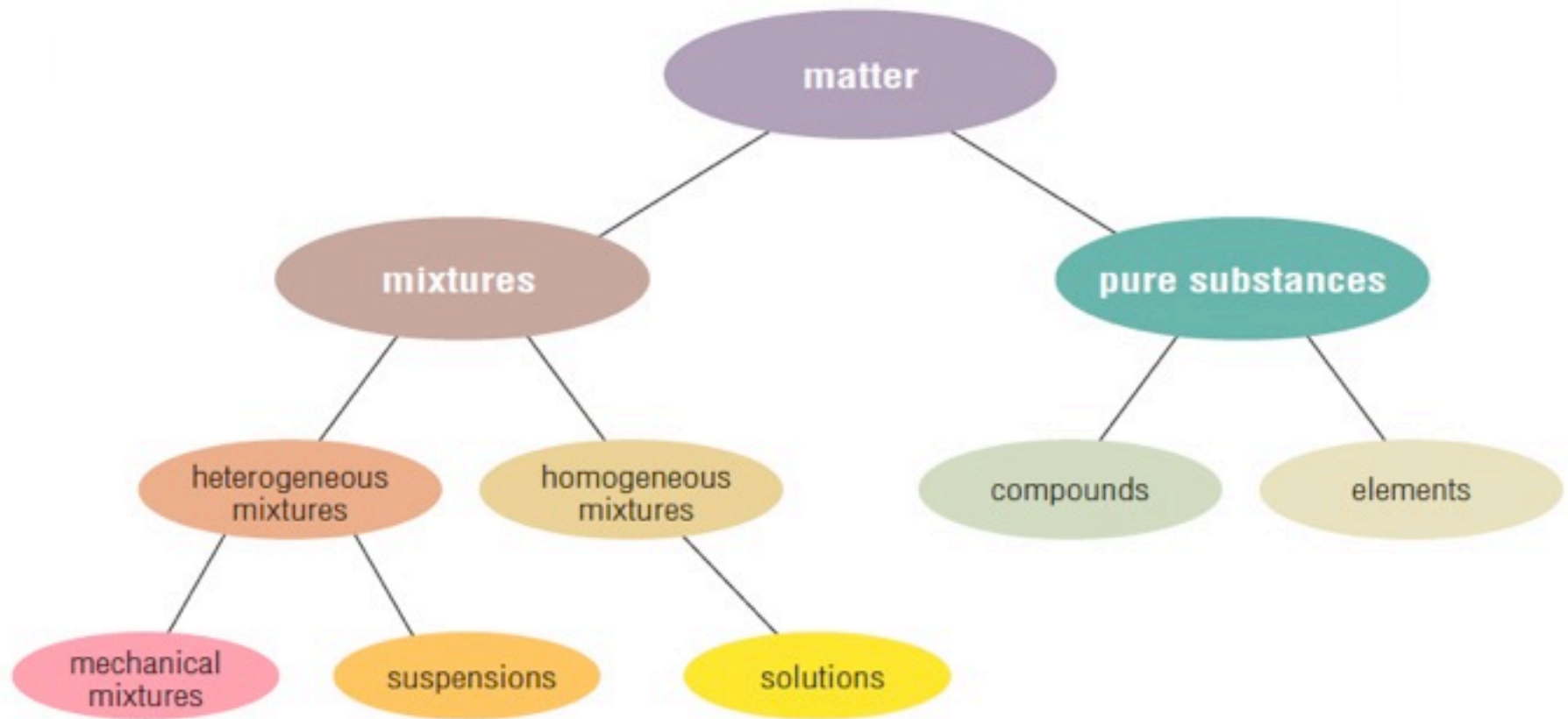


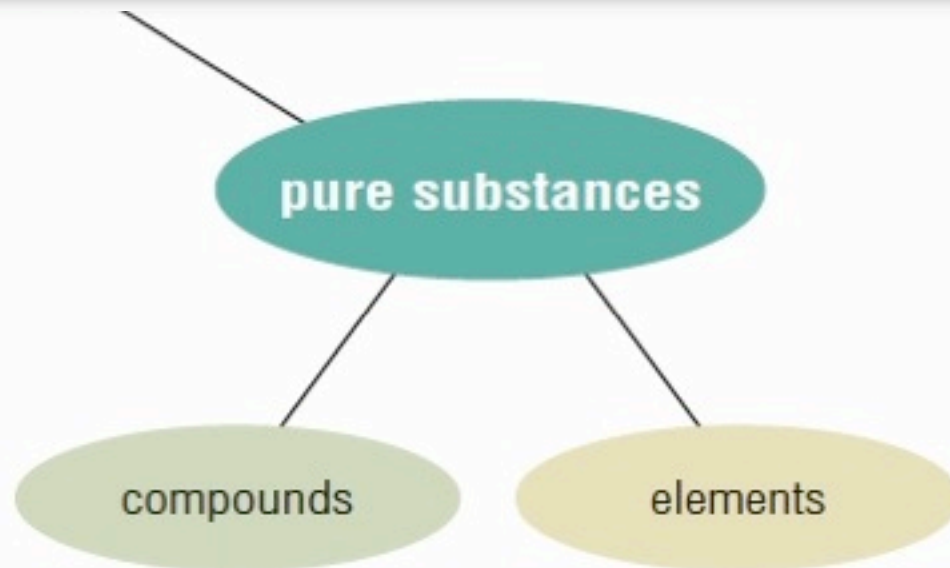
CLASSIFICATION OF MATTER



CLASSIFICATION OF MATTER



PURE SUBSTANCES



pure substance = a substance that has **constant** composition and properties (contains only one kind of particle)

ELEMENTS



element = a pure substance that **cannot** be broken down by **ordinary** means.







eg) Any example from the periodic table

Periodic Table of Elements

	IA		IIA											IIIA	IVA	VA	VIA	VIIA	0	
1	1	H																		2
2	3	Li	4	Be											5	6	7	8	9	10
3	11	Na	12	Mg	IIIB	IVB	VB	VIB	VII B	— VII —		IB	IB	13	14	15	16	17	18	
