Jasper City Schools Curriculum Map – 2014-2015
Maddox Middle School

PHYSICAL SCIENCE-8th GRADE

Course Name: Physical Science- Physics	
Unit Name: Motion and Force	
Time Frame:	September / February
Unit Standards	8.1.10 - Differentiate between potential and kinetic energy. 8.1.8 - Identify Newton's three laws of motion. Technology standards- #11 Use digital tools to locate, collect, organize, evaluate, and synthesize information. #14- Use digital tools to generate new ideas, products, or processes. Literacy standards- # 3- Follow precisely a multistep procedure. #2- Determine the central ideas or conclusions from text. #7- Words in a text with a version of that information expressed visually (in charts, graphs, etc.). #8- Distinguish among facts based on research findings and speculation in text.
Unit Essential Questions	1. What is a force? 2. What is gravity? 3. What is the standard unit for measuring force? 4. What are the 3 laws of motion?
Unit Essential Vocabulary	Battery Energy Electrode Electrolyte Wet Cell Dry Cell Potential Energy Kinetic Energy Force Mass Weight Robert Hooke Elastic Force Gravity Newton Spring Scale gravitational force friction static friction velocity terminal velocity drag inertia surface area
Resources	Teacher-made notes Holt Physical Science Text: Chapters 5-7 Bubble gum physics- calculate speed Balloon rocket on string lab- calculate speed, graphs, variables Domino Dash lab- calculate speed Friction lab Build balloon racers You tube video on newton's laws Create digital storyboards on Bookemon website AMSTI kits
Assessment(s)	Chapter 5 post test, vocab quiz, Illustrations of Newton's laws , Newton's Laws packet of calculations, bookemon- digital storyboard, Newton's law quiz

Jasper City Schools Curriculum Map – 2014-2015
Maddox Middle School

PHYSICAL SCIENCE-8th GRADE

Course Name:	**Physical Science- Physics**
Unit Name:	Simple machines
Time Frame:	October / March
Unit Standards	8.1.9 - Describe how mechanical advantages of simple machines reduce the amount of force needed for work. 8.1.11 - Explain the law of conservation of energy and its relationship to energy transformation, including chemical to electrical, chemical to heat, electrical to light, electrical to mechanical, and electrical to sound. Technology standards- #11 Use digital tools to locate, collect, organize, and synthesize information . # 5- Use basic features of word processing. Literacy standards- # 3- Follow precisely a multistep procedure. #2- Determine the central ideas or conclusions from text. #7- Words in a text with a version of that information expressed visually (in charts, graphs, etc.)
Unit Essential Questions	1. What is work? 2. How is work calculated? 3. What is a machine? 4. What are the common categories of simple machines? 5. What is the difference between a compound and a simple machine? 6. What is power? Current? Voltage? 7. Compare and contrast conduction, convection, and radiation.
Unit Essential Vocabulary	Work Wheel-and-Axle Level Inclined Plane Pulley Wedge Screw Joule Meter Power Time Watt Kilowatt Horsepower Effort Force Effort Distance Load Force Load Distance

	Simple Machine Inclined Plane Slope Pulley Input Work Output Work Lever Fulcrum Effort Arm Load Arm Torque Actual Mechanical Advantage Ideal Mechanical Advantage Efficiency Technology Parallel connection Series connection Current Voltage Heat Conduction Convection Radiation
Resources	Teacher-made Notes Holt Physical Science Text: Chapter 8 & 9 Computer lab- ED heads activity Drawing packet of all 6 simple machines "Levers R Us" science initiative activity Calculate work worksheet Lab- stations of simple machines Computer lab- type lab reports Build a marshmallow catapult lab You tube- Bill Nye simple machines with questions AMSTI Robotics kits- Save the Sea Birds and Save the Penguins
Assessment(s)	Post tests Vocab quiz Machine quiz Calculate work problems Lab reports Drawings of simple machines labeled Kits pre- and post- tests Drawing on storyboards

Jasper City Schools Curriculum Map – 2014-2015
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PHYSICAL SCIENCE-8th GRADE

