8th Grade Science PACING Guide

Quarter 1

Timeline & Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
Science Introduction 1st Quarter (*4 Days*) **Resources:** **Videos:** • *Why Should I Stay Awake in Science* **Books:** -Help! I'm Teaching Middle School Science -Doing Good Science -Textbook -Science Careers (library) **Worksheets:** • Syllabus • Interest Survey	•	• What is science? • Why is science important? • What are we going to learn about? • Class Expectations	I will be able to: ○ List careers that use science ○ Explain an event that use science ○ Explain why science is important ○ List some of the science concepts we are going to learn about ○ List the classroom/lab expectations	• Science • Behavioral • Physical • Social • Life •

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Measuring 1st Quarter (*4 days)* **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1: Inquiry Process. ○ Concept 2: Scientific Testing (Investigating and Modeling): • PO 4: Perform measurements using appropriate scientific tools • PO 5: Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs	• Why did scientists create the international System of Units? • How can tools assist physical scientists? • Why is the scientific notation a useful tool for scientists?	I will be able to: ○ Accurately take measurements ○ Accurately record measurements ○ Accurately convert measurements ○ Accurately choose the label of the objec	• Meter • Liter • Centi • Mili • Deci • Deka • Gram • Volume • Area • Weight • Triple Beam Balance • Meter Stick • Graduated • Mass • Scientific notation • International System of Units • Percent Error • Non-Standard units of measurement Length • Temperature • Hector • Kilo

Graphing 1st Quarter (*6 days)* **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1: Inquiry Process. ○ Concept 3: Analysis and Conclusions • PO 3: Interpret data that show a variety of possible relationships between two variables, including: • Positive relationship • Negative relationship • No relationship • Strand 1: Inquiry Process. ○ Concept 4: Communication • PO 2: Choose and appropriate graphic representation for collected data • Line graph • Double bar graph • Stem and leaf plot • Histogram • PO 5: Communicate the results and conclusions of the investigation	• Why do we use different types of graphs to show information? • How do you decide the best graph to use to show your data?	I will be able to: ○ Accurately create graphs that depict data ○ Accurately analyze data and interpret relationships between data	• Bar Graph • Circle Graph • Histogram • Stem and Leaf Plot • Horizontal Axis • Vertical Axis • Scale • Independent • Dependent • Title • Key

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Lab Safety 1st Quarter (*3 Days*) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1: Inquiry Process. ○ Concept 2: Scientific Testing (Investigating and Modeling): • PO 1: Demonstrate safe behavior and appropriate procedures in all science inquiry	• Why are Safety Rules important in a laboratory setting? • What do I do if I have an emergency in the lab?	I will be able to: ○ List the safety equipment ○ Explain how to use equipment safely ○ Demonstrate how to safely use the equipment ○ State the consequences of breaking rules in the lab	• Apron • Biological hazard • Equipment • Eyewash • Fire alarm • First-Aid Kit • Goggles • Graduated cylinder • Hand lens • Hazard • Hot plate • Investigation • Laboratory • Materials • Risk • Waste disposal
Scientific Inquiry 1st Quarter- (*14 days)* *10 days on the steps* *4 days on mini inquiry project (Lab)* **Covered:** **ALL QUARTERS** **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1: Inquiry Process. ○ Concept 1:Observations, Questions, and Hypotheses • PO 1: Formulate questions based on observations that lead to the development of a hypotheses • PO 2: Use appropriate research information, not limited to a single source, to use in the development of a testable hypothesis • PO 3: Generate a hypothesis that can be tested ○ Concept 2: Scientific Testing (Investigating and Modeling): • PO 1: (Previously Used) • PO 2: Design a controlled investigation to support or reject a hypothesis • PO 3: Conduct a controlled investigation to support or reject a hypothesis • PO 4: Perform measurements using appropriate scientific tools	• What are some steps used during scientific inquiry? • What are the results of scientific inquiry? • What is critical thinking? • What makes a theory a law?	I will be able to: ○ Create a question to be explored ○ Use a variety of information to gather research ○ Formulate and Test a hypothesis ○ Create a lab book ○ Create a well formulated lab report ○ Collect qualitative or quantitative data ○ Create a graphic representation of the collected data ○ Make inferences ○ Analyze data and make conclusions about the collected data ○ Distinguish between theory and law	• Problem • Research • Hypothesis • Experiment • Materials • Procedure • Observation • Qualitative • Quantitative • Inference • Conclusion • Analyze • Scientific theory • Scientific law • Critical thinking • Variable • Constant • Independent variable • Dependent Variable • Control Group • Experimental Group