4	19	K	20	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	31	32	33	34	35	36
5	37	Rb	38	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	49	50	51	52	53	54
6	55	Cs	56	Ba	*La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	81	82	83	84	85	86
7	87	Fr	88	Ra	+Ac	Rf	Ha	106	107	108	109	110								

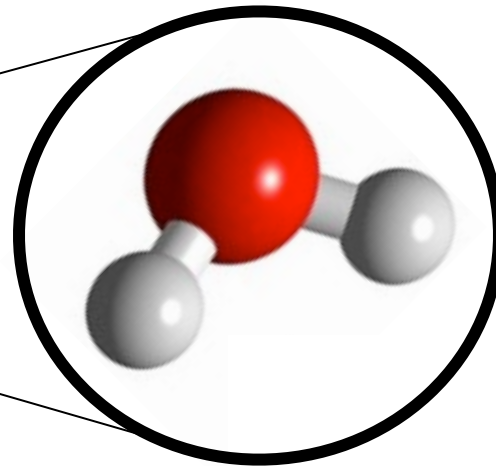
58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

* Lanthanide Series
+ Actinide Series

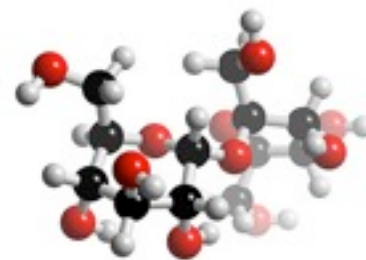
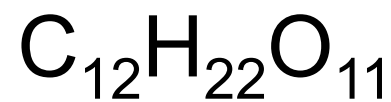
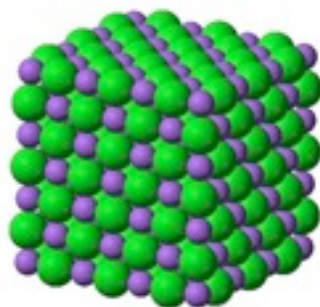
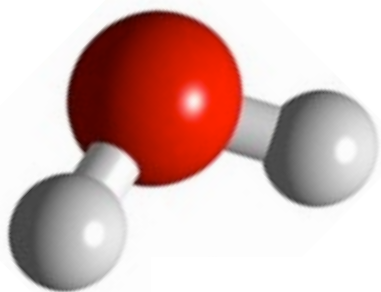
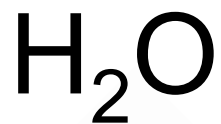







