Day 3 Worksheet

* Classifying Matter: Elements, Compounds, and Mixtures

Pure substances are a sample of matter that has definite chemical and physical properties.

Elements are pure substances that cannot be separated into simpler substance by physical or chemical means.

A molecule is formed when two or more atoms join together chemically. A compound is a molecule that contains at least two different elements. All compounds are molecules but not all molecules are compounds.

* Mixtures

A combination of two or more pure substances that are not chemically combined.

substances held together by physical forces, not chemical No chemical change takes place

Each item retains its properties in the mixture .

They can be separated physically

* Matter

Anything that has mass and takes up space.

* Mass

the amount of matter in an object

measured with a balance

* Volume

the amount of space an object takes up

measured with a ruler or graduated cylinder

* Physical Properties

Are characteristics or features that describe matter

Are true only for a certain amount of matter

Examples include:

Color size shape smell texture temperature state pH Flammability

Boiling point melting point solubility conductivity hardness density

* States of Matter

Solid Liquid Gas Plasma

* Solids

Have definite shape and definite volume

Particles are tightly packed

* Liquids

Do not have definite shape but do have definite volume

Particles are loosely packed.

* Gases

Do not have definite shape or definite volume

Particles are very far apart.

* Phase Changes of Water

Solid ( ice ) > Liquid ( water ) > Gas ( steam )

* Properties of Matter include:

How it looks (shiny, dull, colored)

How it feels (hard, soft, rough, smooth)

How it smells (sweet, salty, flowery)

How it sounds (loud, soft, hollow)

How it tastes (sweet salty, bitter, sour)

What it does (bounce, bubble, tear)

* Examples of Physical Properties/Changes

Mass Volume Shape Texture State

Mixture Solution Odor

* Examples of Chemical Properties/Changes

Burning Rusting Cooking Film Processing

Any change that causes NEW matter to be formed

* What is Energy?

Energy is the ability to do work.

Energy is the ability to cause a change.

Energy can change an object’s:

motion shape temperature color

* Energy is all around us

You can hear energy as sound when someone talks.

You can see mechanical energy every time you move.

You can see energy as light from the sun or a lamp.

You can feel it as heat warms things up.

* What are the Forms of Energy

Electrical Light Sound Chemical Heat/Thermal

Mechanical: kinetic / potential

* Kinetic Energy

Energy due to motion.

Types of kinetic energy

Kinetic energy can change into other forms of energy.

* Potential Energy

Stored energy that could cause change in the future.

Potential energy is stored energy--energy ready to go.  A lawn mower filled with gasoline, a car on top of a hill, and students waiting to go home from school are all examples of potential energy.

* Types of potential energy

gravitational compressed spring chemical magnetic

* Mechanical Energy

Mechanical energy is the energy that is possessed by an object due to its motion or due to its position. Mechanical energy can be either kinetic energy (energy of motion) or potential energy (stored energy of position)

All energy can be in one of two states:  potential energy or kinetic energy.

The amount of mechanical energy depends on the object’s speed and mass.

Mechanical energy can change into other forms of energy

* Chemical Energy

Chemical energy is made when substances react and form new substances.

Food, batteries, and fuels such as oil and gasoline are stored chemical energy.

Chemical energy can change to:

sound light thermal electrical kinetic

* Sound

Sound is a form of energy produced by a vibration or a back and forth movement of an object.

Sound is a wave of vibrations that spread from its source of its matter.

The more vibrations the waves have, the more energy, the louder the sound.

The faster the vibrations or the frequency, the higher the sound.

How high or low a sound is called the pitch.

* Light

Light is something that allows us to see objects.

Light is a form of energy.

Light is produced by the vibrations of electrically charged particles.

* Properties of Light

Light travels in a straight path.

Light doesn’t travel through all objects.

These are defined as opaque.

Light can be absorbed and changed to heat.

Light bounces off or is reflected from some kinds of opaque objects.

Some objects let all light pass through them are known as:

transparent

Some objects let some light pass through them are known as:

Translucent

* Light Changes Direction

Light bends or refracts as it passes from one medium (form of matter: solid, liquid or gas) to another.

* What is Thermal Energy?

Thermal energy is the total of all the kinetic

and potential energy of the atoms in an object.

When any form of matter gets warmer, the kinetic energy of its atoms increases.

The object’s particles move faster, so its thermal energy increases.

A change in thermal energy can lead to a change in phase or state of matter.

Temperature is a measure of thermal energy.

* What is the Transformation of Energy?

Energy can change and move from one object to another.

chemical > electrical > light

Where does the energy of a lit light bulb transfer to

after the flashlight has been on for a while?

Heat energy transfers into the air.