Name KEY

ILS

Elements, Compounds & Mixtures Worksheet

Part 1: Read the following information on elements, compounds and mixtures. Fill in the blanks where necessary.

Elements:

- A pure substance containing only one kind of atom.
- An element is always uniform all the way through (homogeneous).
- An element cannot be separated into simpler materials (except during nuclear reactions).
- Over 100 existing elements are listed and classified on the periodic table.

Compounds:

- A pure substance containing two or more kinds of elements.
- The atoms are chemically combined in some way. Often times (but not always) they come together to form groups of atoms called molecules.
- A compound is always homogeneous (uniform).
- Compounds cannot be separated by physical means. Separating a compound requires a chemical reaction.
- The properties of a compound are usually different than the properties of the elements it contains.

Mixtures:

- Two or more elements or Compounds NOT chemically combined.
- No reaction between substances.
- Mixtures can be uniform (called homogenous) and are known as solutions.
- Mixtures can also be non-uniform (called heterogeneous).
- Mixtures can be separated into their components by chemical or physical means.
- The properties of a mixture are similar to the properties of its components.

Part 2: Classify each of the following as elements (E), compounds (C) or Mixtures (M). Write the letter X if it is none of these.

C Diamond (C)	C Sugar ($C_6H_{12}O_6$)	M Milk	E Iron (Fe)
M Air	C Sulfuric Acid (H_2SO_4)	M Gasoline	X Electricity
E Krypton (Kr)	E Bismuth (Bi)	E Uranium (U)	M Popcorn
C Water (H_2O)	C Alcohol (CH_3OH)	M Pail of Garbage	M A dog
C Ammonia (NH_3)	C Salt (NaCl)	X Energy	E Gold (Au)
M Wood	M Bronze	M Ink	M Pizza
C Dry Ice (CO_2)	C Baking Soda ($NaHCO_3$)	E Titanium (Ti)	M Concrete

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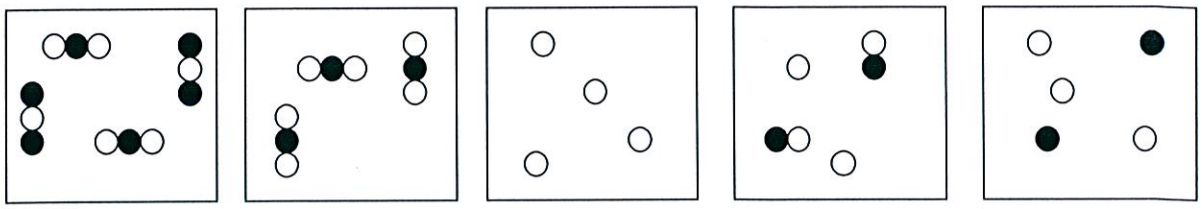
Part 3: Match each diagram with its correct description. Diagrams will be used once.



A B C D E

C 1. Pure Element – only one type of atom present.

E 2. Mixture of two elements – two types of uncombined atoms present.

B 3. Pure compound – only one type of compound present.

A 4. Mixture of two compounds – two types of compounds present.

D 5. Mixture of a compound and an element.

Part 4: Column A lists a substance. In Column B, list whether the substance is an element (E), a compound (C), a Heterogeneous Mixture (HM), or a Solution (S). (Remember a solution is a homogeneous mixture.) In Column C, list TWO physical properties of the substance.

Column A	Column B	Column C
1. Summer Sausage	HM	
2. Steam	C	
3. Salt Water	S	
4. Pencil lead (Pb)	E	
5. Dirt	HM	
6. Pepsi	S	
7. Silver (Ag)	E	
8. Toothpaste (Na_2HPO_4)	C	
9. A burrito	HM	
10. Italian Dressing	HM	
11. Chicken Soup	HM	
12. Lemonade	S	

Will vary

NAME _____

Chemistry I Worksheet
Classification of Matter and Changes

INSTRUCTIONS: Write **E** in the blank if the material is *heterogeneous* or **O** if it is *homogeneous*.

1. Wood ___O___
2. Freshly-brewed black coffee ___O___
3. Water X compound ___X___
4. Lucky Charms® ___E___
5. Salt compound ___X___
6. Dirt ___E___
7. Sausage-and-mushroom pizza ___E___
8. Air ___O___
9. Milk ___O___
10. Gold element ___X___

INSTRUCTIONS: Classify each of the following as an *element* [**E**], a *compound* [**C**], or a *mixture* [**M**].

11. Gold ___E___
12. Water ___C___
13. Seawater ___M___
14. Sugar ___C___
15. A chocolate sundae ___M___
16. Air ___M___
17. Carbon dioxide ___C___
18. Silver ___E___
19. Ice ___C___
20. A Big Mac® ___M___

INSTRUCTIONS: Classify each of the following properties of matter as *physical* [**P**] or *chemical* [**C**].

