

LESSON PLAN VOCABULARY

Absorb To soak up or take in (as in the manner of a sponge)

Acid-base indicator A substance that indicates the acidity or alkalinity (basicity) of a solution through characteristic color changes

Acids Solutions that contain a higher concentration of hydrogen ions than pure water

Adhesion An attractive force that holds atoms or ions of separate bodies together

Air A colorless and odorless gaseous mixture, composed of mainly nitrogen and oxygen

Air pressure The cumulative force exerted on a surface by the molecules of the air

Aluminum A bluish, silver metal that is light and can easily be shaped (and re-shaped); it is resistant to oxidation and is the most abundant metal in the earth's crust

Anemia A condition in which red blood cells or the hemoglobin in red blood cells is abnormally low

Atom The smallest unit of an element that maintains the properties of that element and can exist either alone or in combination with other atoms

Atomic number The number of protons found in the nucleus of an atom

Attraction A force that draws particles together

Bases Solutions that contain a hydrogen ion concentration less than pure water

Blubber A thick layer of fat under the skin of sea mammals that helps to keep them warm

Boiling point The temperature at which a liquid becomes a gas

Borax An ore of boron used as a cleaning agent

Buoyancy An upward force that a fluid exerts on an object, enabling the object to float

Calcium An element found in the human body that gives strength to bones and teeth

Capillary A tiny tube or vessel that is able to hold or transport liquids

Capillary action The ability of a substance to be drawn upward through a tiny tube or vessel due to adhesive and cohesive forces

Carbon dioxide A colorless, odorless gas composed of carbon and oxygen (CO_2) and formed during respiration and combustion

Carbonation The act of combining with carbon dioxide

Chemical bond A strong force of attraction holding atoms together in a molecule or crystal

Chemical energy Energy that results from a chemical reaction or change

Chemical property A property of an object characterized by reactions that change the object's identity; describes an object's "potential" to undergo some chemical change or reaction due to its composition

Chemical reaction A change that takes place when two or more substances interact to form new substances

Chemistry The science of the composition, structure, properties, and reactions of matter, especially of atomic and molecular systems

Chromatography A method of separating mixtures according to differences in molecular size and weight

Cohesion An attractive force that holds atoms or ions of a single body together

Compound A substance formed by the combination of elements in fixed amounts

Condensation A physical change in which a substance changes states from a gas to a liquid

Constituent A component; one part of a substance

Cosmic dust Clouds of fine solid particles that exist in outer space

Cross-linking The formation of chemical bonds between molecular chains (polymers)

LESSON PLAN VOCABULARY

Density A physical property of matter that describes how closely packed together the atoms of an element or the molecules of a compound are; the mass of an object per unit volume ($d = m/v$)

Desalination The process of removing salt from a salt-water solution

Dew point The temperature at which water vapor becomes liquid water

Diatomic Molecules consisting of two atoms bound together (e.g., O_2)

Diffusion The mixture of different substances as a result of the random motion of their constituent atoms, molecules, and ions

Disposable An object that is designed to be used once and then thrown away

Dissolve To cause a substance to combine with a solvent, creating a solution

Distillation A process of separating components of a mixture based on differences in boiling point

Dye A soluble substance used to stain or color fabrics and fibers, such as paper, cotton, etc.

Electric charge A characteristic of a unit of matter identified by an imbalance of electrons, whether an excess or deficiency of electrons

Electron A basic particle that orbits the nucleus of an atom and has a negative charge

Element A substance that cannot be reduced to simpler substances by ordinary chemical means and is composed of atoms having an identical number of protons in each nucleus

Energy The ability to do work

Equilibrium A state of balance between opposing forces or elements

Evaporation A physical change in which a substance changes states from a liquid to a gas

Experiment An operation carried out under controlled conditions in order to discover an unknown effect or phenomenon; to test or establish a hypothesis as valid or invalid

