



What is an atom?	The smallest piece of matter that exists and still upholds the properties of its element.
What is an element?	A pure substance made up of only one type of atom.
What is a pure substance?	A substance that has specific properties that can be used to identify it. Pure substances are either elements or compounds. They have only one type of molecules.
What is a molecule?	A group of two or more atoms.
What is a compound?	A group of two or more elements.
Why is it that "all compounds are molecules but not all molecules are compounds"?	<p>A molecule must contain two or more atoms; while a compound must contain two or more elements. To have that, at least two atoms are also necessary, making every compound a molecule.</p> <p>However, molecules only need two or more atoms- they can be from the same element. This means that molecules are not necessarily compounds.</p>
What are the states of matter?	<p>Solids, liquids, and gasses. All matter can be in each at various temperatures. The change is physical.</p> <p>As temperature increases, the molecules of any matter begin moving at a higher rate and increase from solid, to liquid, to gas.</p>
What is a solid?	The "coldest" state of matter. In it, a substance's molecules vibrate slowly but stay together in a rigid form. Solids have volume and shape.
What is a liquid?	The "middle" state of matter. In it, a substance's molecules are moving faster, but still attract one another. They flow past one another. Liquids have volume, but not shape.
What is a gas?	The "hottest" state of matter. In it, a substance's molecules move at high speeds, colliding and moving apart from one another. They do not attract very strongly. Gasses have no volume or shape.
What is the Law of Conservation of Matter?	Matter can never be destroyed.
What is the difference between a physical and a chemical change?	<p>Physical changes affect the way a substance appears, but the substance essentially remains and acts the same.</p> <p>When chemical changes take place, substances are transformed into completely different ones that act differently.</p>
What is a chemical?	A substance with definite composition.
How are chemicals made?	Through chemical reactions.
What is a chemical reaction?	A process by which one or more substances change to produce one or more different substances.
How does one know if a chemical reaction has taken place?	<p>If the product acts differently than the reactants.</p> <p>Signs of a chemical reaction are:</p> <ol style="list-style-type: none">1. Gas forms (bubbling, odor)2. A precipitate forms (two liquids combined form a solid)



	<p>3. Change in light (sparking, flame) 4. Change in color 5. Change in temperature</p>
What is matter?	Anything that has mass and volume.
What is volume?	The space an object takes up. Measured in m^3 for solids and, for liquids, L. $1\text{ cm}^3=1\text{ mL}$.
What is mass?	The quantity of matter contained in an object. This is measured on a balance, in units such as mg, g, kg. Mass is not weight. (Weight=mass*the force of gravity and is measured in Newtons.)
What is density?	<p>A ratio of mass to volume.</p> <p>Density=mass/volume. $D=m/V$.</p> <p>Measured in g/cm^3.</p> <p>Mass and density are directly proportional ($D \sim m$) (when one increases, so does the other) while volume and density are inversely proportional ($D \sim 1/V$) (when one increases the other decreases).</p> <p>Density, a physical property, is the same for all samples of a substance, no matter the size.</p>
What is the difference between chemical and physical properties?	A physical property can be determined without changing the nature of a substance. Chemical properties can only be determined by subjecting the substance to chemical change.
What is a conversion factor?	<p>A ratio between two units that expresses a measurement of the same quantity. Conversion factors are used to convert one unit into another. These are mainly used in stoichiometry.</p> <p>They're formed by setting up fractions with equivalent amounts in different units as numerator and denominator. For example, $1\text{ kg}/1000\text{ g}$ is a conversion factor, equal to $1000\text{ g}/1\text{ kg}$.</p> <p>To use conversion factors, write a fraction with "convert into" units as the numerator and "convert out of" units as the denominator. Multiply this by the given quantity.</p> <p>Example: How many mL are in a .23L package of orange juice? $[(.23)(1000\text{ml}/1\text{L})=230\text{ mL}]$</p>
What is scientific notation?	<p>A simple way to write very large or very small numbers. Since 10 to the nth power=10 with n 0's following it, then any number can be written "$\times 10$ to the nth power".</p> <p>Numbers written "$\times 10$ to the negative nth power" mean that the number of 0's that would be used if the exponent was positive becomes the number of decimal places added.</p> <p>359 billion billion= 359 000 000 000 000 000</p>



Quantity	Symbol	Unit	Abbreviation
Length	l	meter	m
Mass	m	kilogram	kg
Time	t	second	s
Thermodynamic Temperature	T	kelvin	K
Amount of substance	n	mole	mol