CCPS Science Unit Plan

Grade	10-12	**Subject**	Physics	**Unit #**	5
Unit Name	Electricity and Magnetism		**Timeline**	3 Weeks	
How to use the Framework	This Framework should be used to implement daily science instruction. The resources and instructional strategies reflected in the Framework will provide a foundation for effective implementation and student mastery of standards. Please see the hyperlinked abbreviation document to ensure understanding all abbreviations used with this framework.				
Unit Overview	In this unit, students will seek to answer the question "What role do electricity and magnetism play in the technology we use every day?" The modules in this unit each provide part of the answer to this question. • **Module 18:** Students will learn that electrically charged objects exert forces on each other and that this force can be used in various applications, including capacitors. • **Module 19:** Students will learn that electric currents allow for the transfer of energy, which can be transformed into other useful forms of energy. • **Module 20:** Students will learn that both permanent magnets and electromagnets produce magnetic fields, which can be used in a variety of applications, including motors. • **Module 21:** Students will learn that electricity and magnetism are part of the same force and that the interaction between electric and magnetic fields allows for a variety of technological applications, including generators and the use of electromagnetic waves.				
Lesson Plan guidance document and template	CCPS Lesson Plan Template Day View Lesson Plan Template Week View Department of Science Guidance Document				

3Dimensional Instruction

GSE	Science and Engineering Practices	Crosscutting Concepts
SP5. Obtain, evaluate, and communicate information about electrical and magnetic force interactions. a. Develop and use mathematical models and generate diagrams to compare and contrast the electric and gravitational forces between two charged objects. b. Plan and carry out investigations to demonstrate and qualitatively explain charge transfer by conduction, friction, and induction. c. Construct an explanation based on evidence of the behavior of charges in terms of electric potential energy. d. Plan and carry out an investigation of the relationship between voltage, current, and power for direct current circuits. (Clarification statement: Application of Ohm's Law to different circuit	**Asking Questions and Defining Problems** Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations. **Using Mathematics and Computational Thinking** Mathematical and computational thinking in 9-12 builds on K-8 and experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and	**Patterns**. Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them. **Cause and effect:** Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts. **Systems and System Models:** A system is an organized group of related objects or components;

	configurations, not limited to parallel and series, and calculations of equivalent resistance are expected.) e. Plan and carry out investigations to clarify the relationship between electric currents and magnetic fields. (Clarification statement: This includes coils and their importance in the design of motors and generators.)	used based on mathematical models of basic assumptions. **Developing and Using Models** Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed world(s). **Obtaining, Evaluating, and Communicating Information** Obtaining, evaluating, and communicating information in 9–12 builds on K–8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs. **Engaging in Argument from Evidence** Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). **Planning and Carrying Out Investigations:** Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.	models can be used for understanding and predicting the behavior of systems. **Energy and Matter** Tracking energy and matter flows, into, out of, and within systems helps one understand their system's behavior.
NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas		

Weekly Lesson Tasks

Week 1	
GSE: SP5.a., SP5.b., SP5.c.	**Focused Concept: Electrostatics & Intro to Electric Currents and Circuits**
Phenomenon: Why does the rod cause the water to bend? **How does energy get from the power plant to the lights in your home?**	**DQ: How does electricity work?**

SEP: Using Mathematics and Computational Thinking			**CCC:** Patterns, Cause & Effect		
	Day 1 18.1	**Day 2 18.2**	**Day 3 18.3**	**Day 4 18.4**	**Day 5 19.1**
Learning Targets	**Students will explore the evidence we have for electric charge and how some materials are electric conductors while others are electric insulators.** **Focus Question:** **Why does rubbing your shoes on the carpet lead to a shock when you touch a metal door knob?**	**Students will explore how objects can be charged, as well as Coulomb's Law.** **Focus Question:** **How can objects be electrically charged?**	**Students will explore electric fields and how they can be modeled.** **Focus Question:** **How can we explain how electric forces work at a distance?**	**Students will explore electrical potential energy, capacitors, and how the charge of an electron was determined.** **Focus Question:** **What is a capacitor and how does it work?**	**Students will explore current, electrical energy, circuit diagrams and Ohm's law.** **Focus Question:** **What is an electric circuit?**
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**
Guided Practice/ Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online	**Instructor will:** use the presentation **Electric Charge** to introduce the content to the student. Go Online to play a video about early investigations in to electric forces.	**Instructor will:** use the presentation **Electric Forces** to introduce the content to the student. Generate interest by raising questions and connecting to past knowledge using Online	**Instructor will:** use the presentation Measuring Electric Fields to introduce the content to the students. Use students journals to record the evidence they collect as you guide them through the readings.	**Instructor will:** use the presentation **Application of Electric fields** to introduce the content to the students. **Carry out a Quick Investigation** into the effects of an electric field on a charged object.	**Instructor will:** use the presentation **electric current** to introduce the content to the students. Go online to play video about electric currents. Then go to claim, evidence reasoning exercise to make

