to science careers and contributions of scientists over time.
3.4: Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:		
3.4A: collect, record, and analyze information using tools, including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting	• Many types of tools can be used to collect, record, and analyze information. • Interactive Notebooks are used as a thinking and recording tool in science.	• Use tools and materials to collect, record and analyze data during investigations of the natural world.
3.4B: use safety equipment, including safety goggles and gloves.	• Know how, why, and when to use safety equipment appropriately.	• Use safety equipment when appropriately in labs. • Wear gloves and safety goggles

		when needed.

ASSESSMENT EVIDENCE

Student Work Products/Assessment Evidence

Performance Tasks	Other Evidence (i.e. unit tests, open ended exams, quiz, essay, student work samples, observations, etc.)
• Directed Inquiry: Static Electricity Lab • Guided Inquiry: Generating Static Electricity Lab • Guided Inquiry: Force of Static Electricity Lab • Guided Inquiry: Measuring Static Electricity Lab • Guided Inquiry: Make a Spark • Guided/Full Inquiry : Make an Electroscope Lab	**Short Cycle Assessment** • *SCA Testing Window: September 17-21* *Tested TEKS: 3.1, 3.2, 3.3, 3.4* **Additional Suggestions for Assessment** • Measure accurately and appropriately with science tools • Interactive Notebook entries: lab safety contract, students' reflections, vocabulary, observations, drawings, etc. • Data collected and recorded from the use of various science tools. • Inquiry Board questions • Students write about contributions of scientists and identify career choices • Teacher observations: Use of safety rules and equipment • Teacher observations: management and use of tools • Tools foldable/web in Interactive Notebook

LESSON PLANNING TOOLS

In the course of lesson planning, it is the expectation that teachers will include whole child considerations when planning such as differentiation, special education, English language learning, dual language, gifted and talented, social emotional learning, physical activity, and wellness.

Model Lesson- *Inquiry*

- What is Science, What do Scientists Do?
- Static Electricity Directed Inquiry
- Generating Static Electricity Guided Inquiry
- Force of Static Electricity
- Measuring Static Electricity
- Make a Spark

Suggested Pacing: (14 days)
TEKS: 3.1, 3.2, 3.3, 3.4