

Matter	
Matter	Has Mass; Occupies Space
Classification by States	Solid; Liquid; Gaseous
Behaviour	Inter-molecular Forces (Attraction & Repulsion); Shape; Volume; Matter is classified by its behaviour at the given time.
Classification by Purity	pure: Substance; impure: Mixture
Aliases	Substance
Substance	Element; Compound
Element	Simplest substance; Chemical reactions cannot break them down further into other substances; Smallest particle: Atom
Compound	Smallest particle: Molecule; Consists of multiple Elements
Characteristic	Property independent of Shape, and Size
Physical Property	Value can be known without altering the substance.
Chemical Property	Value cannot be determined without altering the substance.
Mass	Amount of matter in the object.
Volume	Amount of space occupied by an object.
Density	Mass per unit volume.

Mirrors & Lenses

Temperature & Heat

Heat	Excites the Molecules; Causes matter to Expand; Reduces its Density; Changes State of Matter.
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Temperature & Heat (cont)	
Kinetic Energy	Anything that is in motion has Kinetic Energy.
Temperature	It is a measure of the average kinetic energy of the molecules. It isn't exactly equal to the average kinetic energy, but is directly proportional to the average kinetic energy of the molecules in the substance.
Temperature Units	Kelvin, or Celsius (Centigrade), or Fahrenheit; $^{\circ}\text{F} = ^{\circ}\text{C} \times 9/5 + 32$; $^{\circ}\text{C} = ^{\circ}\text{K} + 273$
Thermal Energy	Sum of kinetic and potential energies of all the particles in an object.
Heat Revisited	It is the energy "in transit"; Objects don't "contain" heat, but rather transfer heat from one place to another; An object can "have" a certain amount of thermal energy, but an object cannot "have" heat.
Absolute Zero	All molecular motion ceases; Nothing could be colder than this;
Temperature	No heat energy remains in a substance; 0 K, or -273.15°C , or -459.67°F .

Temperature & Heat (cont)	
Normal Body Temperature	98.6°F , or 37°C , or 310.15 K
Latent Heat	The heat that is absorbed (or released) without raising or reducing the temperature. Heat absorbed causes the molecular bonds to break, and thus causes the change of state of matter.
Parts of Thermometer	Glass Tube; Bulb; Kink
Clinical Thermometer	Substance: Mercury; Range: 35°C to 42°C ;
Laboratory Thermometer	Substance: Alcohol; Range: -10°C to 110°C ;
Heat Transfer	Conduction; Convection; Radiation
Conduction	Heat transfer between molecules by direct collision; From Hot to Cold.
Convection	Heat transfer by movement of masses; Density decreases with Heat.
Radiation	Heat transfer when objects are not touching; Hot object emits electromagnetic waves.
Classification by heat conductivity	Good Conductors of Heat: Most Metals; Insulators: Air, Water, Wood, Plastic



Magnetism

Light & Color

Electricity



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