Scientific Inquiry (Cont.)	• PO 5: Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs
	○ Concept 3: Analysis and Conclusions
	• PO 1: Analyze data obtained in a scientific investigation to identify trends.
	• PO 2: Form a logical argument about a correlation between variables or sequence of events.
	• PO 3: Interpret data that show a variety of possible relationships between two variables, including:
	  • Positive relationship
	  • Negative relationship
	  • No relationship
	• PO 4: Formulate a future investigation based on the data collected
	• PO 5: Explain how evidence supports the validity and reliability of a conclusion
	• PO 6: Identify the potential investigational error that may occur
	• PO 7: Critique scientific reports from periodicals, television, or other media
	• PO 8: Formulate new questions based on the results of a previous investigation
	○ Concept 4: Communication
	• PO 1: Communicate the results of an investigation			

Scientific Inquiry (Cont.)	• PO 2: Choose and appropriate graphic representation for collected data
	  • Line graph
	  • Double bar graph
	  • Stem and leaf plot
	  • Histogram
	• PO 3: Present analyses and conclusions in clear, concise formats
	• PO 4: Write clear, step-by-step instructions for conducting investigations or operating equipment
	• PO 5: Communicate the results and conclusions of the investigation
	• investigation
	• Strand 2: History and Nature of Science
	  ○ Concept 2: Nature of Scientific Knowledge
	  • PO 1: Apply scientific processes to other problem solving or decision making situations
	  • PO 2: Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories
	  • PO 3: Defend the principle that accurate record keeping, openness, and replication are essential for maintaining and investigator's creditability with other scientists and society
	  • PO 4: Explain why scientific claims may be questionable if based on very small samples of			

	data, biased samples, or samples for which there was no control			

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History of Science 1st Quarter (*8 Days*) **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• Who were the major contributors to science? • How did their ideas get improved over time? • What were the people's interests and ideas of science throughout history?	I will be able to: ○	•
Inventors and Inventions 1st Quarter (*11 Days*) 7 Days History 4 Days Junior Inventors PBL **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• What were the most impactful inventions of all time? • How do inventions get improved over time? • How did the times compare to when the ideas were first developed and when the first inventions with those ideas were created?	I will be able to: ○	• Invention • Innovator • Additions • Corrections • Gadget

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Quarter 2

Timeline & Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
Physical Properties of Matter 2nd Quarter (6 Days) Lab: 3 Days **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 5: Physical Science ○ Concept 1: Properties and Changes of Properties in Matter • PO 1: Identify different kinds of matter based on the following physical properties • States • Density • Boiling point • Melting point • Solubility	• How does the kinetic molecular theory describe the behavior of a gas? • How are temperature, pressure, and volume related in Boyle's Law? • How is Boyle's Law different the Charles' Law?	I will be able to: ○ Characterize matter using its physical and chemical properties ○ Explain/Compare and Contrast the gas laws ○ Accurately match the state of matter with the description of what phase change it is in.	• Viscosity • Surface Tension • Kinetic molecular theory • Pressure • Malleability • Luster • Ductility • Vaporization • Evaporation • Condensation • Sublimation • Deposition • Boiling • Boiling Point • Freezing • Melting • Oxidation
Chemical Properties of Matter 2nd Quarter (3 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 5: Physical Science ○ Concept 1: Properties and Changes of Properties in Matter • PO 2: Identify different kinds of matter based on the following chemical properties • Reactivity • pH • oxidation	• How do particles move in states of matter? • How are the forces between particles different in states? • What are the 5 states of matter? • What is the cycle of the states of matter?	I will be able to: ○ List the 5 states of matter ○ Determine if a solid is crystalline or amorphous ○ Explain the 5 states of matter ○ Create and explain the states of matter cycle of the 3 common states of matter	• Solid ○ Crystalline ○ Amorphous • Liquid • Gas ○ Vapor • Bose Einstein Condensates • Plasma • Boyle's Law • Charles's Law • Conservation of Mass and Energy • Acid • Base