21. Color ___P___
22. Density ___P___
23. Burns easily (flammable) ___C___
24. Not affected by acids ___C___
25. Boils at 450 °C ___P___
26. Reacts violently with chlorine ___C___
27. Good conductor of heat ___P___
28. Dissolves readily in water ___C___
29. Melts at 145 °C ___P___
30. Malleable ___P___

INSTRUCTIONS: Classify each of the following changes in matter as *physical* [**P**] or *chemical* [**C**].

31. Grinding chalk into powder ___P___
32. Dissolving salt in water ___P___
33. Dissolving zinc in acid ___C___
34. Tearing a piece of paper ___P___
35. Stretching copper into wire ___P___
36. Burning gasoline ___C___
37. Hammering gold into foil ___P___
38. Melting ice ___P___
39. Digesting food ___C___
40. Making hydrogen from water ___C___

INSTRUCTIONS: Classify each of the following as an *intensive property* [**I**] or an *extensive property* [**E**].

41. Mass ___E___
42. Density ___I___
43. Melting point ___I___
46. Color ___I___
47. Volume ___E___
48. Length ___E___

Name _____ Hr _____

Scientific Notation and Sig Figs

Scientific Notation Notes

Write the following numbers in scientific notation

1. 987,000,000 9.87×10^{8}
2. 0.0002103 2.103×10^{-4}
3. 910 9.1×10^{2}
4. 0.0000483 4.83×10^{-5}
5. 7,000,000,000 7×10^{9}
6. 0.81 8.1×10^{-1}
7. 1,002,000 1.002×10^{6}
8. 0.0086 8.6×10^{-3}

Write the following values long hand

1. 6.37×10^{5} 637000
2. 7.11×10^{-4} 0.000711
3. 1.2×10^{2} 120
4. 4.4×10^{-1} 0.44
5. 3.335×10^{6} 3,335,000
6. 8.22×10^{-3} 0.00822

Write the following calculator values in scientific notation and in long hand

1. 5.5E-6 5.5×10^{-6} 0.0000055
2. 9.1E3 9.1×10^{3} 9100
3. 2.2E-4 2.2×10^{-4} 0.00022

Name _____ Hour_____

Significant Figure Worksheet

1. Using the rules given in class. State whether the underlined "0's" are significant or not.

Example	Significant? (Y/N)	Rule
0.008201	Y	in btwn 2 sig.
7600	N	place holders
7600.0	Y	in btwn 2 sig
820	N	place holders
0.06	N	place holder
3.0050	Y	terminating zero
0.00870	N	place holder

2. State the number of significant figures in each number

a) 1234 4

b) 0.023 2

c) 890 2

d) 91010 4

e) 9010.0 5

f) 1090.0010 8

g) 0.00120 3

h) 3.4×10^{4} 2

i) 9.0×10^{-3} 2

j) 9.010×10^{-2} 4

k) 0.00030 2

l) 1020010 6

m) 780. 3

n) 1000 1

o) 918.010 6

p) 0.00390 3

q) 8120 3

r) 7.991×10^{-10} 4

s) 72 2

3. Perform the following operations. Be sure to record your answer with the correct number of significant figures

a) 334.54 grams + 198 grams = 532.54 = 533g

b) 34.1 grams / 1.1 mL = 31 g/mL

c) 11.2cm * 3.0 cm* 4.556cm = 153.0816 = 150 cm^3

d) 2.11 x 10^3 joules / 34 seconds = 62.0588 = 62 J/s

e) 0.0010 m– 0.11 m = -.109 = -.11 m

f) 349 cm + 1.10 cm + 100 cm = 450.1 = 450 cm

g) 450 meters / 114 seconds = 3.947 = 3.9 m/s

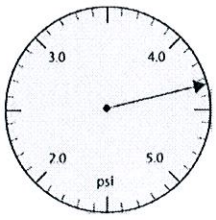
h) 3.1 miles + 6.2 miles = 9.3 mi

i) 298.01 kilograms + 34.112 kilograms = 332.122 = 332.12 kg

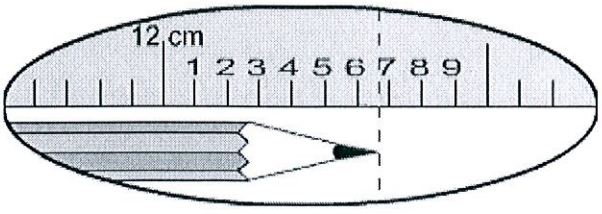
j) 84 m/s x 31.221 s = 2622.56 = 2600 m

k) 56 s - 2.55 s = 53.45 = 53 s

4. Record the measurements with the correct number of significant figures



4.33 psi



12.68 cm