Name: KEY Block: _____

Chemistry 11

Qualitative / Quantitative Properties Worksheet

Directions: Answer in the space provided. State whether the description is qualitative or quantitative property. Have fun ☺

1. Roses are colourful and smell nice — Qualitative
2. Water is colourless, odorless and a liquid — Qualitative
3. Water has a boiling point of 100° Celsius — Quantitative
4. Water has a density of 1.0 g/mL — Quantitative
5. Water's viscosity is less than glycerol — Quantitative
6. Water consists of hydrogen and oxygen — Quantitative
7. Salt is a white, crystalline solid — Qualitative
8. Salt is composed of sodium and chlorine — Quantitative
9. The molar mass of salt (NaCl) is 58.3 g/mol — Quantitative
10. Copper is a good conductor — Qualitative
11. Oxygen is a colourless gas — Qualitative
12. Carbon Monoxide is a poisonous gas — Qualitative
13. Iron is metallic — Qualitative
14. Iron's molar mass is 55.847 g/mol — Quantitative
15. A nitrogen atom has 7 protons — Quantitative
16. Rust is a mixture of iron and oxygen — Quantitative
17. Chemistry is super awesome — Qualitative
18. The sun is hot — Qualitative
19. The speed of light is 3.00×10^8 m/s — Quantitative
20. Simms has a full head of luscious hair — Quantitative

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Chemistry 11

Physical and Chemical Properties Worksheet

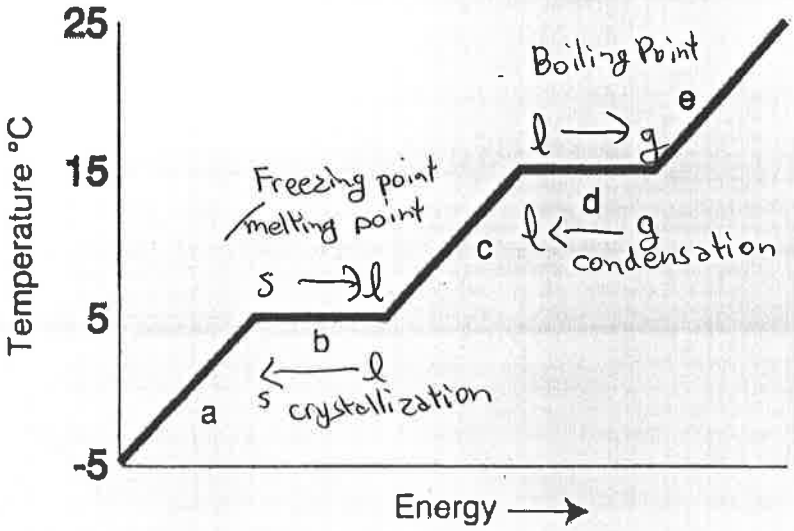
Directions: Classify the following properties as either chemical or physical by putting a check in the appropriate column. Have fun and enjoy the chem.-is-try ☺

	Physical Property	Chemical Property
1. red color	✓	
2. density	✓	
3. flammability		✓
4. solubility		✓
5. reacts with acid to form hydrogen		✓
6. supports combustion		✓
7. bitter taste	✓	
8. melting point	✓	
9. reacts with water to form a gas		✓
10. reacts with a base to form water		✓
11. hardness	✓	
12. boiling point	✓	
13. can neutralize a base		✓
14. luster	✓	
15. odor	✓	

Name: KEY Block: _____

Chemistry 11

Freezing and Boiling Point Graph Worksheet



Answer the following questions using the chart above.

1. What is the freezing point of the substance? b
2. What is the boiling point of the substance? d
3. What is the melting point of the substance? b
4. What letter represents the range where the solid is being warmed? a
5. What letter represents the range where the liquid is being warmed? c
6. What letter represents the range where the vapor is being warmed? e
7. What letter represents the melting of the solid? b
8. What letter represents the vaporization of the liquid? d
9. What letter(s) shows a change in potential energy? b, d
10. What letter(s) shows a change in kinetic energy? a, c, e
11. What letter represents condensation? d
12. What letter represents crystallization? b

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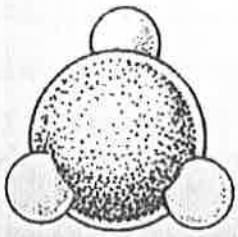
Chemistry 11

