

1 – Chapter 2

What is **chemistry**?

2 - Chapter 2

What is **matter**?

3 - Chapter 2

Define **macroscopic**.

4 - Chapter 2

Define **microscopic**.

5 - Chapter 2

Define **particulate**.

6 - Chapter 2

Define **model** and name several examples.

7 - Chapter 2

What are the states of matter?

8 - Chapter 2

What is the **kinetic molecular theory**?

<p>Matter is anything that has mass and takes up space.</p>	<p>Chemistry is the study of matter and the energy associated with physical and chemical change.</p>
<p>Microscopic matter is too small to observe with the naked eye.</p>	<p>Macroscopic matter can be observed with the naked eye.</p>
<p>A model is a representation of something else.</p> <p><u>Ball-and-stick model</u>: shows atoms as balls and electrons as sticks.</p> <p><u>Space-filling model</u>: shows the outer boundaries of the particle in three-dimensional space.</p> <p><u>Lewis diagram</u>: provides the same information as the chemical formula, but also shows how atoms and electrons are arranged.</p>	<p>Particulate matter is too small to see even with the most powerful optical microscope.</p>
<p>All matter consists of extremely tiny particles that are in constant motion. The speed at which the particles move is faster at higher temperatures and slower at lower temperatures.</p>	<p>The states of matter are:</p> <ul style="list-style-type: none">GasesLiquidsSolidsPlasma (positive ions and free electrons in a gaslike state)

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What is a **physical change**?

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What is a **chemical change/reaction**?

11 - Chapter 2

What is a **pure substance**?

12 - Chapter 2

What is a **mixture**?

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Describe a **solution**.

14 - Chapter 2

Describe a **homogenous** mixture.

15 - Chapter 2

What is a **compound**?

16 - Chapter 2

What are the two elements that are liquids at common temperatures and pressures?

<p>A chemical change/reaction occurs when the chemical identity of a starting substance is destroyed and a new substance forms.</p> <p>As a group, all the chemical changes possible for a substance make up its chemical properties.</p>	<p>A physical change is an alteration of the physical form of matter without changing its chemical identity.</p> <p>It's a new form of the old substance.</p>
<p>A mixture is a sample of matter that consists of two or more chemicals.</p>	<p>A pure substance is a single chemical, one kind of matter.</p> <p>Elements and compounds are pure substances.</p>
<p>A sample from a homogeneous mixture has a uniform appearance and composition throughout.</p>	<p>A solution has a uniform appearance, and once properly stirred, it has a uniform composition.</p> <p>Any two samples will have exactly the same composition and appearance.</p> <p>Chemists consider a homogeneous mixture and a solution to be the same thing.</p>
<p>Mercury and bromine are the two elements that are liquids at common temperatures and pressures.</p>	<p>A compound is any pure substance that can be decomposed by a chemical change into two or more other pure substances.</p>

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What four elements make up 99.3% of the atoms in your body?

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What is **chemical formula**?

19 - Chapter 2

What is the **Law of Definite/Constant Composition**?

20 - Chapter 2

What are the four **fundamental forces**?

21 - Chapter 2

Define: **static electricity**

22 - Chapter 2

Define: **electrostatic force**

23 - Chapter 2

Define: **chemical equation**

24 - Chapter 2

Define: **reactant**

<p>A chemical formula is the symbolic representation of the particles of a pure substance. It is a combination of the symbols of all the elements in a substance.</p>	<p>Hydrogen (63.0%), oxygen (25.5%), carbon (9.45%) and nitrogen (1.35%) are the elements that make up 99.3% of the atoms in our bodies.</p>
<p>The four fundamental forces are: Gravity Electromagnetic force (electricity & magnetism) Strong force Weak force</p> <p>* strong and weak force operate within atoms</p>	<p>The Law of Definite/Constant Composition states that any compound is always made up of elements in the same proportion by mass (weight).</p>
<p>Static electricity is an electrical charge that is not moving (a static electrical charge)</p>	<p>Electrostatic force is the force of attraction or repulsion between electrically charged objects. It is also known as static electricity.</p>
<p>A reactant is the beginning substances in a chemical reaction.</p>	<p>A chemical equation shows that a chemical change has occurred. The formulas of the beginning substances, called reactants, are written to the left of an arrow that points to the formulas of the substances formed, called products.</p>

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Define: **product**

26 - Chapter 2

What is an **exothermic reaction**?

27 - Chapter 2

What is an **endothermic reaction**?

28 - Chapter 2

What is a **force field**?

29 - Chapter 2

What is the **Law of Conservation of Mass**?

30 - Chapter 2

What is the **Law of Conservation of Energy**?

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Define: **potential energy**

32 - Chapter 2

Define: **kinetic energy**

<p>An exothermic reaction is when a chemical change releases energy to its surroundings, for example: $C + O_2 \rightarrow CO_2 + \text{energy}$</p>	<p>A product is the substances formed in a chemical reaction.</p>
<p>A force field is a region in space where the force is effective.</p>	<p>An endothermic reaction is when energy is required to cause a reaction. The chemical change absorbs energy from its surroundings, for example: $2 H_2O + \text{energy} \rightarrow 2 H_2 + O_2$</p>
<p>The Law of Conservation of Energy states that: In a nonnuclear change, energy is conserved. It is neither created nor destroyed.</p>	<p>The Law of Conservation of Mass states that: In a nonnuclear change, mass is conserved. It is neither created nor destroyed.</p>
<p>Kinetic energy is energy of motion; translational kinetic energy is equal to $\frac{1}{2} \times \text{mass} \times (\text{velocity})^2$.</p>	<p>Potential energy is the energy possessed by a body by virtue of its position in an attractive and/or repulsive force field.</p>

33 - Chapter 2

What is Albert Einstein's equation that shows how energy and matter are related?

* it represents the **Conservation Law**

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What is the equation that represent the **Law of Conservation of Mass**?

35 - Chapter 2

Define: **chemical property**

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Define: **chemical change**

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Define: **distillation**

37 - Chapter 2

Define: **filtration**

38 - Chapter 2

Define: **element**

39 - Chapter 2

Define: **atom**

<p>Total mass of reactants = Total mass of products Mass of (wood + oxygen) = Mass of (ash + carbon dioxide + water vapor)</p>	$\Delta E = \Delta m \times c^2$ <p>Change in energy = (change in mass) X (speed of light)²</p>
<p>A chemical change is a change in which one or more substances disappear and one or more new substances form.</p>	<p>A chemical property is the type(s) of chemical change a substance is able to experience.</p>
<p>Filtration is the separation of sediment from liquid using a porous medium, such as filter paper, to separate the components of the mixture. The pore size in the filtration device must allow one (or more) component(s) of the mixture to pass through while blocking other component(s).</p>	<p>Distillation is the process of separating components of a mixture by boiling off and condensing the more volatile component.</p>
<p>An atom is the smallest particle of an element that can combine with atoms of other elements in forming chemical compounds.</p>	<p>An element is a pure substance that cannot be decomposed into other pure substances by ordinary chemical means.</p>

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Define: **elemental symbol**

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Define: **mass**

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Define: **weight**

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Define: **heterogenous**

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Mass is a property reflecting the quantity of matter in a sample.

An **elemental symbol** is used to represent elements. The first letter of the name of the element, written as a capital, is often its symbol. If more than one element begins with the same letter, a second letter written in lowercase is added.

Heterogeneous is having a nonuniform composition, usually with visibly different parts or phases.

Weight is a measure of the force of gravitational attraction.

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