Name: KEY!

SLO Study Guide

Identify the following as a pure substance or a compound:

a. Water - Pure Substance - Compound
   - if distilled
   - compound if not.

b. Table salt ($NaCl$) — Pure Substance - Compound

c. Diamond — Pure Substance - Compound

d. Glucose ($C_6H_{12}O_6$) — Pure Substance - Compound

e. Oxygen — Pure Substance - Compound

1. *Identify the following as a homogeneous or a heterogeneous mixture (circle):*

a. Bowl of fruit salad — homogeneous - heterogeneous

b. Any solution — homogeneous - heterogeneous

c. A bag of skittles — homogeneous - heterogeneous

d. A rock — homogeneous - heterogeneous

e. Dirt — homogeneous - ~~heterogeneous~~

f. Italian Dressing — homogeneous - heterogeneous

g. Gasoline — homogeneous - heterogeneous

h. Milk — homogeneous - heterogeneous

i. Air — homogeneous - heterogeneous

Name:_____

Write the following numbers in scientific notation:

a. 540,000 $5.4 * 10^5$

b. 95 $9.5 * 10^1$

c. 0.0000103 $1.03 * 10^{-5}$

d. .0009 $9.0 * 10^{-4}$

Calculate the density of the following objects:

Book with a mass of 20 g and a volume of 15 (cm^3),.

$\frac{20g}{15} = 1.33 g/cm^3$

Bag with a mass of 5 g and a volume of 2 (cm^3),

$\frac{5g}{2cm^3} = 2.5 g/cm^3$

Calculate the mass of the following objects:

Ball with a volume of 9 (cm^3) and a density of 5 ($g/cm3$)

$5 = \frac{x}{9} = 45 g$

Ball with a volume of 15 (cm^3) and a density of 2 ($g/cm3$)

$2 g/cm^3 = \frac{x}{15 cm^3} = 30 g$

Calculate the volume of the following objects:

Book with a mass of 80 g and a density of 1 ($g/cm3$)

$1 = \frac{80g}{x} = 80 cm^3$

Ball with a mass of 150 g and a density of 3 ($g/cm3$)

$3 = \frac{150g}{x} = 50 cm^3$

Name:_____

Complete the table below:

Example	Physical or Chemical Property
Density	Physical
mass	physical
Boiling point	Physical
Flammable	Chemical
Reacts with acid	Chemical
Melting point	Physical
Is red in color	Physical
smooth	physical
Reacts with oxygen to form rust	Chemical

Complete the following table:

Example	Physical or Chemical Change
Alkaseltzer is added to water and bubbles form	chemical
Wood is burned	Chemical
Water freezer to form ice	physical
An ice pack is broken and gets colder	chemical
Salt is dissolved in water	physical
Water evaporates	physical
Leaves changing color in the fall	chemical
The statue of liberty rusting	chemical
Glass is broken	physical

Name:_____

Determine the number of each element in the following compounds:

a. $NaCl$	Na = 1	Cl= 1		
b. $CaCO_3$	Ca= 1	C= 1	O= 3	
c. Na_2CO_3	Na= 2	C= 1	O= 3	
d. $AlPO_4$	Al= 1	P= 1	O= 4	

Write if the following is a chemical or physical property:

a. Color - physical

b. Odor - physical

c. Flammability - chemical

d. Reactivity - chemical

e. luster - physical

Rank the following in order of kinetic energy from low to high? Describe how you know!

a. A hot lead block; 300 °C

b. A cold lead block; 35 °C

c. A hot piece of wood; 150 °C

d. A cold piece of wood; 47 °C

b < d < c < a

higher temp, higher energy.

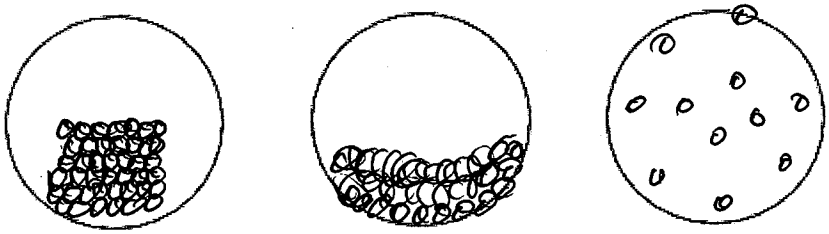
Energy is measured in J

*zero energy is absolute zero, no particle motion

What does temperature tell you? How is it measured? How is it related to energy?

- Temperature tells you the amount of kinetic energy an object has. Measured with a thermometer. Higher temperature = higher kinetic energy.

Draw what the molecules would look like for each state of matter below:



Solid Liquid Gas

Name:_____

10. *Describe the following and give a specific example of each. Use words such as "definite shape, indefinite shape, definite volume, and indefinite volume":*

a. Solid

Block of wood = definite volume & definite shape

b. Liquid

glass of water = definite volume but takes the shape of the container (~~indefite~~ indefinite shape).

c. Gas Shape of container (indefinite) and size of the container (indefinite) - Animal balloon.

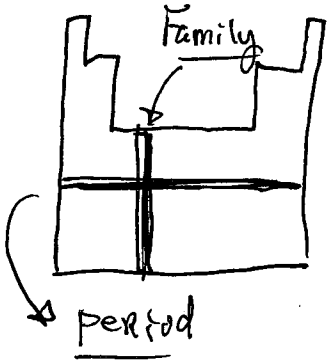
Sometimes atoms lose or gain electrons.