				• Oxidation

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Chemical and Physical Changes 2nd Quarter (8 Days) Lab: 3 Days **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 5: Physical Science ○ Concept 1: Properties and Changes of Properties in Matter • PO 3: Identify the following types of evidence that a chemical reaction has occurred: • Formation of a precipitate • Generation of gas • Color change • Absorption or release of heat • PO 7: Investigate how the transfer of energy can affect the physical and chemical properties of matter	• How is temperature related to particle movement? • How are temperature and thermal energy different? • What happens to thermal energy when matter changes from one state to another?	I will be able to: ○ Explain and give examples of chemical and physical changes ○ Explain the Law of Cons. Of mass ○ Accurately write out chemical equations using a variety of changes	• Chemical Change • Physical Change • Chemical Reaction • Chemical equation • Reactant • Product • Law of conservation of mass • Coefficient • Synthesis • Decomposition • Single replacement • Double replacement • Combustion • Endothermic • Exothermic • Activation energy • Catalyst • Enzyme • Inhibitor

Atoms 2nd Quarter (2 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• What is an atom? • How has the atomic model changed over time? • What happens during nuclear decay?	I will be able to: ○ Explain the timeline of the atom the people and how the atom has changed over time ○ Explain and illustrate atomic diagrams.	• Protons • Neutrons • Electrons • Nucleus • Isotope • Atomic number • Mass Number • Ion • Electron Cloud • Dalton • Democritus • Rutherford

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Elements 2nd Quarter (3 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• What are elements? • How are they different and similar to each other?	I will be able to: ○ Accurately find and give the protons, neutrons, electrons, atomic #, atomic mass, electron dot diagram, and valence electrons of your given element.	• Protons • Neutrons • Electrons • Nucleus • Isotope • Atomic number • Mass Number •
Periodic Table of Elements 2nd Quarter (7 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• What is the Periodic Table of Elements? • How is the Periodic Table organized? • What things to do row and column numbers tell us? • What do the families tell us about all those elements?	I will be able to: ○ Explain the timeline of the atom and how it has changed over time ○ Explain nuclear decay and accurately compute the nuclear decay of items. ○ Accurately find and give the protons, neutrons, electrons, atomic #, atomic mass, electron dot diagram, and valence electrons of your given element.	• Protons • Neutrons • Electrons • Atomic number • Mass Number • Atomic Name • Atomic Symbol • Periods • Valence Electron • Family • Metals • Non-Metals • Metalloids
Compounds 2nd Quarter (7 Days) **Resources:**	•	• What is a compound? • How are compounds and elements different? • How do compounds form?	I will be able to: ○	• Ionic • Covalent • Polar • Non-Polar • Bond

Books: -Help! I'm Teaching Middle School Science		•		• Stable

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Mixtures 2nd Quarter (7 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• What is a mixture? • Are all compounds mixtures? Are all mixtures compounds?	I will be able to: ○ Explain and identify the solute and solvent ○ Determine if an illustration is a compound, element or mixture: homogenous or heterogenous	• Solvent • Solute • Homogenous • Heterogenous
Christmas Chemistry **End of Chemistry Unit** 2nd Quarter (4 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	•	• How can you identify an unidentified substance using tests?	I will be able to: ○ Identify a mystery substance using inquiry skills	• Physical Properties • Chemical Properties • Chemical Reaction • Physical Reaction • Problem • Experiment • Hypothesis • Quantitative • Qualitative

