HORNET TARGETS

"CAN I?"

9TH GRADE PHYSICAL SCIENCE

Discover · Explore · Practice · Create

Target #	Target	Can I?'s
9.1	1a. I CAN explain and identify basic forces and how they affect each other. 1b I CAN explain and identify Newton's first law of motion. 1c. I CAN apply newton's second law of motion	1a. • Define and identify balanced and unbalanced forces • identify objects that are affected by air resistance • Define and identify... friction • Define and identify... gravity 1b. • define newton's first law of inertia • identify when newton's first law of motion is affecting an object 1c. • define newton's second law • describe the mathematical relationship between force, mass, and acceleration. • calculate force using newton's 2nd law equation. • isolate and solve for a variable other than force in the equation.
9.2	2.a I CAN define, explain and interpret motion newton's third law. 2.b I CAN calculate and define the momentum of an object 2.c I CAN apply mathematical representations to show that the total momentum before and after a collision is conserved.	2a. • define newton's third law • describe the motion of an object undergoing Newton's third law • Describe action-reaction forces 2b. • define momentum • calculate momentum • define elastic and inelastic collisions. 2c. • determine the initial momentum and final momentum during a collision to prove momentum is conserved
9.3	3a. I CAN describe the properties that affect the magnitude of gravity 3b. I CAN describe and predict the gravitational forces between objects using the law of gravitation equation.	3a. • Define the relationship between gravity, mass, and distance between two objects. 3b. • Calculate the gravitational forces using the law of gravitation equation • list in order of increasing gravitational pull, a list of 2 object situations.
9.4	I CAN design, evaluate, and refine a phone case that minimizes the force applied to the phone during a fall.*	• Define impulse-momentum theorem • explain how the force of a collision is affected by the time of the collision Project-based assessment
9.5	I CAN calculate the kinetic and potential energy of a system and show with data and a model that energy is conserved.	• calculate the kinetic energy of a moving object • calculate the potential energy of a moving object • explain how energy is changed to different forms but is still conserved (law of conservation of mass) • use an equation to show that the initial energy of a system is equal to the final energy of a system.

9.6	I CAN build a device that converts one form of energy into another form of energy.*	• Design and build a Rube Goldberg device, wind turbine, solar cell, solar oven, or a generator. (or any similar device) using resources • Be able to list and define forms of energy
9.7	I CAN experimentally find the specific heat of a metal and explain the concept.	• define specific heat • calculate the heat transfer between two objects at different temperatures using their known specific heats. • find the specific heat of a metal using the specific heat of the water and its temperature change.
9.8	8a. I CAN identify the types of waves, source and diagram the wave properties. 8b. I CAN use the wave speed equation to relate and solve for frequency, wavelength, and speed of waves that are traveling in various media.	8a. • Identify the types of waves • diagram properties of a wave(crest, trough, amplitude, wavelength, node, and antinode) • Identify the source of the wave • explain why light can be seen as a particle or a wave 8b. • Calculate the speed of a wave. • calculate the frequency of a wave(speed equation and 1/T) • calculate the wavelength of a wave • Applications of waves and how they are transmitted • explain the Doppler effect using a sound source
9.9	I CAN evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation/sound waves have when absorbed by matter.	• Define reflection • Define diffraction • Define refraction. • Identify interference(constructive and destructive) from a diagram • Predict wave-form during interference. • map the electromagnetic spectrum • explain what blocks cell signal and what doesn't. • explain situations when a light/sound source would be reflected, refracted or diffracted
9.10	I CAN explain how electric current is produced, manipulated, and diagramed.	• describe an electric charge and how it connects to electricity. • explain what can produce an electrical current • Define voltage • Define resistance • Define current • Know units on voltage, resistance, and current • Define and use Electric power equation. • Define a parallel circuit • Define a series circuit. • Draw circuit schematics. • Use snap circuits to show how resistors affect current. • Identify conductors and insulators
9.11	I can think and use skills as a scientist.	• I can measure accurately and precisely • I know and can convert the metric units for mass, length, temperature, and volume between prefixes. limit to milli through kilo • I know and can use the scientific method to solve a problem • I can use lab tools accurately and precisely and with the correct units • I can identify and construct a hypothesis, procedure, conclusion, independent variable, dependent variable, control, and constants.