

State Inspection Sheet. [ONLINE FIGURE A.]

Station 1: Piston Pressure			
	Trial 1	Trial 2	Trial 3
Initial pressure (kPa)			
Final pressure (kPa)			
Initial volume (cc) cm³			
Final volume (cc) cm³			
Station 2: Soda Can Radiator			
	Trial 1	Trial 2	Trial 3
Initial mass (soda can and stirring rod)			
Mass of water	50 g	50 g	50 g
Final mass (add mass of water to initial mass)			
Initial water temperature (°C)			
Final water temperature (°C)			
Change in temperature (°C)			
Initial mass of food and burner			
Final mass of food and burner			

Change in mass			
Station 3: The Color of Headlights			
Color of the Bulb		Light Intensity (lx)	
Station 4: Going the Distance			
1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

Station Completion Checklist			
Station 1	Station 2	Station 3	Station 4

Car labs by standards **[ONLINE FIGURE B]**

Lab	Key concept integration*	Probe
The Color of Headlights	<p>Math: SI units, scientific notation (wavelength), measurement, data, problem solving</p> <p>Science: Wavelength, energy, nature of light</p> <p>Technology: Standard 10: design; Standard 16: energy and power technologies</p>	Light intensity
Piston Pressure	<p>Math: Proportions, volume (e.g., cylinder, cone), geometry, percent error, units, data</p> <p>Science: Gas laws, energy, volume, pressure, precision, properties of gases, error</p> <p>Technology: Standard 16: energy and power technologies; Standard 13: impact of systems</p>	Gas Pressure
Soda Can Radiator	<p>Math: Functions, units, data, mathematical models</p> <p>Science: Heat, energy, properties of water, specific heat, calorimeter,</p>	Temperature

	<p>properties of matter, chemical reactions, conservation of energy, interactions of energy and matter</p> <p>Technology: Standard 3: connections between fields; Standard 12: use of technological products</p>	
Going the Distance	<p>Math: Measurement, units, averages, data analysis, rate of change</p> <p>Science: Laws of motion, forces, speed, velocity, acceleration, energy, distance</p> <p>Technology: Standard 10: troubleshooting and experimentation</p>	Motion
Rubber Band Car Drag Race	<p>Math: Slope, linear equation, graphical analysis, rate of change</p> <p>Science: Laws of motion, speed, velocity, acceleration, distance</p> <p>Technology: Standard 10: experimentation and troubleshooting</p>	Motion
Rubber Band Car Design	<p>Science: Science as inquiry, science and technology</p> <p>Math: Apply to contexts outside of mathematics</p> <p>Technology: Standard 3: nature of</p>	None

	technology; Standards 9 and 10: design; Standard 11: apply design process	
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*Science standards are linked to the *National Science Education Standards* (NRC 1996); mathematics standards are linked to *Principles and Standards for School Mathematics* (NCTM 2000); and technology standards are linked to the *Standards for Technological Literacy* (ITEA 2000).

Equipment list [ONLINE FIGURE C].

	Consumables	Equipment
Piston Pressure		calculator
		graphical analysis software
		gas pressure sensor
		125 mL flask
		60 mL syringe
		500 mL graduated cylinder
		ruler
Drag Race	Tape	calculator
		GM-CALC cable
		motion detector
		car
		graphical analysis software
		force sensor
Rubber Band Car	wooden skewers	ruler
	cardboard	scissors
	corrugated cardboard	washers
	tape	
	rubber bands	
	poster putty	
	pencils, pens, markers	
Soda Can Radiator	empty soda can	screwdriver or bottle opener
	cork stopper	calculator

	aluminum foil	stirring rod
	food	ring stand
	match or lighter	graphical analysis software
		temperature probe
		ring and clamp
		balance
Color of Headlights	bulbs	graphical analysis software
		lamp
		calculator
		light sensor
Going the Distance	tape	calculator
		GM-CALC cable
		Motion Detector
		car