



# HENRY COUNTY SCHOOLS

Better Together.



## 8th GRADE

| SCIENCE |

 **HENRY**  
Teaching & Learning Standards





# Teaching & Learning Standards

**Science**

**8th Grade**

HCS Graduate  
Learner Outcome

*As a Henry County graduate, I will understand and analyze atoms, matter, reactions, and interactions through scientific processes and practices.*

GA Standard Code

**S8P1 Obtain, evaluate, and communicate information about the structure and properties of matter.**

- S8P1a Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures.
- S8P1b Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed.
- S8P1c Plan and carry out investigations to compare and contrast chemical (i.e., reactivity, combustibility) and physical (i.e., density, melting point, boiling point) properties of matter.
- S8P1d Construct an argument based on observational evidence to support the claim that when a change in a substance occurs, it can be classified as either chemical or physical.
- S8P1e Develop models by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (protons, neutrons, and electrons) and simple molecules.
- S8P1f Construct an explanation based on evidence to describe conservation of matter in a chemical reaction including the resulting differences between products and reactants.

HCS Graduate  
Learner Outcome

*As a Henry County graduate, I will understand and analyze energy as it relates to electricity and magnetism as major kinds of forces acting in nature.*

GA Standard Code

**S8P2 Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system.**

- S8P2a Analyze and interpret data to create graphical displays that illustrate the relationships of kinetic energy to mass and speed, and potential energy to mass and height of an object.
- S8P2b Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands, etc.).
- S8P2c Construct an argument to support a claim about the type of energy transformations within a system [e.g., lighting a match (light to heat), turning on a light (electrical to light)].
- S8P2d Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction), through space (radiation), or in currents in a liquid or a gas (convection).

**S8P5 Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.**

- S8P5a Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact.
- S8P5b Plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators.
- S8P5c Plan and carry out investigations to identify the factors (e.g., distance between objects, magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) that affect the strength of electric and magnetic forces.

HCS Graduate  
Learner Outcome

*As a Henry County graduate, I will understand and analyze forces, mass, motion, and interactions through scientific processes and practices.*

GA Standard Code

**S8P3 Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects.**

- S8P3a Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration.
- S8P3b Construct an explanation using Newton's Laws of Motion to describe the effects of balanced and unbalanced forces on the motion of an object.
- S8P3c Construct an argument from evidence to support the claim that the amount of force needed to accelerate an object is proportional to its mass (inertia).

HCS Graduate  
Learner Outcome

*As a Henry County graduate, I will understand and analyze the characteristics of waves as demonstrated through the integration of scientific practices.*

GA Standard Code

**S8P4 Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves.**

- S8P4a Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves.
- S8P4b Construct an explanation using data to illustrate the relationship between the electromagnetic spectrum and energy.
- S8P4c Design a device to illustrate practical applications of the electromagnetic spectrum (e.g., communication, medical, military).
- S8P4d Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials.

- S8P4e Analyze and interpret data to predict patterns in the relationship between density of media and wave behavior (i.e., speed).
- S8P4f Develop and use a model (e.g., simulations, graphs, illustrations) to predict and describe the relationships between wave properties (e.g., frequency, amplitude, and wavelength) and energy.
- S8P4g Develop and use models to demonstrate the effects that lenses have on light (i.e., formation an image) and their possible technological applications.