Course Name: Physical Science - Chemistry

Unit Name: Chemical Formulas / Chemical Equations

Time Frame:	**November / April**
Unit Standards	8.1.2 Describe the structure of atoms, including the location of protons, neutrons, and electrons. 8.1.4 - State the law of conservation of matter. 8.1.5 - Differentiate between ionic and covalent bonds. 8.1.7 - Describe states of matter based on kinetic energy of particles in matter. Literacy 4. Determine the meaning of symbols and phrases as they are used in a specific scientific context. 7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually. Technology 13. Use a digital tools to formulate solutions to authentic problems.
Unit Essential Questions	What is the Law of Conservation of Matter? How does one balance an equation? How does reactivity of a element affect a chemical reaction? What effects does temperature? concentration of a solution? surface area? a catalysts have on the rate of a reaction? What is a reactant? What is a product? How does knowing the chemical and physical properties of an element help one predict whether a reaction will occur?
Unit Essential Vocabulary	1. Atoms 2. Inhibitor 3. Catalyst 4. Chemical reactions 5. Precipitate 6. Chemical formula 7. Chemical equation 8. Reactant 9. Product 10. Law of conservation of matter (mass) 11. synthesis reaction 12. decomposition reaction 13. single-displacement reaction 14. double-displacement reaction 15. exothermic reaction 16. endothermic reaction 17. law of conservation of energy 18. activation energy
Resources	Teacher Made Tests Holt Physical Science chapters: 13, 14, & 15 AMSTI "Properties of Matter" Kit Materials and Labs Worksheets: Quiz on Atomic Structure Types of Reactions Balancing Equations Word Equations Predicting Products in a Reaction Smartboard interactive lessons YouTube Videos: Flame Test, Types of reactions, & Element Song
Assessment(s)	Formula Writing Quiz Reference Sheet Quiz Balancing Equations Quiz Balancing Equations – chapter 14 AMSTI "Properties of Matter" Kit Performance Based Assessment Activities

Jasper City Schools Curriculum Map – 2014-2015
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PHYSICAL SCIENCE-8th GRADE

Course Name: Physical Science - Solutions

Unit Name: Solutions

Time Frame:	**December / May**
Unit Standards	8.1.6 - Define solutions in terms of solute and solvent. Literacy Std. 3 – Follow precisely a multistep procedure when carrying out an experiment, taking measurements, and performing technical tasks. Literacy Std. 9- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading text on the same topic. Technology Std. 2 – Publish digital products that communicate curriculum concepts. Technology Std. 5 – Use basic features of presentation software. Technology Std. 10- Describe advances in technology and effects of each on society. Technology Std. 11 – Use digital tools to organize information.
Unit Essential Questions	What is a solution? What is a solute? What is a solvent? What is the difference between osmosis and diffusion? What is an isotonic (saturated) solution? Hypertonic (supersaturated)? Hypotonic (unsaturated) solution? What is an acid? base? What is a hydronium ion?
Unit Essential Vocabulary	1. mixtures 2. heterogeneous 3. homogeneous 4. Solution 5. Solute 6. Solvent 7. Concentration 8. Solubility 9. Suspension 10. Colloid 11. Emulsion 12. acid 13. base 14. indicator 15. neutralization reaction 16. pH 17. salt 18. osmosis 19. diffusion 20. isotonic (saturated) solution 21. hypotonic (unsaturated) solution 22. hypertonic (supersaturated) solution
Resources	Teacher-made Notes Holt Physical Science Text: Chapter 4 & 15 AMSTI "Properites of Matter" Kit Materials and Labs Water quality tests Google Earth - video about Earth's water supply Quizlet: Solubility terms Smartboard interactive lessons United Streaming - Acid/ Base Chemistry
Assessment(s)	Benchmark Assessment (Post Test or Semester Exam covering Standards 1-7) Water Quality Tests pH scale Separation of Mixtures Creative Writing Essay - Acid/Base / pH

Jasper City Schools Curriculum Map – 2014-2015
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PHYSICAL SCIENCE-8th GRADE