COMPOUNDS

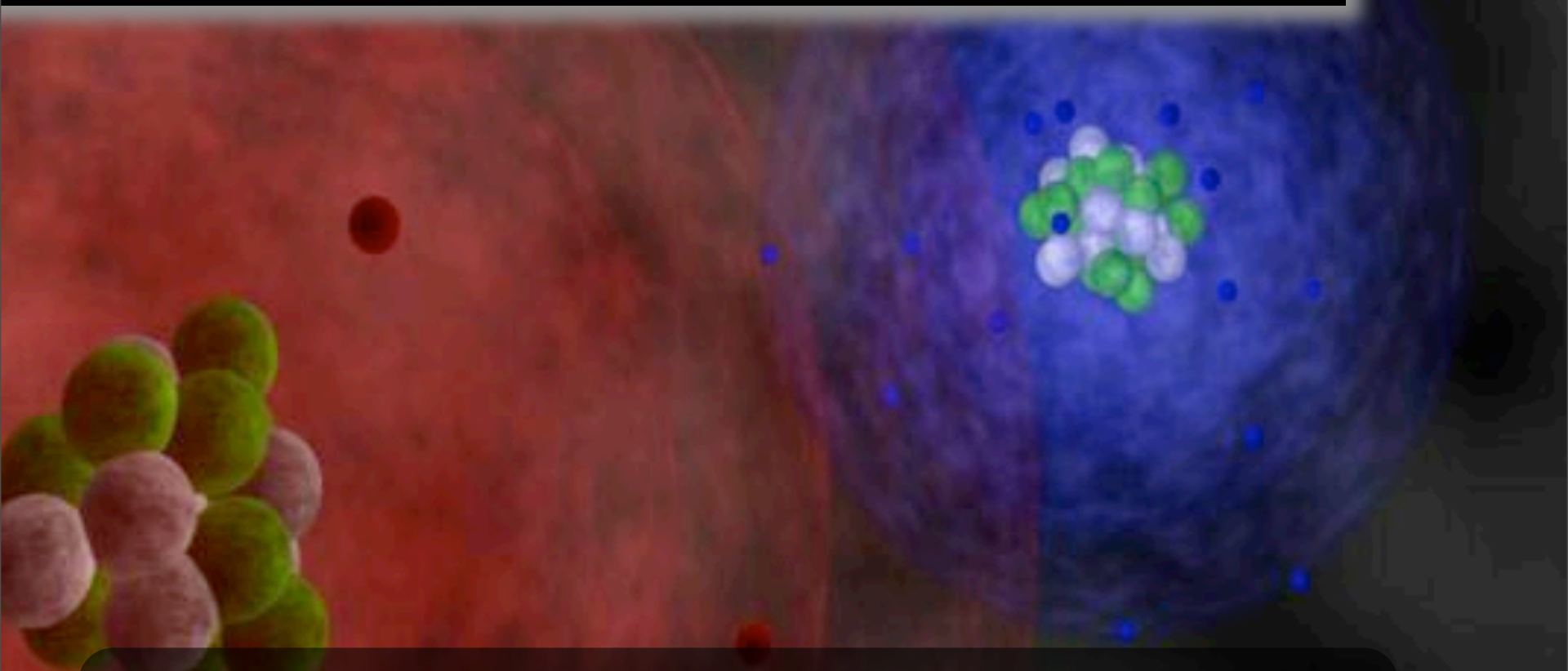
compound = a pure substance that contains **two** or more different elements in a **fixed** proportion. The elements are **chemically** bonded.



COMPOUNDS



ATOMS

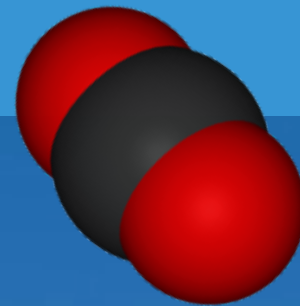


atom = a particle in an element and the **smallest** unit of an element

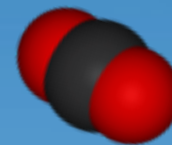
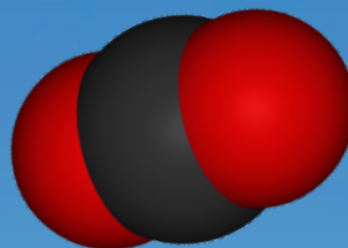
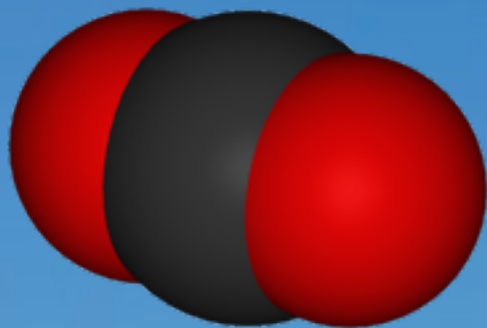
MOLECULES

molecule = the combination of two or more **atoms**

MOLECULES



CO₂



MIXTURES



mixture = a substance that contains **two** or more different pure substances that are **NOT chemically** combined

MIXTURES



Components can be separated by physical means (e.g. filtration, evaporation, distillation)

