Science/Unit Map – Grade 4 – Trimester 3

Trimester Focus: Heat, Electricity, and Magnetism

Big Ideas:

- All objects have physical properties that can be measured.
- Matter exists in different states.
- Matter can change from one state to another by heating and cooling.
- Heat and electricity are forms of energy.
- Evidence of energy is change.
- Electrical circuits demonstrate a transfer of energy.
- Magnetism is a physical property of matter.
- Heat can be transferred from one substance or object to another.

GLCEs	Vocabulary	Resources (See Curriculum Calendar for Details)	Assessments
P.EN.04.12 Identify heat and electricity as forms of energy. **P.EN.04.41** Demonstrate how temperature can be increased in a substance by adding energy. **P.EN.04.42** Describe heat as the energy produced when substances burn, certain kinds of materials rub against each other, and when electricity flows through wire. **P.EN.04.43** Describe how heat is produced through electricity, rubbing and burning. **P.EN.04.51** Demonstrate how electrical energy is transferred and changed through the use of a simple circuit. **P.EN.04.52** Demonstrate magnetic effects in a simple electric circuit. **P.PM.04.53** Identify objects that are good conductors or poor conductors of heat and electricity. **P.PM.04.33** Demonstrate magnetic field by observing the patterns formed with iron filings using a variety of magnets. **P.PM.04.34** Demonstrate that magnetic objects are affected by the strength of the magnet and the distance from the magnet.	heat electricity energy evident temperature thermometer Celsius Fahrenheit increase decrease substance electric current friction simple circuit open circuit closed circuit battery wire bulb power source energy transfer conductor compass magnet magnetic field magnetic poles lines of force iron filings attract repel generator device appliance	**Textbook**: National Geographic - Physical Science Chapter 4 – All Lessons (Magnets) Chapter 5 –Lessons 4,6,7, & 9 (Energy) Chapter 7 – All Lessons (Electricity) **Inquiry book:** See Inquiry Book for Snap, Explore, Directed, Guided, and Open Investigations	Formative Assessment Examples The formative assessment is the information that you collect as you complete the activities. These activities should drive instruction. • Use students' ice cube investigation assess students' ability to explain ho heat is produced while performing a simple investigation. • Observe the student trials and depth of conversation while investigating electrical circuits. • Record observations of simple electrical circuits in journals. • Make a chart comparing the number of clips picked up by a magnet. Summative Assessment Examples • Demonstrate the use of a thermometer to measure the temperature of a variety of substances. • Create a simple investigation to give evidence that when heat or electrical energy is added to a substance, the temperature increases. • In a quiz, identify burning, rubbing and electricity as ways that heat is produced. Explain through definition or example, how heat is produced by electricity, burning or rubbing. • Diagram energy flow and transfer in an electrical circuit. • Draw a diagram of the magnetic effects of two magnets. Diagrams should show like and opposite poles and arrows to indicate how the magnets move toward or away from each other. • Draw a picture showing the magnetic field on bar magnets. • Design a simple investigation that demonstrates the effect of magnets on materials that are attracted to a magnet.
