HONORS PHYSICS

THEME:		
STRAND		**Report Card Language**
TOPIC: One-dimensional kinematics		
POWER OBJECTIVE #1	**The student is able to model the one-dimensional kinematics of an object using narrative, mathematical, and graphical representations.**	**Model the one-dimensional kinematics of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***1KIN.1.a*** *Describe and use Reference Frames for motion and displacement.*	
	1KIN.1.b *Describe and solve motion problems using average velocity and instantaneous velocity.*	
	1KIN.1.c *Develop and use vectors to represent motions.*	
	1KIN.1.d *Describe and solve motions of objects in Uniform Motion (UM) and in Uniformly Accelerated Motion (UAM) using physics expressions for Equations of Motion.*	
	1KIN.1.e *Describe and solve motions of objects in Uniform Motion (UM) and in Uniformly Accelerated Motion (UAM) using Graphical Analysis of Motion.*	
	1KIN.1.f *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understanding and/or big ideas.*	
STRAND		**Report Card Language**
TOPIC: Two-Dimensional Kinematics		
POWER OBJECTIVE #2	**The student is able to model the TWO-DIMENSIONAL KINEMATICS of an object using narrative, mathematical, and graphical representations.**	**Model the TWO-DIMENSIONAL KINEMATICS of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***2KIN.2.a*** *Develop and use vectors to represent motions of objects.*	

	2KIN.2.b *Describe and solve the motions of falling objects.*	
	2KIN.2.c *Develop and solve Projectile Motion Problems: projectiles fired horizontally and at an angle.*	
	2KIN.2.d *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understanding and/or big ideas.*	
STRAND		**Report Card Language**
TOPIC: Dynamics: Newton's Laws Basics		
POWER OBJECTIVE #3	**The student is able to model DYNAMICS: NEWTON'S LAWS BASICS of an object using narrative, mathematical, and graphical representations.**	**Model DYNAMICS: APPLICATIONS OF NEWTON'S LAWS of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***1DYN3.a*** *Define and describe how forces act upon objects.*	
	1DYN.3.b *Describe and use Free Body Diagrams.*	
	1DYN.3.c *Define the similarities and differences between mass and weight, inertial mass, and gravitational mass.*	
	1DYN.3.d *Define and explain Newton's Laws of Motion. of energy.*	
	1DYN.3.e *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understandings and/or big ideas.*	
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TOPIC: Dynamics: Applications of Newton's Laws		
POWER OBJECTIVE #4	**The student is able to model DYNAMICS: APPLICATIONS OF NEWTON'S LAWS of an object using narrative, mathematical, and graphical representations.**	**DYNAMICS: APPLICATIONS OF NEWTON'S LAWS of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***2DYN.4.a*** *Explain and solve problems applying Newton's Laws of Motion for gravitational forces and fields.*	
	2DYN.4.b *Explain and solve problems applying Newton's Laws of Motion for inclined plane.*	

	2DYN.4.c *Explain and solve problems applying Newton's Laws of Motion for translational equilibrium.*	
	2DYN.4.d *Explain and solve problems applying Newton's Laws of Motion for connected objects.*	
	2DYN.4.e *Explain and solve problems applying Newton's Laws of Motion for friction (static and kinetic)*	
	2DYN.4.f *Explain and solve problems applying Newton's Laws of Motion for Atwood machines.*	
	2DYN.4.g *Explain and solve problems applying Newton's Laws of Motion for tension in ropes/pulleys/cables.*	
	2DYN.4.h *Explain and solve problems applying Newton's Laws of Motion for weightlessness.*	
	2DYN.4.i *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understanding and/or big ideas.*	
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TOPIC: Circular Motion and Gravitation		
POWER OBJECTIVE #5	**The student is able to model CIRCULAR MOTION AND GRAVITATION of an object using narrative, mathematical, and graphical representations.**	**Model CIRCULAR MOTION AND GRAVITATION of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***UCM.5.a*** *Use and apply the laws of motion to analyze, describe and predict the effects of kinematics of uniform circular motion (UCM) of objects.*	
	UCM.5.b *Use and apply the laws of motion to analyze, describe and predict the effects of dynamics of uniform circular motion (UCM) of objects.*	
	UCM.5.c *Describe and use Newton's Law of Universal Gravitation on objects.*	
	UCM.5.d *Describe and use Newton's Laws of Gravity near the Earth's surface.*	
	UCM.5.e *Describe and use Newton's Laws of Gravity to model satellites and explain "weightlessness."*	
	UCM.5.f *Define and apply Kepler's Laws to objects in circular motion.*	
	UCM.5.g *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understandings and/or big ideas.*	
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PERRY LOCAL SCHOOLS GUARANTEED AND VIABLE CURRICULUM

