Name:_____

Period:_____

Accuracy and Precision

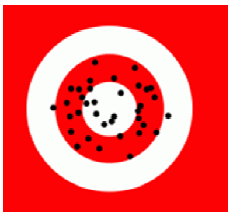
A

Accuracy:_____

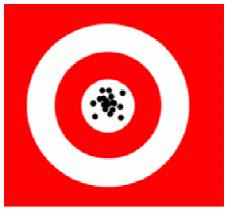
Precision:_____

_____

B



C



Classification of Matter

Much of science involves describing the universe. To do this we must be able to *classify* the things we encounter.

D Anything that has mass and takes up space we call _____.

Everything you can touch or hold we call ***matter,*** but only *most* of what you can see is matter (lightening is not, it is *energy*).

E

A_____is made up of more than one kind of matter and

_____

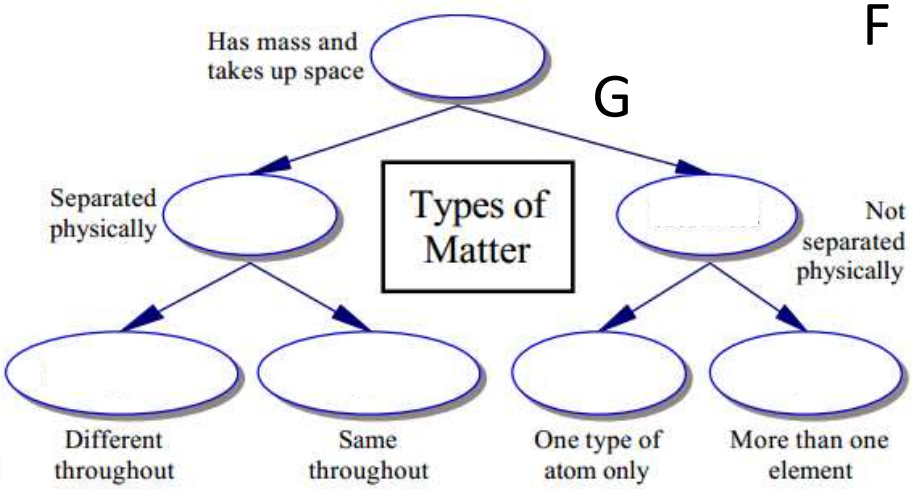
_____

Ways to physically separate include:

_____

_____

_____



F

_____

_____

_____ can be separated chemically. _____can only be separated by *nuclear* means.

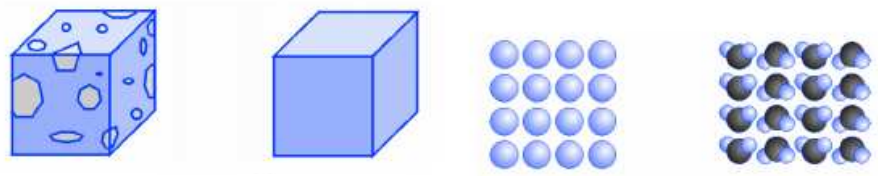
To tell the difference in chemical formulas remember that each element uses on one capital letter. Two capital letters—must be a compound

Examples of mixtures

Homogenous:
milk;
salt water;
vanilla ice cream

Heterogeneous:
chicken soup;
orange juice
rocky road ice cream

E



Examples of substances:

Elements:
Iron (Fe)
Oxygen (O_2)

Compounds:
Rust (FeO_2)
Carbon Dioxide (CO_2)

1. Substance or non-mixture	a. Made up of two types of matter that can be physically separated.	1. Meter	a. Divide by 1000. This is the smallest standard metric prefix.
2. Mixture	b. Two samples might not be the same.	2. Kilo-	b. The standard metric unit of mass; it is very small.
3. Heterogeneous Mixture	c. Two samples will have the same makeup.	3. Gram	c. The standard metric unit of length; equal to 3.3 feet.
4. Matter	d. Has only one kind of atom in the same.	4. Milli-	d. The standard metric unit of volume. Used to measure liquids.
5. Element	e. Contains two kinds of atoms that *can-not* be physically separated.	5. Centi-	e. Means divide by 100. Easy to remember by the word *cent*-ury.
6. Homogeneous Mixture	f. Cannot be separated by physical means.	6. Liter	f. Prefix that means multiply by 1000.
7. Compound	g. A classification of anything that has mass and takes up space.		

List heterogeneous and homogenous mixtures for:

Mixture	Heterogenous	Homogenous
Jello		
Ice cream		
Soup		

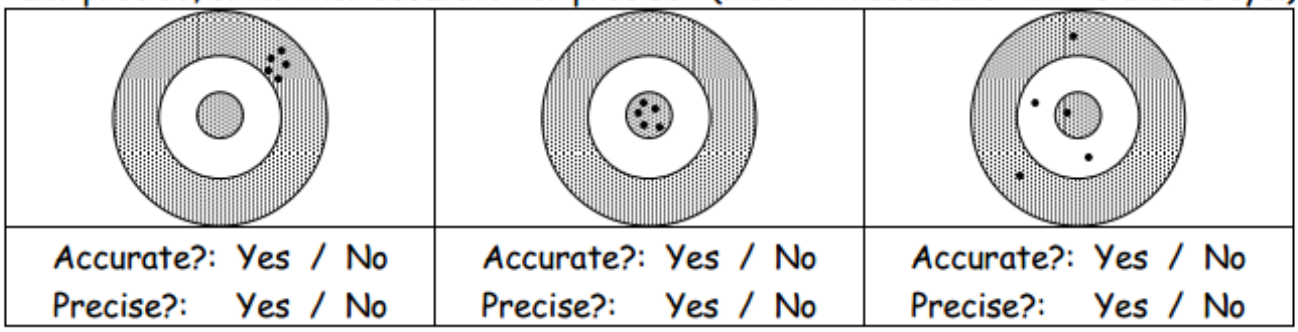
Mark these as elements (E) or compounds (C):

Water (H_2O) _____ Carbon Dioxide (CO_2) _____

Hydrogen (H) _____ Sodium (Na) _____

Helium (He)_____ Silver (Ag)_____

Look at each target and decide whether the "hits" are accurate, precise, both accurate and precise, or neither accurate nor precise: (Note: An accurate "hit" is a bulls eye!)



Accurate?: Yes / No Precise?: Yes / No	Accurate?: Yes / No Precise?: Yes / No	Accurate?: Yes / No Precise?: Yes / No

Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8	Team 9	Team 10	Team 11	Team 12	Team 13	Team 14
2.65 cm	2.75 cm	2.80 cm	2.77 cm	2.60 cm	2.65 cm	2.68 cm	2.60 cm	2.70cm	2.80 cm	2.75 cm	2.65 cm	2.62 cm	2.78 cm

A group of students worked in separate teams to measure the length of an object. Their data is listed above.

- The average length is _____cm.
  This is the mean or average.
- Subtract the highest value from the lowest value:_____cm. This is the range or spread.
- Divide this number by 2:_____cm. This is the approximate ± range from the average.
- The precision of the measurement can be shown as average ± range.
  The precision of the measurement was

  _____±_____cm.

A second group of students obtained the above data:

- The average length is _____cm.
- The precision of the measurement was

  _____±_____cm.
- In comparing groups, the first or the second, which group was more precise or was the precision the same? **Justify your answer.**