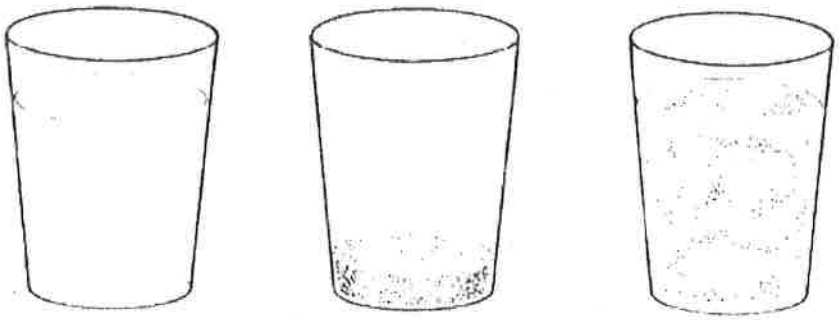
Substances vs. Mixtures Worksheet

A substance is matter for which a chemical formula can be written. Elements and compounds are substances. Mixtures can be in any proportion, and the parts are not chemically bonded.

Classify the following as to whether it is a substance or a mixture by writing S or M in the space provided.



1. sodium	S	11. iron	S
2. water	S	12. salt water	M
3. soil	M	13. ice cream	M
4. coffee	M	14. nitrogen	S
5. oxygen	S	15. eggs	M
6. alcohol	S	16. blood	M
7. carbon dioxide	S	17. table salt	S
8. cake batter	M	18. nail polish	M
9. air	M	19. milk	M
10. soup	M	20. cola	M



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Chemistry 11

Classification of Matter Worksheet

Directions: Answer in the space provided. Be sure to read the question carefully.

1. Define matter

   Matter is anything that has mass and volume (takes up space)

2. What is difference between a mixture and a pure substance? Give an example of each.

   Pure substance = contains only one type of particle (gold, aluminum, sugar)

   Mixtures = are substances that consist of combinations of two or more pure substances or different particles (pop, cake batter)

3. How can you tell and element apart from a compound?

   Element = a pure substance containing only one kind of atom

   Compound = a pure substance containing two or more kinds of atoms

4. What is an ion?

   An **ion** is when an element or molecule gains or loses electrons

5. Complete the following sentences by filling in the appropriate word from the list below.

gas	plasma	✓ physical
✓liquid	matter	✓chemical
✓solid	energy	✓Simms

1. Matter is anything that has mass and volume.
2. The two states of matter that occupy a definite volume are liquid and solid.
3. Chemical changes alter the identity of a substance, whereas physical changes do not.
4. Mr. Simms is amazing. The hair on his head is ridiculously thick and luscious.

Name: KEY Block: _____

6. Identify whether each of the following change is a physical change or a chemical change. Write "P" for physical and "C" for chemical

P	water boiling	C	iron rusting
P	butter melting	P	alcohol evaporating
C	wood rotting	C	baking a cake
C	leaves changing colour	P	glass breaking
C	Milk sours	P	mowing the lawn
P	Evaporation	C	Food is digested

7. What is the relationship between the kinetic energy (KE) of molecules and their physical state?

solid < liquid < gas
least KE most KE

8. How can you determine whether a change in matter is physical or chemical?

Physical change = change in phase (state)

chemical change = change in chemical formula (substance) can not change back to original substance

9. Classify each of the following as an element (e), a compound (c) or a mixture (m).

e	Gold	m	Air
C	Water	C	Carbon Dioxide
m	Seawater	e	Silver
C	Sugar	C	Ice
m	A chocolate sundae	m	A cheeseburger

10. Classify each of the following as an intensive (I) or extensive (E) property

E	Mass	I	Colour
I	Density	E	Volume
I	Melting Point	E	Length

Name: KEY Block: _____

Chemistry 11

Separation of Mixtures Worksheet

Taking advantage of various physical and chemical properties, how would you separate the following mixtures into their components?

1. Sand and water Filter

2. Sugar and water Evaporation or Distillation

3. Oil and water Separatory funnel

4. Sand and gravel Hand separation

5. A mixture of heptane (boiling point 98°C) and heptanol (boiling point 176°C)
   Distillation

6. A mixture of iodine solid and sodium chloride (Hint: Iodine is not soluble in water.)
   Add water dissolve all sodium chloride. Filter iodine solid. Evaporate water to leave sodium chloride

7. A mixture of lead and aluminum pellets melting points

8. A mixture of salt and iron filings magnet