Course Name:	Comprehensive Science-7
Unit Title: 1	***The Practice of Science: Investigations, Models, Theories, Laws, Science Fair***
Key Learning:	Science is a multifaceted and enduring process, but is open to change based on empirical evidence.
Unit Essential Question:	How can science be durable, yet open to change based on empirical evidence?

Know:	Understand:	Do:
1.Scientific investigations of various types are carried out by defining a problem, identifying variables, collecting and interpreting data, and forming conclusions. 2. Scientific knowledge is a result of a great deal of debate within the scientific community. 3. Scientific models have many limitations and benefits. 4. Theories and laws have different meanings in science. 5. Empirical evidence is an accumulation of data that supports scientific ideas.	1. Real life problems are scientifically investigated with the formulation of questions, construction of investigations, the collection of data, and communicating results.	1. Students will conduct experiments, gather data, and interpret empirical evidence to support a hypothesis by completing a science fair project. 2. Students are able to explain why the scientific community does not readily accept new knowledge without debate or confirmation. 3. When making or using a model, students should be able to assess the benefits and limitations of that model. 4.Students should be able to identify theories and laws embedded in the content studied throughout the year and distinguish between their meanings. 5. Students will conduct experiments that demonstrate replication and repetition and then analyze their data.

Concept:	Benchmark(s):	Lesson Essential Questions:	Vocabulary:
Developing Investigations	SC.7.N.1.1 ♀ *Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.* SC.7.N.1.2 ♀ *Differentiate replication (by others) from repetition (multiple trials).* SC.7.N.1.3 ♀ *Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.* SC.7.N.1.4 ♀ *Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.* SC.7.N.1.5 ♀ *Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.*	How do scientists investigate questions, conduct investigations, collect data, and communicate their findings? How are replication and repetition different with scientific investigations? What is the relationship between the test and outcome variables in an experiment? How do the methods used in different scientific fields differ as scientific explanations are attempted to be discovered?	*systematic observations experiment, data, graphing, *hypothesis, *controlled variable, constants, *outcome variable (dependent variable), *test variable (independent variable)research, conclusion *replication, *repetition

Concept: Practice of Science	Benchmark(s): SC.7.N.1.6 ⚲ *Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.*	Lesson Essential Questions: How can scientists use empirical evidence and use creative thinking during investigations?	Vocabulary: *empirical evidence scientific explanations	
Concept: Characteristics of Science	Benchmark(s): SC.7.N.2.1 ⚲ *Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.* SC.7.N.1.7 ⚲ *Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.*	Lesson Essential Questions: How does scientific thinking change over time? How is scientific knowledge a result of debate and confirmation in a science community?	Vocabulary: research, data, evidence	
Concept: Role of Models	Benchmark(s): SC.7.N.3.2 ⚲ *Identify the benefits and limitations of the use of scientific models.*	Lesson Essential Questions: What are the benefits and limitations of using scientific models?	Vocabulary: *model (scientific model) scale	
Concept: Role of Theories and Laws	Benchmark(s): SC.7.N.3.1 ⚲ *Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.*	Lesson Essential Questions: What is the difference between theories and laws?	Vocabulary: *theory (scientific theory) *law (scientific law)	