textbook resources.	Pose the questions to student and facilitate a CER activity. (pg 471) Go online to access the students CER Chart and explore resources that can help them collect evidence Revisit the Encounter the phenomenon question: What information from this lesson can help you answer the Unit and Module questions? **Essential Vocabulary** *electrostatics *neutral *insulator *conductor	interactive content: Electrostatic Forces Use mathematical representation of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects **Essential Vocabulary** *electroscope *charging by conduction *harging by induction *grounding *Coulomb's Law *coulomb *elementary charge	Identity cross cutting concepts (pg 490) Create a table of the crosscutting concepts and fill in examples you find as you read Review the News Obtain information from a current news story about electric charge, electric forces or electric fields. Evaluate your source and communicate your findings to your class. (pg 486) Get it? Explain how the strength of an electric field can be determined. **Essential Vocabulary** *electric field *electric field line	Review practice problems with students (pg 496) use the problem set demonstrate, step by step, how to solve Electric potential difference in a uniform field problems. **Essential Vocabulary** *electric potential difference *equipotential *capacitor *capacitance	a scientific claim supported by evidence and reasoning to explain the phenomenon. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motion of particles (objects) and energy associated with the relative positions of particles (objects). Get it? Draw a diagram o fan electric circuit and explain how energy is conserved in it. Explain how a schematic of an electric circuit compares to an artist's drawing of the same circuit. Identify what an ammeter and a voltmeter measure. Model how to solve power problems using sample problem (pg 512). **Essential Vocabulary** *electric current *conventional current *battery *electric circuit *ampere *resistance *resistor *parallel connection *series connection

Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**The Student Will:** Forensics Lab: Static Charge Carry out an investigation to determine how static electric charges affect each other and neutral objects.	**Student will:** Phet Simulation: Balloons and Static Electricity	**Students will:** engage in a crosscutting concept exercise (pg 490). Cause and Effect - Describe how modeling small scale, simple electric fields caused by single point charges can help you suggest and predict more complex fields cause by multiple charges. Cite evidence from Fig 19 and 20 (pg 490-491) respectively. Pattern- Describe how the pattens made by field lines in models such as those in Fig 19 and 20 can provide evidence to help you explain the phenomena at different scales	**Students will:** check for understanding by completing problem set on pg 497, independently.	**Students will:** complete practice problems idependently (pg 512). Practice Drawing schematic diagrams by following and notating the step by step instructions on how to Draw a schematic Diagram (pg. 514) complete schematic diagram problems (pg. 514) using the problem solving strategies on pg (514).
Assessment Summary (Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**TE Page 476** **Task:** Students will imagine bringing a charged metal sphere into contact with an uncharged metal sphere per the scenario presented and make predictions from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 484-485** **Task:** Students will imagine a Van de Graaff generator per the scenario presented and make predictions from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 492** **Task:** Students will consider the balloon demonstration and answer questions posed by the teacher from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 503** **Task:** Students will imagine a test charge placed in a uniform electric field per the scenario presented and make calculations from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 519** **Task:** Students will draw a simple circuit per the scenario presented and answer questions from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.
Small Group Tasks (TBA)					