TOPIC: Work, Energy, Power		
POWER OBJECTIVE #6	**The student is able to model the WORK, ENERGY, and POWER of an object using narrative, mathematical, and graphical representations.**	**Model the WORK, ENERGY, and POWER of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***WEP.6.a*** *Define Work and Energy from a science perspective, both qualitatively and quantitatively.*	
	WEP.6.b *Define, explain, and use the Kinetic Energy and the Work-Energy Theorems.*	
	WEP.6.c *Define, explain, and use the Potential Energy concepts for Gravitational and Elastic energies.*	
	WEP.6.d *Define, explain and use the Law of Conservation of Mechanical Energy.*	
	WEP.6.e *Define, explain, and use the concept of Power.*	
	WEP.6.f *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understanding and/or big ideas.*	
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TOPIC: Momentum		
POWER OBJECTIVE #7	**The student is able to model the MOMENTUM of an object using narrative, mathematical, and graphical representations.**	**Model the MOMENTUM of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***MOM.7.a*** *Define, explain, and use the concepts of Impulse and Change in Momentum.*	
	MOM.7.b *Define, explain, and use the concept of Conservation of Momentum.*	
	MOM.7.c *Define, explain and use the concepts of Conservation of Energy and Momentum in Collisions 1 dimension.*	
	MOM.7.d *Define, explain and use the concept of Conservation and Momentum in Collisions in 2 dimensions.*	
	MOM.7.e *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or across enduring understanding and/or big ideas.*	

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TOPIC: Electricity and Magnetism		
POWER OBJECTIVE #8	**The student is able to model the ELECTRICITY and MAGNETISM of an object using narrative, mathematical, and graphical representations.**	**Model the ELECTRICITY and MAGNETISM of an object using narrative, mathematical, and graphical representations.**
SUPPORTING INDICATORS	***EMG.8.a*** *Solve problems involving charging objects (friction, contact and induction).*	
	EMG.8.b *Solve problems involving Coulomb's law.*	
	EMG.8.c *Solve problems involving electric fields and electric potential energy.*	
	EMG.8.d *Solve problems involving DC circuits that include the following areas: Ohm's Law, series circuits, parallel circuits, mixed circuits and applying conservation of charge and energy (junction and loop rules).*	
	EMG.8.e *Solve problems involving magnetic fields*	
	EMG.8.f *Solve problems involving electromagnetic interactions.*	
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TOPIC: Math Tools		
POWER OBJECTIVE #10	**The student is able to demonstrate the mathematics skills required for physics conceptual and quantitative solutions as a means to study matter and energy.**	**Demonstrate the mathematics skills required for physics conceptual and quantitative solutions as a means to study matter and energy.**

SUPPORTING INDICATORS	***MAT.10.a*** *Demonstrate proper safety methods when using laboratory equipment and chemicals while performing scientific procedures.*	
	MAT.10.b *Identify proper significant figures in measurements and calculations.*	
	MAT.10.c *Perform basic English/Metric conversions while properly identifying significant figures.*	
	MAT.10.d *Convert quantities with derived units (i.e., density and velocity) using dimensional analysis while properly identifying significant figures.*	
	MAT.10.e *Perform calculations using Scientific Notation.*	
	MAT.10.f *Use basic right triangle trigonometry (sine, cosine, tangent) and Pythagorean Theorem to model and solve physics problems.*	
	MAT.10.g *Define, explain, and use the concepts of "slope" in two dimensions.*	
	MAT.10.h *Apply physics problem solving processes and mathematical routines to connect and integrate concepts in and across the above supporting indicators in order to generalize or extrapolate in and/or enduring understandings and/or big ideas.*	
STRAND		**Report Card Language**
TOPIC: Scientific Inquiry and Application (SI)		
POWER OBJECTIVE #11	**The student will be able to appraise emerging scientific issues associated with physical sciences.**	**Appraise emerging scientific issues associated with physical sciences.**
SUPPORTING INDICATORS		