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Quarter 3

Timeline & Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/ Academic)
Science Fair 3rd Quarter (7 Days) -Fridays until fair **Resources:** Books -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs • Strand 2: History and Nature of Science (Listed in 1st qtr.) ○ Concept 2: Nature of Scientific Knowledge • All POs	• What category and subject **interests** you? • How are you going to experiment with this idea in a new and creative way? • How are you going to share this information and an interesting and captivating manner?	I will be able to: ○ State my problem ○ Show my research and explain what background information I learned to help me with the creation of my question and site it appropriately. ○ Create and Conduct my experiment ○ List and explain my control group and experimental group ○ List and explain my control, independent and dependent variables and procedure. ○ Create visuals to show my multiple trial data ○ Create a lab book to accompany my project ○ Explain my qualitative and quantitative observations and make conclusions about my experiment ○ Explain my future directions for my project.	• Interview • Justify

Cells(Review) 3rd Quarter (4 Days) **Resources:** Books: -Help! I'm Teaching	•	• How do cells know what their specialized function is?	I will be able to: ○ Explain the process of the cell cycle ○ Explain the purpose of cells and cell organelles	• Cell Cycle • Animal Cell • Plant Cell

Mitosis 3rd Quarter (4 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 1: Explain the purposes of cell division • Growth and repair • Reproduction	• How is the daughter cell and mother cell alike? • What types of cells go through mitosis? • What stage does the cell spend most of its time in and why? • Why and when do cells go through mitosis?	I will be able to: ○ List the stages of mitosis in the correct order ○ Explain in detail what happens during each stage of the cycle ○ List reasons that cells go through mitosis ○ Accurately match/create the visual representation of the stage to the stage name	• Interphase • Prophase • Metaphase • Anaphase • Teleophase • Cytokinesis • Daughter Cell • Diploid • Somatic Cell • Repair • Growth
Meiosis 3rd Quarter (4 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 1: Explain the purposes of cell division • Growth and repair • Reproduction	• What type of division do sex cells go through? • Why do sex cells only have half the amount of genetic material that their parents do? • What does the second pmat do to the cell?	I will be able to: ○ List the stages of meiosis in the correct order ○ Explain in detail what happens during each stage of the cycle ○ Compare and Contrast Mitosis and Meiosis	• Sperm • Egg • Zygote • Haploid
DNA-Genetics Intro. 3rd Quarter (4 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 1: Explain the purposes of cell division • Growth and repair • Reproduction	• How does DNA line up? • What does DNA do? • What bases make up DNA?	I will be able to: ○ List the chemicals found in DNA ○ Accurately pair up the chemicals to their counter part ○ Explain how DNA works and is replicated	• Deoxiribose Nucleic Acid • Adenine • Cytosine • Guanine • Thymine

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Heredity 3rd Quarter (10 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 3:Science in Personal and Social Perspectives ○ Concept 2: Science and Technology in Society • Compare risks and benefits of technological advances • Genetic engineering • Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 2: Explain the basic principles of heredity using the human examples of: • Eye color • Widow's peak • Blood type • PO 3: Distinguish between the nature of dominant and recessive traits in humans ○ Concept 4: Diversity, Adaptation, and Behavior • PO 2: Describe how an organism can maintain a stable internal environment while living in a constantly changing external environment. • PO 3: Determine characteristics of organisms that could change over several generations	• How do traits get passed on? • What does it mean to be a carrier? • How are phenotype the same but different at the same time? • What is the importance of Gregor Mendel to genetics? • What makes something dominant or recessive?	I will be able to: • Explain how traits get passed on from parent to child • Explain the process that Gregor Mendel used that made him become the father of genetics. • Accurately depict something as dominant or recessive • Correctly state the genotype and phenotype of objects • Explain the idea of selective breeding	• Heredity • Genetics • Gregor Mendel • Selective breeding • Dominant trait • Recessive Trait • Genotype • Phenotype • Heterozygous • Homozygous • Traits • Allele • Carrier