Week 2					
GSE: SP5.e.	**Focused Concept: Electric Current and Circuits & Intro to Magnetism**				
Phenomenon: How does energy get from the power plant to the lights in your home? What makes this electromagnet stronger than a typical refrigerator magnet?			**DQ: How has electricity shaped the world around us?**		
SEP: Developing and Using Models, Obtaining-Evaluating & Communicating Information, Using Mathematics and Computational Thinking			**CCC:** Structure & Function, Energy & Matter, System & System Models		
	Day 6 19.2	**Day 7** 19.3	**Day 8** 19.4	**Day 9** 20.1	**Day 10** 20.2
Learning Targets	**Students will explore the relationships between electrical energy, power, potential difference, and resistance.** **Focus Question:** **How do we use electrical energy?**	**Students will explore series and parallel circuits and analyze them using Kirchhoff's rules.** **Focus Question:** **How can you build a simple circuit to fit the needs of a given situation?**	**Students will explore electrical safety devices and combined circuits, including ammeters and voltmeters.** **Focus Question:** **How are circuits used in your home and school?**	**Students will explore the properties of magnets, magnetic domains, magnetic fields, and electromagnets.** **Focus Question:** **Why are some materials magnetic and others are not?**	**Students will explore the effects of magnetic forces on current-carrying wires and moving charged particles, as well as related applications, such as galvanometers and motors.** **Focus Question:** **What role do magnetic forces play in everyday life?**
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video** **• Use the See-Think-Wonder protocol to guide student thinking.** **• Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**
Guided	**Instructor will:** use the	**Instructor will:** use the	**Instructor will:** use the	**Instructor will:**	**Instructor will:**

Practice/Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	presentation Using Electric Energy to introduce the content to the students. Interactive Content You can use this interactive resource to spark student curiosity as you launch the lesson: Using Electric Energy Use sample problem (pg 522) to create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other components and energy flows in and out of the system are known. **Essential Vocabulary** *superconductor *kilowatt-hour	presentation **Simple Circuits** to introduce the content to the students. Review the news Obtain information from a current news story about circuits or electrical energy in everyday life. Evaluate your source and communicate you findings to your class. Have students use their scientific journals to record the evidence they collect as they complete the readings and activities in the lesson. Check student understanding by engaging in the practice problems (pg 527). Model how to solve Equivalent Resistance for Resistors in Series problems along with Ohm's Law problems. **Essential Vocabulary** *series circuit *equivalent resistance *voltage divider *parallel circuit	presentation Application of Circuits to introduce the content to the students. **Virtual Investigation**: Electric Circuits - Use a computer model to investigate the relationships among voltages , resistance, and current in an electric circuit. Revisit the Encounter the phenomenon Question: What information from this lesson can help you answer the Unit and Module questions? **Essential Vocabulary** *short circuit *circuit breaker *ground-fault interrupter *combination series-parallel circuit	use the presentation Understanding Magnetism to introduce the content to the students. Facilitate the Applying Practices exercise Modeling Magnetic Fields Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. Have students use their science journals to record the evidence you collect as you complete the readings and activities in this lesson. Get it? Describe examples of how humans have used Earth's magnetic poles through the centuries. Cite Evidence – infer what the magnetic domain looks like in the magnet shown on the first page of this module. Summarize Oersted's conclusion in your own words. **Essential Vocabulary** *polarized *domain *magnetic field *magnetic flux *solenoid *electromagnet	Use the presentation Applying Magnetic Forces to introduce the content to the students. **Essential Vocabulary** *galvanometer *electric motor *armature

Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Students will:** Complete Practice problems on (pg 522).	**Students will:** Enhance student comprehension of scientific concepts through a lab investigation. **Interactive Content: Parallel Circuits**	**Student will:** Problem-solving- Strategy series parallel circuits (pg 538). Use the strategies to solve practice problems (pg 540) Option 2: Students can attempt physics challenge problems (pg 338).	**Student Will:** Engage in Cross Cutting Concepts - Cause and effect; study Figure 9 (pg 552) on the previous page. What empirical evidence did Oersted observe that led him to the conclusion that electric current produces a magnetic field?	**Student Will:** Virtual Investigation: Charge in a Magnetic field - Carry out an investigation to determine the effect a magnetic field has on a moving, electrically charged partical.
Assessment/Summary (Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**TE Page 524** **Task:** Students will calculate the resistance of a specific device per the scenario presented from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 535** **Task:** Students will rearrange a three bulb circuit to produce brighter light per the scenario presented from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 541** **Task:** Students will build a four lightbulb series-parallel circuit according to Figure 30 and answer questions from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 554-555** **Task:** Students will make predictions based on scenarios presented from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 563-564** **Task:** Students will consider two wires per the scenario presented and answer questions from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.
Small Group Tasks (TBA)					