Filter paper A porous paper that can be used to separate solids from liquids

Filtration A separation process that utilizes the different size of the components in a mixture

Fluid Any substance that flows, either a liquid or a gas

Force A push or pull acting on an object, sometimes causing a change in position or motion

Freezing A physical change in which a substance changes states from a liquid to a solid

Freezing point The temperature at which a substance changes from a liquid to a solid

Friction The force that resists motions between objects in contact

Gas A state of matter that has no definite volume or shape

Glucose A sugar, $C_6H_{12}O_6$, occurring in most plant and animal tissue

Gravity The force of attraction between all masses in the universe; the force that tends to draw all bodies in the earth's sphere toward the center of the earth

Heat A form of energy transferred from one substance to another because of differences in temperature

Heat transfer The flow of heat from one substance of a higher temperature to another substance of a lower temperature

Hemoglobin A protein found in red blood cells that contains iron and carries blood throughout the human body.

Hydrophilic The tendency of a substance to be strongly attracted to water and easily dissolved in water; "water loving"

Hydrophobic The tendency of a substance to repel water or to not be easily dissolved in water; "water fearing"

Index of refraction The ratio of the speed of light in a vacuum to the speed of light in a substance

LESSON PLAN VOCABULARY

Inflate To fill an object with air or gas, causing the object to expand

Ink A pigmented liquid used for printing, writing, or drawing

Insulation Any materials that resist the flow of heat, sound, or electric current

Intermolecular force A force of attraction existing or acting between molecules

Ion An atom or group of atoms that carries a positive or negative charge as a result of having lost or gained one or more electrons

Ionize To convert into ions

Iron One of the most common metallic elements found on Earth; essential for the transport of oxygen through the human body

Kinetic energy The energy that an object possesses due to motion

Law of conservation of energy A law stating that energy cannot be created or destroyed; it can only change form

Light A form of energy that travels freely through space in the form of waves

Liquid A state of matter that has a definite volume but no definite shape; a liquid will take the shape of the container that holds it

Litmus paper An acid-base indicator that turns blue paper red in the presence of an acid and turns red paper blue in the presence of a base

Luster A shine or sheen (especially from reflected light)

Magnet An object that is able to attract iron

Magnetism A force of attraction or repulsion between various substances

Malleability An object's ability to be extended or shaped when hammered

Mammal A warm-blooded animal that breathes air, has hair or fur, and produces milk (in females) to feed its offspring

Mass A physical property that measures the amount of matter in an object

Matter Any substance that has mass and takes up space; generally found in three states: solid, liquid, or gas

Measure To mark or fix in multiples of a specific unit based on a comparison to some standard

Measurement A figure, extent, or amount obtained by measuring

Melting A physical change in which a substance changes states from a solid to a liquid

Melting point The temperature at which a substance changes from a solid to a liquid

Metal Any element that is able to conduct heat and electricity and is pliable under heat or pressure

Mixture A physical combination of two or more pure substances (elements or compounds) that can be physically separated

Molecule The simplest structural unit of an element or compound composed of two or more atoms bonded together by an exchange or sharing of electrons

Monomer Any molecule that can combine with other molecules to form a polymer

Motion An act or process that changes the position or location of an object

Neutron A basic particle found in the nucleus of an atom that has no charge

Newton's third law of motion A physical law that declares for every action, there exists an equal and opposite reaction

Non-Newtonian fluid A fluid in which the viscosity changes with the application of force, causing the fluid to exhibit solid properties as well as fluid properties

Nuclear energy Energy released by splitting atomic nuclei or forcing atomic nuclei together

LESSON PLAN VOCABULARY

Nucleus The center of an atom containing protons and neutrons

Oil An organic liquid that will not mix with water

Outer space A region beyond the limit of the earth's atmosphere or any other celestial body (planet, star, asteroid, etc.)