Punnett Squares 3rd Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 2: Explain the basic principles of heredity using the human examples of: • Eye color • Widow's peak • Blood type • PO 3: Distinguish between the nature of dominant and recessive traits in humans	• What is the probability of a child getting a trait that the parent's have? • Does the probability change with the number of children the parents have? • Does it matter what parent the gene comes from?	I will be able to: ○ Accurately complete Punnett squares ○ Complete multiple allele Punnett squares. ○ Explain Co-dominance and incomplete dominance ○ Accurately complete monohybrid cross	• Monohybrid cross • Punnett square • Incomplete dominance • Co-dominance • Multiple allele • Carrier

Animal Behaviors Animal Life Cycles 3rd Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 4: Diversity, Adaptation, and Behavior • PO 5: Analyze the following behavioral cycles of organisms • Hibernation • Migration • Dormancy (plants)	• Why do animals exhibit particular behaviors and cycles? • What about animal population can affect the surroundings? • How have things evolved over time? • Why does diversity in populations matter?	I will be able to: ○ Explain animal behavioral cycles ○ Explain plant cycles ○ Explain diversity in communities and niches ○ Analyze the effect of population based upon animal behavioral changes ○ Explain natural selection ○ Create conservation ideas and debate them ○ Explain the idea of evolution	• Habitat • Population • Community • Niche • Abiotic • Biotic • Producer • Consumer • Food Web • Food Energy flow	• Energy Pyramid • Dormancy • Hibernation • Variation • Natural selection • Adaptation • Evolution • Extinction • Conservation biology

Diversity and Adaptations 3rd Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 1: Explain how an organism's behavior allows it to survive in an environment • PO 4: Compare the symbiotic and competitive relationships in organisms within and ecosystem. • PO 6: Describe the following factors that allow for the survival of living organisms • Protective coloration • Beak design • Seed dispersal • Pollination	• What makes some species more prone to a specific type of behavior over another one? • Can the event make the animal change the type of relationship that they have? • What effect do these relationships have on the energy pyramid and food web?	I will be able to: ○ State the different types of animal relationships ○ Explain each type of animal relationship ○ Correctly match the animal relationships to the name	• Predation • Symbiosis • Competition ○ Inter ○ Intra • Parasitism • Carnivore • Herbivore • Omnivore • Detritivore
Animal Relationships 3rd Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 4: Life Science ○ Concept 2: Reproduction and Heredity • PO 1: Explain how an organism's behavior allows it to survive in an environment • PO 4: Compare the symbiotic and competitive relationships in organisms within and ecosystem. • PO 6: Describe the following factors that allow for the survival of living organisms • Protective coloration • Beak design • Seed dispersal • Pollination	• What makes some species more prone to a specific type of behavior over another one? • Can the event make the animal change the type of relationship that they have? • What effect do these relationships have on the energy pyramid and food web?	I will be able to: ○ State the different types of animal relationships ○ Explain each type of animal relationship ○ Correctly match the animal relationships to the name	• Predation • Symbiosis • Competition ○ Inter ○ Intra • Parasitism • Carnivore • Herbivore • Omnivore • Detritivore

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Quarter 4

Force, Motion and Newton's 1st Law 4th Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs • Strand 3: Science in Personal and Social Perspectives ○ Concept 2: Science and Technology in Society • PO 2: Compare solutions to best address an identified need or problem • Strand 5: Physical Science ○ Concept 2:Motion and Forces • PO 2: Identify the conditions under which and object will continue in its state of motion (Newton's 1st Law of Motion) • PO 4: Describe forces as interactions between bodies (Newton's 3rd Law of Motion) • PO 5: Create a graph devised from measurements of moving objects and their interaction, including: • Position-time graphs • Velocity-time graphs	• How does the description of an object's position depend on reference point? • How can you describe the position of an object in two dimensions? • What is the difference between distance and displacement?	I will be able to: ○ Define force ○ Explain how to tell if something is in motion ○ Create Output and Input Diagrams ○ Explain the demonstrate the different types of friction	• Force • Motion • Position • Reference Point • Displacement • Contact force • Noncontact force • Gravity • Air resistance • Output force • Input force • Input device • Output device • Friction ○ Static ○ Sliding ○ Fluid
Speed and Newton's 2nd Law 4th Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs • Strand 5: Physical Science ○ Concept 2:Motion and Forces • PO 4: Describe forces as interactions between bodies (Newton's 3rd Law of Motion) • PO 5: Create a graph devised from measurements of moving objects and their interaction, including:	• What is Speed? • How can you use a distance-time graph to calculate average speed?	I will be able to: ○ Define speed ○ Define and Calculate constant speed, instantaneous speed and average speed. ○ Create distance-time graphs and be able to answers questions using the graph .	• Speed • Constant Speed • Instantaneous Speed • Average Speed • Total distance • Total time • Distance-time graph

