

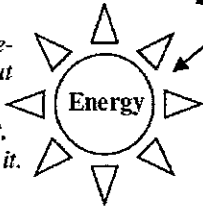
Name: _____
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Classification of Matter

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Much of science involves describing the universe. To do this we must be able to *classify* the things we encounter. Everything in the universe is made up of either energy or matter.

Energy
 You can see and sometimes feel energy, but not touch or smell it.
 Ex. you can feel heat, but not touch or smell it.



Everything

Matter

Anything that has mass and takes up space. You can feel it, taste it, or smell it.

More than one kind of matter. Can be separated physically thru sorting, boiling, or filtering.

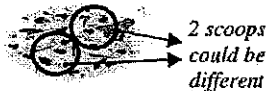
Mixture

Substance

Only one kind of matter. Can be separated chemically, but not physically.

Heterogeneous

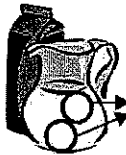
Different throughout. Two samples might be different. Ex: Chicken soup; Chex mix; Rocky Road ice cream



Heterogeneous Mixture:
Chicken Soup

Homogeneous

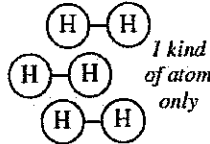
Same throughout. Any two samples are the same. Ex: Milk; Salt water; Vanilla ice cream



Homogenous Mixture:
Milk

Element

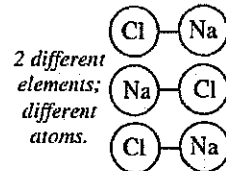
Only one type of atom: Gold (Au); Oxygen (O₂); Iron (Fe); Chlorine (Cl). Anything on the Periodic Table is an Element.



Element:
Hydrogen (H₂)

Compound

More than one element: Salt (NaCl); Rust (FeO₂); Carbon Dioxide (CO₂); Water (H₂O)



Compound:
Table Salt (NaCl)

States of Matter

When a substance changes temperature it doesn't change substances, but it can change its state. The three most common states of matter are solid, liquid, and gas.

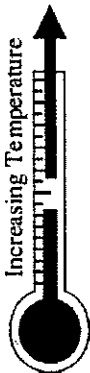
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Basic Properties of the Three Most Common States of Matter				
State	Amount of Energy	Molecular Motion	Shape	Volume
Gas	High	Bounce against each other	Shape of container	Takes Volume of container
Liquid	Medium	Slide over each other	"	Retains Volume
Solid	Low	Locked together	Retains Shape	"

Sublimation:

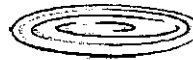
States of Matter in Water

Boiling (Evaporation) Point:



Steam—water in gaseous state. Doesn't keep its shape and volume. High energy and temperature.

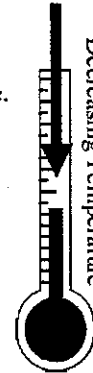
Water—water in liquid state. Retains its volume, but not shape. Medium energy and temperature.



Melting Point:



Ice—water in solid state. Retains its shape and volume. Low energy and temperature.



Condensation Point:

Freezing Point:

1. Substance <u>G</u>	A. Made up of two types of matter that can be physically separated.	1. Condensation Point <u>E</u>	A. Temperature when liquids turn to gas. 100°C for water.
2. Mixture <u>A</u>	B. Two samples might not be the same.	2. Boiling Point <u>A</u>	B. Can change shape, but not volume.
3. Heterogeneous Mixture <u>B</u>	C. Two samples will have the same makeup.	3. Liquid <u>B</u>	C. Temperature when solid turns to liquid.
4. Matter <u>H</u>	D. Has no matter; can be felt and seen.	4. Solid <u>D</u>	D. Can't change shape. Low energy
5. Element <u>E</u>	E. Has only one kind of atom.	5. Sublimation <u>H</u>	E. Temperature when gas turns to liquid. 100°C for water.
6. Homogeneous Mixture <u>C</u>	F. Contains two kinds of atoms that <i>cannot</i> be physically separated.	6. Freezing Point <u>F</u>	F. Temperature when a liquid turns to solid. 0°C for water.
7. Compound <u>F</u>	G. Cannot be separated by physical means.	7. Gas <u>G</u>	G. High energy; can change volume and shape.
8. Energy <u>D</u>	H. A classification of anything that has mass and takes up space.	8. Melting Point <u>C</u>	H. When a solid turns straight to gas.

Element (E), Compound (C), Heterogeneous Mixture (He), or Homogeneous Mixture (Ho)?	Heterogeneous (He) or Homogeneous Mixture (Ho)?	Element (E) or Compound (C)?
<u>C</u> Water (H ₂ O) <u>E</u> Lithium (Li) <u>He</u> Trail Mix <u>Ho</u> Sugar Water <u>E</u> Silver (Ag) <u>Ho</u> Tomato soup	<u>C</u> Table Salt (NaCl) <u>Ho</u> Chocolate Milk <u>He</u> Mixed Nuts <u>E</u> Aluminum Foil <u>Ho</u> Vinegar <u>He</u> Chocolate Chip Cookies	 <u>E</u> <u>C</u>

The following chart shows the physical states of water. Fill it in to help you better understand states of matter vocabulary.