Course Name: Physical Science- Physics	
Unit Name: Waves	
Time Frame:	**November/December / April/May**
Unit Standards	8.1.12 - Classify waves as mechanical or electromagnetic. Technology standards- #11 Use digital tools to locate, collect, organize, and synthesize information. # 14- Use digital tools to generate new ideas, products, or processes. Literacy standards- # 3- Follow precisely a multistep procedure. #2- Determine the central ideas or conclusions from text. #9- Compare/contrast information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
Unit Essential Questions	1. What is a wave? 2. What is a medium? 3. What is the electromagnetic spectrum? 4. What are some of the differences between concave and convex lenses? 5. How has a greater understanding of waves and wave interaction contributed to many of modern technological advances?
Unit Essential Vocabulary	wave medium transverse wave longitudinal wave amplitude wavelength frequency wave speed reflection refraction diffraction standing wave resonance sound wave Doppler effect loudness decibel echolocation echo interference sonic boom

	sound quality noise pitch electromagnetic waves radiation electromagnetic spectrum absorption scattering transmission transparent translucent opaque pigment plane mirror concave mirror convex mirror lens convex lens concave lens nearsightedness farsightedness laser hologram
Resources	Teacher-made notes Holt Physical Science Text: Chapters 20-23 Lab Resources & Materials Slinky demonstration of longitudinal and transverse motion You tube video- Bill Nye waves Wave assignment in computer lab- cullerscience.weebly.com/waves.html Demo- drop penny in water and add cork Wave worksheet Label wave quiz Create presentation with "Morfo" app Create prezi on famous scientist AMSTI Kits
Assessment(s)	Unit assessments, daily quizzes, vocab quizzes, lab questions, student drawings

Jasper City Schools Curriculum Map – 2014-2015
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PHYSICAL SCIENCE-8th GRADE

Course Name: Physical Science - Chemistry

Unit Name: Process Skills and Scientific Method

Time Frame:	**August / January**
Unit Standards	8.1.0- Physical Science 8.1.1 - Identify steps within the scientific process. 8.1.7 - Describe states of matter based on kinetic energy of particles in matter. Technology Standard 2 – Publish digital products that communicate curriculum concepts. Technology Standard 5 – Use basic features of word processing, spreadsheets, databases, and presentation software. Literary Standard 3 – Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. Literary Standard 4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context
Unit Essential Questions	1. What is Physical Science ? 2. Why is SI the preferred standard of measurement in science? 3. What are the five states of matter? 4. How does energy change as matter is converted from one state to another? 5. What is the appropriate lab glassware? 6. How do I conduct a safe experiment? 7. How do I identify controls and variables within an scientific investigation? 8. How do you interpret lab data?
Unit Essential Vocabulary	Science Physical Science Chemistry Physics Observation Hypothesis Data Scientific Method Model Theory Scientific Law Mass Volume Density Temperature Plasma Liquid Gas Solid Exothermic Endothermic Viscosity Change of State Graph Chart Table Flask beaker graduated cylinder electronic balance spring scale stir rod watch glass conversion factors units of measure control variable matter pure substances mixture element compound solute solvent colloid suspension solution atom element molecule

Resources	Safety Contract Teacher-Made Notes Holt Physical Science Text Chapters 1 Lab Safety Test Benchmark Test (Pre Test for the course) AMSTI "Properties of Matter" Kit Measurement Lab (How to use various lab apparatus to measure volume, temperature, etc.) Bubble Frame Lab (Determine independent / dependent variable and graph them) "M & M" Lab (How to write a hypothesis) "Save Fred" (How to report data) DEMOs: Candle
Assessment(s)	Safety Test Unit 1 Assessment Benchmark (Pre-Assessment Test)

Jasper City Schools Curriculum Map – 2014-2015
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PHYSICAL SCIENCE-8th GRADE

