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| **SUGGESTED PACING** | | | | | | |
| **STRAND: PHYSICAL SCIENCE (PS)**  **Topic: Electricity, Heat and Matter**  This topic focuses on the conservation of matter and the processes of energy transfer and transformation, especially as they apply to heat and electrical energy.  **Content Statements:**   * Energy can be transformed from one form to another or can be transferred from one location to another. * Energy transfers from hot objects to cold objects as heat, resulting in a temperature change. * Electric circuits require a complete loop of conducting materials through which an electrical energy can be transferred. * Electrical energy in circuits can be transformed to other forms of energy, including light, heat, sound and motion. * Electricity and magnetism are closely related. | | | | | | |
| **PRINT RESOURCES** | | | | | **DIGITAL RESOURCES** | |
| *ScienceFusion*   * Unit 7, All Lessons * Unit 7, TE pages 309-350 * Unit 7, Inquiry Flip Chart pages 38-42 * Unit 7, Science and Engineering Leveled Readers:   + On-Level/Below Level: *How Do We Use Forms of Energy?*   + Above Level: *What Happens Under the Hood?* * Unit 8, All Lessons * Unit 8, TE pages 353A-404 * Unit 8, Inquiry Flip Chart pages 43-48 * Unit 8, Science and Engineering Leveled Readers:   + On-Level/Below Level: *How Do We Generate and Use Electricity?*   + Above Level: *Energy On Demand: Making Electricity* | | | | | *ScienceFusion*   * Unit 7, Lesson 1 Digital Lesson * Unit 7, Lesson 2 Digital Lesson with Virtual Lab * Unit 7, Lesson 3 Digital Lesson * Unit 7, Lesson 4 Digital Lesson with Virtual Lab * Unit 8, Lesson 1 Digital Lesson * Unit 8, Lesson 2 Digital Lesson with Virtual Lab * Unit 8, Lesson 3 Digital Lesson with Virtual Lab * Unit 8, Lesson 4 Digital Lesson * Unit 8, Lesson 5 Digital Lesson | |
| **SCIENCE AND ACADEMIC VOCABULARY** | | | | | | |
| Chemical Energy, Circuit, Conductor, Current Electricity, Electric Motor, Electrical Energy, Electricity, Electromagnet, Energy, Generator, Heat, Insulator, Kinetic Energy, Magnet, Mechanical Energy, Parallel Circuit, Potential Energy, Series Circuit, Static Electricity, Thermal Energy | | | | | | |
| **DIFFERENTIATION** | | **FIELD EXPERIENCE CONNECTIONS** | | | | |
| Basic (Extra Support)   * Unit 7 Response to Intervention - TE page 309K * Unit 7 TE pages 313, 315, 321, 335, 338 * Unit 8 Response to Intervention - TE page 351K * Unit 8 TE pages 357, 359, 373, 375, 376, 388, 389, 391   Advanced (Enrichment)   * Unit 7 TE pages 313, 315, 321, 335, 338 * Unit 7 STEM - Flipchart page 42, TE pages 309I, 345-346B * Unit 8 TE pages 357, 359, 373, 375, 376, 388, 389, 391 * Unit 8 STEM - Flipchart page 48, TE pages 351I, 399-400B   English Language Learners   * Unit 7 TE pages 309L-309M, 312, 319, 320, 336, 339 * Unit 8 TE pages 351L-351M, 356, 358, 372, 374, 378, 390, 392, 394 | | Greater Cleveland Aquarium’s N.E.M.O: Nurturing the Environment by Maintaining Ohio Program.  ***Program details:*** Aquatic animal adaptation investigation. Use STEM design to build a model fish to live in a specific habitat, Predict how environmental changes may affect fish. To prepare in advance-attend two professional development sessions to receive Classroom Aquarium and a flash drive with year-long curriculum connections.  For information contact: Ray Patacca & Erin Bauer 216-862-8803 x7703 or [education@greaterclevelandaquarium.com](mailto:education@greaterclevelandaquarium.com) | | | | |
| **INQUIRY SKILLS** | | | | | | |
| * Classify/Order * Communicate * Compare | * Draw Conclusions * Gather, Record, Display, or Interpret Data * Observe | | | | | * Plan and Conduct a Simple Investigation * Predict |