Week 3					
GSE: SP5.d., SP5.e.		**Focused Concept: Magnetism & Electromagnetism**			
Phenomenon: What causes the Northern Lights?			**DQ: How are the applications of electromagnets impacting the human species?**		
SEP: Asking Questions & Defining Problems, Obtaining-Evaluating & Communicating Information			**CCC:** Cause & Effect, Stability & Change		
	Day 11 21.1	**Day 12 21.2**	**Day 13 21.3**	**Day 14 21.4**	**Day 15 Review**
Learning Targets	**Students will explore how**	**Students will explore**	**Students will explore**	**Students will explore the**	**Students will culminate**

	changing magnetic fields induce currents and how generators work. **Focus Question:** How can a magnet generate a current?	Lenz's law, eddy currents, self-inductance, and transformers. **Focus Question:** How do transformers help with the distribution of electricity in the power grid?	Thomson's experiments with cathode ray tubes and mass spectrometers, both of which demonstrate how charged particles behave in electric and magnetic fields. **Focus Question:** How does a mass spectrometer work?	properties and technological applications of electromagnetic waves. **Focus Question:** What do electric and magnetic fields have to do with light?	their learning of all Unit 5 learning targets.
Opening (Teacher: The Lesson Resource can`be launched or assigned with Know/Want to Know Activity on digital textbook platform)	**• Show students the phenomenon card and/or embedded video • Use the See-Think-Wonder protocol to guide student thinking. • Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video • Use the See-Think-Wonder protocol to guide student thinking. • Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video • Use the See-Think-Wonder protocol to guide student thinking. • Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**• Show students the phenomenon card and/or embedded video • Use the See-Think-Wonder protocol to guide student thinking. • Teachers should provide students opportunities to share observations and develop questions. The teacher should record students' questions.**	**What role do electricity and magnetism play in the technology we use every day? Revisit The Phenomenon (Claim, Evidence, Reasoning)** **phenomenon card**
Guided Practice/Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	**The Teacher Will:** Use the presentation Inducing Currents to introduce the content to the students Go Online - Applying practices : Investigate electromagnetism - Plan and conduct an investigation . Engage students by Revisit the encounter the Phenomenon Question:	**The Teacher Will:** Use the presentation **Application of Induced Currents** to introduce the content to the students. Review the News (pg 578) Obtain information from a current news story about applications of electromagnetism or electromagnetic waves. Evaluate your source and communicate your findings to your class.	**The Teacher Will:** Use the presentation Electric and Magnetic Forces on Particles to introduce the content to the students. Engage students using the interactive content Thomson's Experiment to acquire background knowledge investigations, performance task and lesson content. **Essential Vocabulary**	**The Teacher Will:** Use the presentation **Electric and Magnetic Fields in Space** to introduce the content to the students. Engage students using the interactive content Electric and Magnetic Fields in Space to acquire background knowledge through investigations, performance task and lesson content.	**The Teacher Will:** **select module(s) read and write activity and use provided guided questions** **Module 18**: Scientific Breakthroughs TE 504 **Module 19:** Engineering & Technology TE 542 **Module 20:** Engineering & Technology TE 565