What do you call an atom that has lost an electron?

~~Become~~ cation

Is this ion positive or negative?

Do metals or nonmetals tend to lose valence electrons?



What do you call an atom that has gained an electron?

anion

Is this ion positive or negative?

Do metals or nonmetals tend to gain valence electrons?

What does the atomic number of an atom tell you? number of protons | Mass number = protons + neutrons

Answer the following using: protons, neutrons, and/or electrons

Which are in the nucleus? p^+, n^0

Positive charge? p^+

Negative charge? e^-

Surrounding nucleus in energy levels? e^-

Approximately no mass? e^-

No charge? n^0

Answer the following about ionic bonding:

Which types of elements are involved? Metal + nonmetal

Are electrons shared or transferred? transferred.

Are ions formed? yes

Name:_____

Answer the following about covalent bonding?

Types of elements involved? nonmetals

Electrons shared or transferred? shared

Ions formed? no

For each, identify the type of reaction (use S for synthesis, D for decomposition, C for combustion, SR for single replacement, and DR for double replacement), then balance the chemical equation:

a. $\_2\_K + \_\_\_Br_2 \rightarrow \_2\_KBr$ ID: S

b. $\_2\_C_2H_2 + \_5\_O_2 \rightarrow \_2\_H_2O + \_4\_CO_2$ ID: C

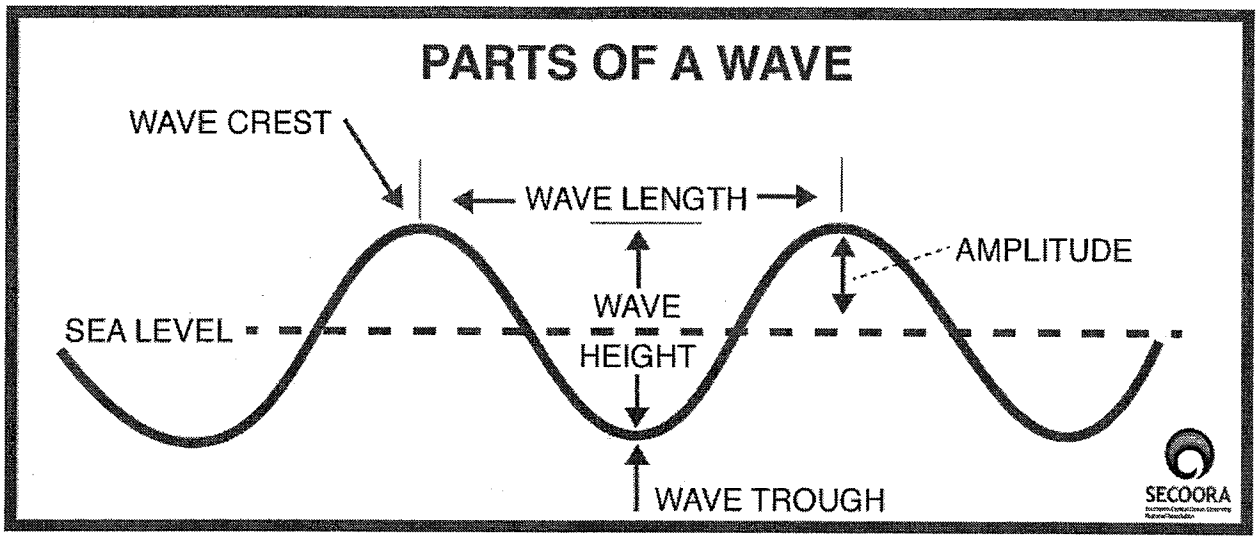
c. $\_2\_Fe_2O_3 \rightarrow \_4\_Fe + \_3\_O_2$ ID: D

d. $\_3\_Ca + \_2\_AlCl_3 \rightarrow \_3\_CaCl_2 + \_2\_Al$ ID: SR

e. $\_3\_BaCl_2 + \_\_\_Al_2(SO_4)_3 \rightarrow \_3\_Ba(SO_4) + \_2\_AlCl_3$ ID: DR

Name: Key

Spring Assessment Study Guide 2

1. 

   a. Know the terms associated with the picture above.
   b. This is an example of light (which is an electromagnetic wave).
2. Recall the doppler effect (viewing planets and celestial bodies in space). What color does light shift towards as planets move farther and farther away from us?

   Red shift (All planets & celestial bodies are moving away from us.)

3. The Sun gives off a lot of energy, what is the process that occurs in the Sun's core that gives it its energy? Nuclear Fusion

4. What is a light year?

   Distance Light travels in one year.

5. What type of galaxy is the Milky Way?

   Spiral

6. What is the life cycle of a star? (You can google this if you need to)

   Stellar nebula → small star → Red giant → white dwarf.
   Stellar nebula → big star → Red super giant → super-nova → black hole
   super-nova → Neutron star

Name: _____

7. Much like two electrons, what would happen if you put two ends of the same magnet together?

Repel

8. What is the charge of an atom on the periodic table?

All atoms on the periodic table

9. What are the names for group 1,2,17,and 18 on the periodic table?

group 1 = Alkali metal
group 2 = Alkaline - Earth metal group 18 = Noble gas.
group 17 = halogens

10. What do all the elements on the periodic table that appear in the same vertical column (group) have in common?

same general properties & same valance electrons.

11. Either in your book or on your phone, look up what the law of inertia means!

Inertia = tendancy for an object continue its state of motion unless acted upon by outside, unbalanced force.