| **HANDS-ON INQUIRY AND APPLICATION** | | | | | | |
| * “Energy Sources” (Flipchart page 38, TE pages 309D, 311A) * “Up Periscope!” (Flipchart page 38, TE pages 309D, 311A) * “Where Does Energy Come From?” (Flipchart page 39, TE pages 309E, 329A-330) * “Sunny Side Up!” (Flipchart page 40, TE pages 309F, 333A) * “Ready to Insulate!” (Flipchart page 40, TE pages 309G, 333A) * “How Do Conductors and Insulators Differ?” (Flipchart page 41, TE pages 309H, 343A-344) * “Static Cling” (Flipchart page 43, TE pages 351D, 353A) * “Electric Materials Test” (Flipchart page 43, TE pages 351D, 353A) * “How Do Electric Charges Interact?” (Flipchart page 44, TE pages 351E, 367A-368A) * “What Is an Electric Circuit?” (Flipchart page 45, TE pages 351F, 369A-370A) * “Compare Two Circuits” (Flipchart page 46, TE pages 351G, 371A) * “Bright Lights” (Flipchart page 46, TE pages 351G, 371A) * “Build an Electromagnet” (Flipchart page 47, TE pages 351H, 387A) * “Is There Current?” (Flipchart page 47, TE pages 351H, 387A) | | | *Differentiated Inquiry*   * Unit 7, TE page 330A   + How Can Marbles Transfer Energy? (Easy)   + How Can a Slingshot Make a Ball Go Farther? (Easy)   + How Does Height Affect Potential Energy’s Change to Kinetic Energy? (Average)   + How Does the Mass of a Ball Affect the Distance It Travels? (Challenging) * Unit 7, TE page 344A   + Observe Radiation (Easy)   + Experiment with Radiation (Easy)   + Test Other Materials (Average)   + Isolate Conductivity (Challenging) * Unit 8, TE page 368A   + Bend Water (Easy)   + Light a Light Bulb with a Comb (Easy)   + Test Materials for Charge (Average)   + Make an Electroscope (Challenging) * Unit 8, TE page 370A   + Test Materials for a Circuit (Easy)   + Use a Lamp as a Switch (Easy)   + Investigate Circuits (Average)   + Invent a Switch (Challenging) | | | |
| **ASSESSMENTS/PROGRESS MONITORING** | | | **ASSESSMENT GUIDE** | | | |
| * Sum it Up   + Unit 7, Lesson 1 - SE page 324, TE page 324   + Unit 7, Lesson 3 - SE page 340, TE page 340   + Unit 8, Lesson 1 - SE page 360, TE page 360   + Unit 8, Lesson 4 - SE page 380, TE page 380   + Unit 8, Lesson 5 - SE page 396, TE page 396 * Brain Check and Apply Concepts   + Unit 7, Lesson 1 - SE pages 325-328, TE pages 325-328   + Unit 7, Lesson 3 - SE pages 341-342, TE pages 341-342   + Unit 8, Lesson 1 - SE pages 361-366, TE pages 361-366   + Unit 8, Lesson 4 - SE pages 381-384, TE pages 381-384   + Unit 8, Lesson 5 - SE pages 397-398, TE pages 397-398 * Unit 7 Review - TE pages 347A-350 * Unit 7 Short Option Performance Assessment - TE page 349 * Unit 8 Review - TE pages 401A-404 * Unit 8 Short Option Performance Assessment - TE page 403 | | | * Lesson Quiz   + Unit 7, Lesson 1 - page AG 70   + Unit 7, Lesson 2 - page AG 71   + Unit 7, Lesson 3 - page AG 72   + Unit 7, Lesson 4 - page AG 73   + Unit 8, Lesson 1 - page AG 81   + Unit 8, Lesson 2 - page AG 82   + Unit 8, Lesson 3 - page AG 83   + Unit 8, Lesson 4 - page AG 84   + Unit 8, Lesson 5 - page AG 85 * Unit 7 Test and Performance Task with Long Option Rubric - pages AG 74-AG 80 * Unit 8 Test and Performance Task with Long Option Rubric - pages AG 86-AG 92 | | | |
| **ACADEMIC CONNECTIONS TO OTHER DISCIPLINES: ELA** | | | | | | |
| Journeys   * Writing Connection - TE page 318 * Make Connections - TE page 328A   + Language Arts Connection - Write a Report About Local Sources of Energy (Average) * Writing Connection - TE page 331 * Writing Connection - TE page 337 * Writing Connection - TE page 354 * Writing Connection - TE page 360 * Make Connections - TE page366A   + Writing Connection - Write an Electricity Narrative (Average) | | | | * Writing Connection - TE page 377 * Make Connections - TE page 384A   + Writing Connection - Safety Rules (Easy)   + Language Arts Connection - Word Origins (Average) * Writing Connection - TE page 385 * Writing Connection - TE page 393 * Make Connections - TE page 398A   + Writing Connection - Write a Description (Easy) | | |