Course Name: Physical Science - Chemistry	
Unit Name: Atoms, Elements, and the Periodic Table	
Time Frame:	**October / March**
Unit Standards	8.1.2 - Describe the structure of atoms, including the location of protons, neutrons, and electrons. 8.1.4 - State the law of conservation of matter. 8.1.3 - Determine the number of protons, neutrons, and electrons, and the mass of an element using the periodic table. 8.1.7 - Describe states of matter based on kinetic energy of particles in matter. 8.1.5 - Differentiate between ionic and covalent bonds. Technology Standard 2 – Publish digital products that communicate curriculum concepts. Technology Standard 5 – Use basic features of word processing, spreadsheets, databases, and presentation software. Literary Standard 3 – Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. Literary Standard 4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context.
Unit Essential Questions	1. What is an atom? 2. What is a compound? 3. What is a mixture? 4. What is the structure of an atom? Where are the protons, neutron, and electrons within the atom? 5. Who were the scientists that helped up understand the structure of atoms? 6. What is the charge of each subatomic particle? 7. How do we determine the number of protons, neutrons, and electrons in an atom? 8. How do we determine the mass of an element? 9. How do we use the periodic table? (in locating metals, nonmetals, metalloids, and noble gases; trends of reactivity, valence electrons, size of radii, etc.) 10. How to differentiate between ionic and covalent bonds?
Unit Essential Vocabulary	1. Atom 2. Element 3. Periodic Law 4. Group 5. Period 6. Electron 7. Neutron 8. Proton 9. Nucleus 10. Electron Cloud 11. Organic 12. Inorganic 13. Alkali Metal 14. Alkaline Earth Metal 15. Transition Elements 16. Halogens 17. Noble Gases 18. Mass Number 19. Atomic number 20. metals 21. nonmetals 22. metalloids 23. valence electrons 24. electronegativity 25. reactivity

Resources	Teacher-made Notes Holt Physical Science Text Chapters: 11, 12, 13, & 15 AMSTI "Properties of Matter" Kit Polymer Lab Polyurethane Foam Lab DEMOs: "Electrified Pickle" Flame Tests Worksheets: Quarks, Isotopes, and Curiosities Who Am I? Forming Words with Symbols Groups of the Periodic Table Electron Configuration Bohr Models Periodic Table Puzzle Periodic Table Crossword Bonding worksheets (covalent / ionic bonds) SmartBoard Lessons
Assessment(s)	Element Tests Periodic Table Test Science Notebook (AMSTI Notebook Components) Groups of Periodic Table - Foldable Chemical Bonding Element Project

Jasper City Schools Curriculum Map – 2014-2015
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PHYSICAL SCIENCE-8th GRADE

Course Name:	**Physical Science - Chemistry**
Unit Name:	**Properties and States of Matter**
Time Frame:	**September / February**
Unit Standards	8.1.0 – Physical Science 8.1.7 - Describe states of matter based on kinetic energy of particles in matter. Technology Standard 2 – Publish digital products that communicate curriculum concepts. Technology Standard 5 – Use basic features of word processing, spreadsheets, databases, and presentation software. Literary Standard 3 – Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. Literary Standard 4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context.
Unit Essential Questions	1. What is matter? 2. Distinguish between physical change and chemical change? 3. What are the five states of matter? 4. How does energy change as matter is converted from one state to another? 5. Distinguish between physical and chemical properties? 6. How do particles behave in a different states of matter?
Unit Essential Vocabulary	matter volume meniscus weight inertia plasma neutron star Mass Volume Density Temperature Liquid Gas Solid Exothermic Endothermic Viscosity Chemical change Physical change Change of State suspension solution element molecule colloid suspension conversion factors units of measure surface tension pressure pure substances mixture element compound solute solvent Chemical properties Physical properties Boyle's Law Charles's Law melting evaporation boiling condensation sublimation
Resources	Holt Physical Science Text Chapters 2, 3 Foldable chapters 2 and 3 Matter Notes AMSTI "Properties of Matter" Kit DEMOs: implode can
Assessment(s)	Assessment chapter 2 – Properties and Change Chapter 3 Assessment – Changes of Matter and Its States Foldable for chapters 2 and 3