

# APPENDIX B

## Lesson correlation to NGSS Performance Expectations

High School

NGSS Performance Expectations		Lessons													
	High School	Penny for Your Thoughts	Pain in the Neck	Momentum Bashing 1	Momentum Bashing 2	Egg Crash!	Conservation: It's the Law!	Ball of Energy	Twirling Penny	Think Fast, Act Fast	Distractions Driving Dangers	Stretching Silly Putty	Stretching Over Pencil Pressure	Paper Car Crash!	Project Pedestrian
HS-PS2-1. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.				✓	✓	✓			✓	✓				✓	
HS-PS2-2. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.							✓	✓							
HS-PS2-3. Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.			✓			✓								✓	✓
HS-PS2-6. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.												✓			
HS-PS3-1. 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.								✓							
HS-PS3-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).							✓								
HS-PS3-3. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.							✓								
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.										✓					
HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.						✓					✓	✓	✓	✓	✓