| **ACADEMIC CONNECTIONS TO OTHER DISCIPLINES: MATH** | | | | | | |
| Math Expressions   * Math Connection - TE page 316 * *Math Expressions Connections:*   + Unit 3 Lesson 7: Just Under Quotient Digits MX TE page 324   + Unit 5 Lesson 4: Customary Measures of Length MX TE pages 475-480 * Math Connection - TE page 334 * *Math Expressions Connections:*   + Unit 5 Lesson 1: Measuring Length MX TE pages 451-458   + Unit 5 Lesson 7: Solve Measurement Problems MX TE pages 497-502   + Unit 5 Lesson 8: Focus on Mathematical Practices MX TE pages 503-508   + Unit 7 Lesson 10: Compare Decimals to Hundredths MX TE pages 673-682   + Unit 7 Lesson 12: Compare Decimals Greater Than 1 MX TE pages 693-698 * Make Connections - TE page 342A * Math Connection - Calculate Savings (Challenging) * *Math Expressions Connections:*   + Unit 2 Lesson 4: Model One-Digit by Two-Digit Multiplication MX TE pages 139-140   + Unit 2 Lesson 10: One-Digit by Three-Digit Multiplication MX TE page 186   + Unit 4 Lesson 8: Solve Multistep Problems MX TE page 414 * Math Connection - TE page 355 * *Math Expressions Connections:*   + Unit 8 Lesson 2: Measuring Angles MX TE pages 719-726   + Unit 8 Lesson 3: Circles and Angles MX TE pages 727-732   + Unit 8 Lesson 4: Name Triangles MX TE pages 741   + Unit 8 Lesson 6: Real World Problems MX TE pages 751-756 * Math Connection - TE page 361 * *Math Expressions Connections:*   + Unit 2 Lesson 4: Model One-Digit by Two-Digit Multiplication MX TE pages 139-140   + Unit 2 Lesson 10: One-Digit by Three-Digit Multiplication MX TE page 186   + Unit 4 Lesson 8: Solve Multistep Problems MX TE page 414   + Unit 5 Lesson 3: Units of Time MX TE pages 467-474 * Math Connection - TE page 379 * *Math Expressions Connections:*   + Unit 2 Lesson 4: Model One-Digit by Two-Digit Multiplication MX TE pages 139-140   + Unit 2 Lesson 10: One-Digit by Three-Digit Multiplication MX TE page 186   + Unit 4 Lesson 8: Solve Multistep Problems MX TE page 414 * Make Connections - TE page 384A * Math Connection - Use Numbers (Challenging) * Math Connection - TE page 395 * *Math Expressions Connections:*   + Unit 6 Lesson 1: Understand Fractions MX TE pages 515-520   + Unit 6 Lesson 2: Fractions that Add to One MX TE pages 524-527   + Unit 6 Lesson 3: Add and Subtract Fractions with Like Denominators MX TE pages 537-538   + Unit 6 Lesson 4: Mixed Numbers and Fractions Greater Than 1 MX TE pages 542-547   + Unit 7 Lesson 4: Equivalent Fractions Using Multiplication MX TE pages 622-626   + Unit 7 Lesson 5: Equivalent Fractions Using Division MX TE pages 630-634   + Unit 7 Lesson 6: Compare Fractions with Unlike Denominators MX TE pages 638-642   + Unit 7 Lesson 8: Relate Fractions and Decimals MX TE pages 659-660 * Make Connections - TE page 398A * Math Connection - Find a Rule (Easy) * *Math Expressions Connections:*   + Unit 6 Lesson 4: Mixed Numbers and Fractions Greater Than 1 MX TE page 546   + Unit 6 Lesson 7: Multiply a Fraction by a Whole Number MX TE pages 568-572   + Unit 6 Lesson 8: Practice Multiplying a Fraction by a Whole Number MX TE pages 576-578   + Unit 6 Lesson 9: Mixed Practice MX TE page 584 * Math Connection - Design an Experiment (Average) * *Math Expressions Connections:*   + Unit 1 Lesson 14: Focus on Mathematical Practices MX TE page 106 | | | | | | |