	What information from the lesson can help you answer the Unit and Module questions? Use their science journals to record the evidence they collect as they complete the readings and activities in the lesson **Essential Vocabulary** *electromagnetic induction *induced electromotive force *electric generator	Crosscutting concepts Cause and Effect - Analyze the effect that running a motor can have on other electrical devices in a household and on the device that uses the motor itself. Describe related safety precautions that should be taken when using a device with a moto. Cite evidence to support the case and effect relationships underlying your recommendations. **Essential Vocabulary** *Lenz's law *Eddy currents *self-inductance *transformers *step-up transformer *step-down transformer	*isotope *mass spectrometer	Engage students by unpacking the reading content and inquiry lead discussion using: Get It? Apply: How could you change the magnetic field so the electrons deflected upward. Calculate: What is the charge on an ion that has three electrons removed? Get it If the green light of the Aurora Borealis shown **Essential Vocabulary** *electromagnetic waves *electromagnetic spectrum *electromagnetic radiation *transmitter *antenna *dielectric *carrier wave *piezoelectricity *receiver	**Module 21**: Science & Society TE 604 or 605
Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Student Will:** Identify Crosscutting concepts: Create a table of the crosscutting concepts and fill in the examples you find as you read. (pg 570) Cause and Effect - Examin fig 3 (pg 573). Describe how knowing about the effect caused by the movement of a wire in an electric field, as well as the effect caused by sound on a diagram, let you predict how sound affects a microphone. Cite evidence	**Student Will:** Complete Practice problems (pg 584) Option 2: Online Activities Ammeters and Voltmeter Combine Series and Parallel Circuits	**Student Will:** **Quick Investigation: Moving Charged Particles**	**Student Will:** Complete practice problems (pg 595) Additional Options: **What are electromagnetic waves** **Types of Electromagnetic Waves** **Transmitting Electromagnetic Waves** **Procucing Electromagnetic Waves**	**The Teacher Will:** select or create a set of review questions. (Kahoot, Quizizz, Blooket) **Students Will:** participate using the platform selected by the teacher.

	to support your explanation about how the two mechanisms in the systems work together				
Assessment/Summary (Teachers should maximize the use of all the extended learning/assessment tasks if time permits.)	**TE Page 577** **Task:** Students will describe three ways an EMF can be induced in a loop of flexible wire in a magnetic field from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 585** **Task:** Students will describe how electric generators, motors, and transformers use induced current from the Formative Assessment Check. **OExtended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 592-593** **Task:** Students will calculate the distance between isotope beams per parameters of the Manhattan Project from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 602-603** **Task:** Students will imagine holding a fist-full of charge and moving it per the scenario presented and answer questions from the Formative Assessment Check. **Extended:** >Progress Check Questions (Textbook or Online Science Notebook) >Access the online additional resources for a pre-made Lesson Check to assign students.	**TE Page 607** **Task: GO Further** - (What causes the Northern Lights?) Students will create a CER based on the scenario presented.
Small Group Tasks (TBA)					

Week 4					
GSE:		**Focused Concept: Unit 5 Review & Test**			
Phenomenon:			**DQ:**		
SEP:			**CCC:**		
	Day 16 Unit Test	**Day 17**	**Day 18**	**Day 19**	**Day 20**
Learning Targets	**Students will be assessed on their learning for all of Unit 5.**				
Opening	**What role do electricity and magnetism play in the technology we use every day?**				

	Revisit The Phenomenon (Claim, Evidence, Reasoning)				
Guided Practice/Transition TTW, provide 15-20 minutes of direct instructions. PPT presentations are available for every section of every chapter in the online textbook resources.	*				
Independent Practice (TTW, circulate to monitor student performance and will clarify instructions as needed.)	**Unit 5 Test**				
Assessment/Summary	**Unit 5 Test**				
Small Group Tasks (TBA)					

Assessment Prep

Prepare students for assessment by reviewing the following Assessment Prep concepts.

Labs / Investigations		
Mandatory Labs	**Explore Learning Gizmo**	**Pivot Interactives/Phet**
Interactive Content: Parallel Circuits	**>Circuits** **>Coulomb Force** **>Household Energy Use** **>Magnetic Induction** **>Electromagnetic Induction**	**PhET: Static Electricity** **PhET: Charges and Fields** **PhET: Capacitors** **PhET: Ohm's Law**

		PhET: Resistance in a Wire **PhET: Magnets and Electromagnets** **PhET: Force on a Charged Particle** **PhET: Faraday's Law** **PhET: Generator** **PhET: Radio Waves and Electromagnetic Fields**

Additional Resources/Tasks	
Supplemental Resources	☐ McGRAW ONLINE ☐ DRIVING QUESTIONS BOARD & SUMMARY TABLE (TE Page 468B) ☐ STEM UNIT PROJECT (TE Page 469) ☐ LEARNSMART