	• Position-time graphs • Velocity-time graphs			
Newton's 3rd Law 4th Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs • Strand 5: Physical Science ○ Concept 2:Motion and Forces • PO 1: Demonstrate velocity as the rate of change of position over time • PO 5: Create a graph devised from measurements of moving objects and their interaction, including: • Position-time graphs • Velocity-time graphs	• What are ways velocity can change?	I will be able to: ○ Define and calculate velocity ○ Explain how and why velocity changes ○ Create velocity-time graphs and be able to answers questions using the graph .	• Velocity • Velocity-Time graph • Acceleration • Final Speed • Initial Speed • Total Time • Speed-Time Graph • Horizontal • Vertical •
8th Grade in Review Project 4th Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs • Strand 5: Physical Science ○ Concept 2:Motion and Forces • PO 3: Describe how the acceleration of a body is dependent on its mass and the net applied force (Newton's 2nd Law of Motion) • PO 5: Create a graph devised from measurements of moving objects and their interaction, including: • Position-time graphs • Velocity-time graphs	• What are three ways an object can accelerate? • What does a speed-time graph indicate about object's motion?	I will be able to: ○	ALL VOCAB

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Environmental PBL 4th Quarter (7 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs • Strand 3: Science in Personal and Social Perspectives ○ Concept 2: Science and Technology in Society • PO 1: Propose viable methods of responding to an identified need or problem • PO 2: Compare solutions to best address an identified need or problem • PO 3: Design and construct a solution to an identified need or problem using simple classroom materials	• How can machines make work easier? • What is an environmental issue that could be worked on?	I will be able to: ○ Explain my design process when creating a simple machine to take care of an environmental problem ○ Choose an environmental issue to address ○ Research the problem and come up with possible solutions	• Simple machine • Inclined plane • Screw • Wedge • Lever • Wheel and axle • Pulley • Complex machine • Efficiency
Dine Science Connections PBL 4th Quarter (5 Days)	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs ○	•	I will be able to: ○ Explain my design proce ○	•
Scientific Debate 4th Quarter (3 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 3: Science in Personal and Social Perspectives ○ Concept 2: Science and Technology in Society • PO 1: Propose viable methods of responding to an identified need or problem • PO 2: Compare solutions to best address an identified need or problem •	• What is newton's 1st law of motion? • How is motion related to balanced and unbalanced forces? • What is newton's 2nd law of motion? • What is newton's 3rd law of motion? •	I will be able to: ○ State and Explain Newton's Three Laws ○ Calculate net force of an object ○ Explain centripetal and circular motion ○ Explain the idea of action reaction ○ Create graphs and depict what parts show which law.	•

Catapult PBL 4th Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs ○	• How can you create a catapult using everything you know about physics?	I will be able to: ○ Explain my design process when creating my catapult ○ Research catapults and create a variety of possible solutions	• Kinetic Energy • Potential Energy • Work
Rockets PBL 4th Quarter (5 Days) **Resources:** Books: -Help! I'm Teaching Middle School Science	• Strand 1:Inquiry Process (Listed in 1st qtr.) ○ All Concepts • All POs ○	• Why do different objects react differently when acting with the same force?	I will be able to: ○ Explain the process I used to design my rocket ○ Explain the trials and observations that I made ○ Explain the physics behind objects motion and their changes. ○ Create a rocket	• Thrust • Expulsion