

8th Grade Science End of Course Exam-Study Guide

General Science

- An illustration is an example of a scientific model
- Any type of liquid or solid water that falls to earth's surface is called precipitation

Chemistry

- The atoms and the type of bond holding the elements together determines the structure of a compound
- An atom consists of electrons, protons and neutrons
- The rate of a chemical reaction can be affected by temperature and surface area of the reactants
- An endothermic reaction takes in energy where energy is a reactant.
- An exothermic reaction gives off energy where energy is a product
- Elements on the Periodic Table are arranged in periods by increasing atomic number and in groups (families) by similar properties
- Elements in the Periodic Table are arranged by properties and atomic number (protons)
- The three main categories of elements on the Periodic Table are metals, non-metals and metalloids
- Alloys, like brass, are solid mixtures
- Compounds are held together by ionic, covalent or polar covalent bonds
- Energy is released and absorbed as bonds break and form during all chemical reactions
- The law of conservation of mass states that in a chemical reaction the number of atoms present in the reactants is always equal to the number of atoms present in the products
- The law of conservation of energy states that energy cannot be created or destroyed
- Sugar is a solid made of the elements carbon, hydrogen and oxygen. Sugar is a compound

Astronomy: Earth, Moon, Sun

- Waves transfer energy
- The concentration of sunlight is greater at the equator than at the poles
- Uneven heating of earth's surface by sunlight causes wind to blow
- The universe includes space and all the matter and energy in it
- Earth turning on its axis of rotation causes day and night
- Galaxies are classified according to their shape
- The Doppler effect shows that galaxies are generally moving farther apart

Environment

- Without the greenhouse effect, earth would be much colder

Life Science

- Van Leewenhoek was one of the first people to see “live” cells by using a microscope
- The smallest unit that can perform basic activities of life is a cell
- One characteristic of all living things is that they reproduce
- Organelles are cell structures that perform a variety of activities
- Mitochondria is an organelle that releases energy in all cells
- The protective covering that encloses every cell is called the cell membrane
- A plant cell organelle that uses energy from sunlight to make (glucose) sugar is called a chloroplast
- Plant cells have a cell wall & chloroplasts. Animal cells do not
- Photosynthesis captures energy and respiration releases energy
- During photosynthesis light energy changes to chemical energy
- After mitosis, the number of chromosomes present in each daughter cell is equal to that in the parent cell
- Almost all multicellular organisms on Earth belong to the domain Eukarya
- Bacteria is an example of a prokaryotic organism
- Different tissues working together to perform a particular function make up an organ
- In order to function properly every cell must have a complete copy of DNA
- Traits are inherited when genes are passed from parent to offspring
- Genetic engineering changes the DNA of an organism
- Suppose the tall (T) allele is dominant in a plant, the genotype of the short plant would be (tt)
- Cloning involves producing an offspring that is genetically identical to one parent

Data Analysis & Graphing Interpretation

- Coordinate graphs-360°-4 quadrants (+X+Y, +X-Y, -X+Y, -X-Y). You can combine 2 dependent variables with 1 independent variable on a graph.
- Box & Whiskers
- Pie Chart
- Bar Chart
- Line Graph
- Scatter Plot