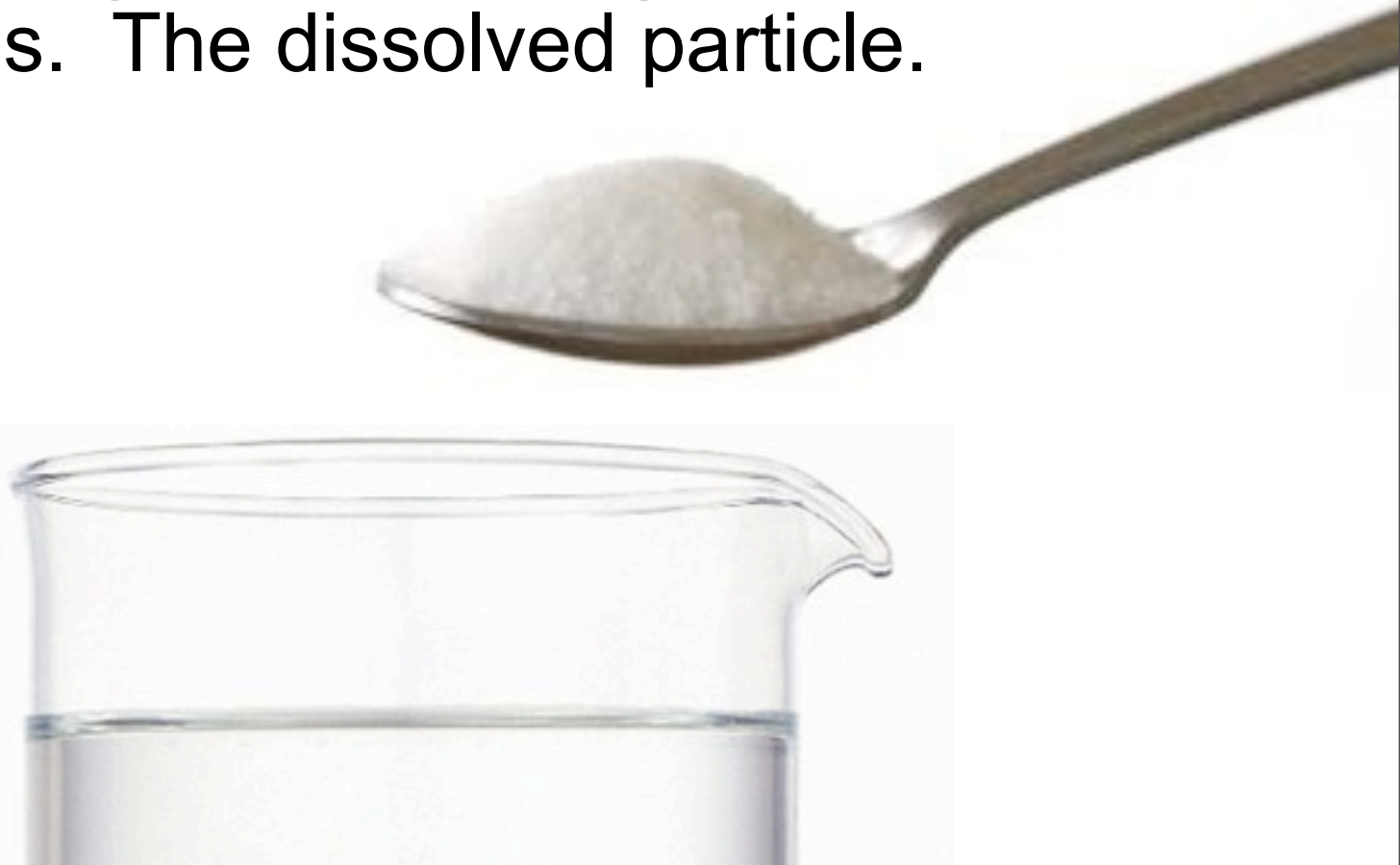
HOMOGENEOUS SOLUTION



homogeneous solution = a mixture that has “uniform” composition - i.e. **one** phase. The components within the solution are not identifiable with the eye.

SOLUTE

solute = the particle that is present in **smaller** proportions. The dissolved particle.



SOLVENT



solvent = the particle in **larger** proportion. The substance in which the solute is dissolved.

ALLOY



sterling silver
silver + copper



steel
iron + carbon



bronze
copper + tin + zinc

alloy = a homogeneous mixture of one or more **metals**

HETEROGENEOUS MIXTURE



heterogeneous mechanical mixture
= a substance in which the different
components are identifiable. Has **two**
or more phases.

MECHANICAL MIXTURE



ordinary mechanical mixture = a substance in which the particles are not **uniformly** scattered

SUSPENSION



suspension = suspended particles can be seen with the unaided eye. If left undisturbed, **gravity** will cause the particles to separate.

EMULSION



emulsion = a suspension of liquids where separation of particles is prevented through the use of an **emulsifying** agent.

COLLOID



colloid = suspended particles cannot be seen with the unaided eye. Gravity will not cause them to separate (they appear to be homogeneous)

TYNDALL EFFECT

tyndall effect = the **scattering** of a beam of **light** caused by particles in a **colloid**. Allows homogeneous solutions and colloids to be distinguished.