Oxidation The process of combining oxygen with some other substance

Oxygen A chemical element used in respiration; a colorless, odorless gaseous element that is vital to human life

Paper A thin material made of pulp from wood, rags, or other fibers and used for writing, printing, or wrapping

Periodic table of elements An arrangement of the chemical elements by atomic number and electron structure so that elements having similar properties fall in the same column

pH A measure of the concentration of hydrogen ions in a solution; used to characterize acids and bases

Photosynthesis The process by which some living organisms, such as plants, convert light energy into chemical energy, stored in sugar

Physical change A change that alters the form or appearance of a substance but does not change the composition of the substance or create a new substance

Physical property A property of an object that can be experienced using one of the five human senses: touch, taste, smell, sight, or sound, often detected through a measuring device

Plastic A variety of polymers or resins mixed with additives that possess different characteristics and have different uses

Polarity Having a positive or negative charge

Polymer A large molecule formed by combining many smaller molecules (monomers) in a regular pattern

Potential energy The energy stored in an object due to its position

Precipitation A separation process that forms a solid (precipitate) from a solution following a chemical reaction

Pressure The force exerted on a surface

Product A substance formed as a result of a chemical reaction

Protein A large organic molecule composed of amino acids and found in all living things

Proton A basic particle found in the nucleus of an atom that has a positive electric charge

Pyrex® glass A heat-resistant glass used for scientific and cooking equipment

Reactant A starting material for a chemical reaction

Recycling The collection, separation, and processing of old, used materials to produce new materials

Refraction The bending of light as it passes from one medium to another

Rocket A device propelled by the ejection of matter

Rocketry A branch of engineering science that studies the design and operation of rockets

Rubbing alcohol A mixture, usually consisting of 70% isopropyl alcohol (a clear, flammable liquid), that can be applied externally to soothe joint or muscle pain

Rust The reddish-brown brittle substance formed by the oxidation of iron

Saturation The point at which a solution can dissolve no more of a solute

Separation process A process that transforms a mixture of substances into two or more distinct substances

Sodium bicarbonate A white, powdery base used in baking and cleaning processes; commonly called baking soda

LESSON PLAN VOCABULARY

Sodium chloride A molecule composed of one sodium atom and one chlorine atom (NaCl), commonly known as table salt

Solid A state of matter characterized by a definite volume and a definite shape

Solubility The measure of the amount of solute that can be dissolved in a solvent

Solute A substance that is dissolved in a solution

Solution A homogeneous (uniform) mixture composed of two or more substances that may exist in any state: solid, liquid, or gas

Solvent A substance capable of dissolving another substance

Static electricity An electric charge caused by the buildup of electrons on the surface of a substance

Steam The vaporized or gaseous form of water, produced when water is heated to its boiling point

Super-absorbent polymer A polymer with the capability to absorb large amounts of water

Surface tension The attraction of molecules at the surface of a liquid

Surfactant Any substance with the ability to reduce the surface tension of a liquid

Tarnish To make or become dull or discolored; a discoloration of a metal caused by exposure to oxygen and other environmental factors

Temperature A measure of the average energy of motion of particles in a substance, generally identified by sensations of hot and cold

Thermal Of, relating to, or caused by heat

Tie-dye A method for dyeing clothing by tying or knotting fabric to produce an irregular pattern of color

Transparent A substance that allows light to pass through it easily

Triatomic Molecules consisting of three atoms bound together (e.g., O₃)

Uniform The same; consistent

Vacuum A volume of space that has essentially no matter

Vapor A substance in the gaseous state

Vinegar A diluted solution of acetic acid obtained through the process of fermentation

Viscosity The measure of a fluid's thickness or resistance to flow

Volume A physical property that measures the amount of space an object occupies

Water A clear, odorless, and tasteless liquid composed of hydrogen and oxygen (H₂O), which is essential to plant and animal life

Watercolor paint A pigment dissolved in water used to create colorful designs on fibers, such as paper

Wax A heat-sensitive substance generally containing fats and oils, which is insoluble in water