



Year at a Glance:
IPC
2022-2023

1st Grading Period

Introductions, start-of –school procedures/protocols, CKH, etc.

Scientific Processes—Incorporated in Every Unit

BIG IDEA: Relationships Exist Between The Structure And Properties Of Matter

Matter

- Types of Matter
- Physical properties (I.6A)
- Arrangement and motion of atoms or molecules (I.6A)
- Changes of state as it relates to arrangement of matter particles and energy transfer (I.7A)
- Characteristics of Matter: viscosity, density, buoyancy, color, boiling point, freezing point, conductivity, and reactivity (I.6C)
- Physical/Chemical Properties & Changes (I.6A, I.6C)
- Intro to Chemical Hazards (SDS sheets) and Lab Safety (I.1ABC)

BIG IDEA: Changes in Matter Affect Everyday Life

Bonding and the Periodic Table

- Review Atoms from 8th grade (protons, neutron, electrons, valence electrons, nucleus, atomic number, atomic mass)
- Review Periodic Table from 6th grade (element, chemical symbol, metal, metalloid, nonmetal); from 8th grade (groups, periods)
- Relate chemical properties of substances to the arrangement of their atoms (I.6B)
- Relate Placement of an element on the Periodic Table to its chemical and physical behavior including bonding and classification (I.6D)
- Ionic and Covalent Bonding: the Basics (I.6D)

2nd Grading Period

Chemical Reactions

- Chemical interactions-formation of new substances (determined by valence electrons) (I.7B)
- Demonstrate conserved mass in a chemical change / counting atoms (I.7C)
- Classify exothermic/endothermic reactions in terms of energy transfer (I.7D)

BIG IDEA: The unique structure of water relates directly to its solvent ability. Many different factors affect the solubility of two or more combined substances

Solution Chemistry

- Relate structure of water to its function as a solvent (I.6E)
- Investigate properties of water solutions and factors affecting solubility of solids (I.6F)
 - nature of solute
 - temperature
 - concentration
- Students research one of the following: acid rain, water quality degradation, air quality degradation, ozone depletion, or similar topic approved by teacher (I.7F, I.3A, I.3D)

Nuclear Energy

- Fission and Fusion—roles in medicine and energy production (I.7E)

Review and Midterm Exam



Year at a Glance:
IPC
2022-2023

3rd Grading Period

BIG IDEA: Concepts of Force and Motion are Evident in Everyday Life

Motion

- Describe and calculate motion of objects in one dimension: position, displacement, speed, and acceleration (I.4A)
- Measure and graph distance and speed as a function of time (I. 4B)
- Net Force—investigate with activities and equipment: Newton’s 1st Law
 - toy Cars, vehicle restraints, sports activities, and classroom objects (I.4C)

Forces

- Newton’s Laws; 2nd & 3rd-- focus is on *relationships between* force, mass, and acceleration
 - Describe and Calculate the Relationship between Force, Mass, and Acceleration (I.4D)
 - ✓ Use Equipment: Dynamic Carts, Moving Toys, Vehicles, and Falling Objects
- Examine conservation of momentum concept – action/reaction forces -- (I.4E)
- Gravitational attraction between objects of different masses (I.4F)

BIG IDEA: Multiple forms of energy exist and the impact of energy transfer and energy conservation affect everyday life.

Energy

- Recognize and Demonstrate:
 - Kinetic- vibration of atoms, water flowing downstream to move pebbles, bowling ball knocking down pins (I.5A)
 - Potential (including gravitational, elastic, and chemical) – ball on inclined plane, spring, batteries. (I.5B)
- Investigate the Law of Conservation of Energy (I.5D)
- Analyze energy transformations of renewable and nonrenewable resources (I.5H)
- Critique the advantages/disadvantages of renewable, non-renewable, and alternative forms of energy (I.5I)
- Investigate and demonstrate heat transfer (I.5E)
 - through solids/liquids/gases by conduction, convection, radiation
 - ✓ weather
 - ✓ living systems
 - ✓ mechanical systems

4th Grading Period

Electrical and Magnetic Energy –

- Evaluate transfer of electrical energy in:
 - Conductive Materials (I.5F)
 - Series and Parallel Circuits (I.5F)
- Moving electric charges produce magnetic forces (I.5C)
- Moving magnets produce electric forces (I.5C)
- Examine electrical force as a universal force between any two charged objects (I.4G)

Waves

- Explore characteristics & behaviors of energy transferred by waves as they reflect, refract, diffract, and interfere with one another and are absorbed by materials. (I.5G)
 - acoustic (sound)
 - seismic
 - light (electromagnetic spectrum)
 - waves on water

Review and Final Exam