

Name: Hollis
Physical Science

Period: _____
Hollis

Study Guide
Fall Semester Exam: Part 1

1. What is the SI unit for measuring volume? LITER
2. What is the SI unit for measuring mass? GRAM
3. What is the SI unit for measuring length? MEIETZ
4. How many milligrams are there in 1gram? 1000
5. If 1 marble has a mass of 1 gram, then
100 marbles would have a mass of 1 HG
1000 marbles would have a mass of 1 Kg

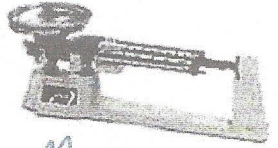
6. Convert each quantity below.

Scratch Paper Area

- 58.2 cm = .582 m
78 m = .078 Km
5.26 L = 5260 mL
0.000727 Kg = 727 mg

KH D u d e m

7. Tell what each tool below is used to measure.



Mass

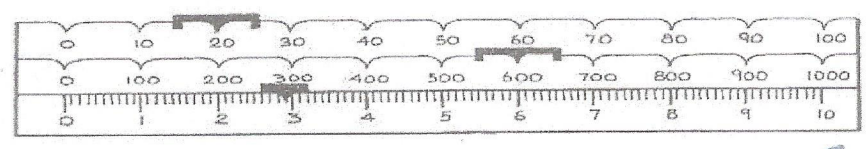


VOLUME

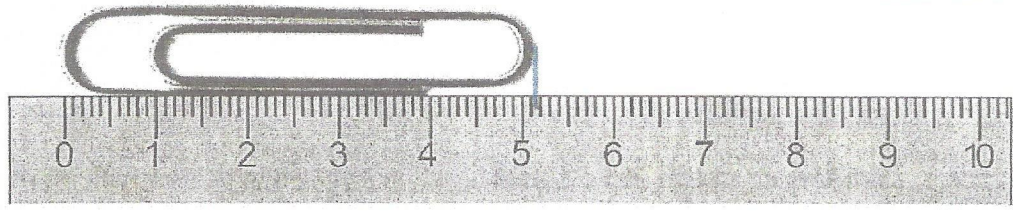


LENGTH

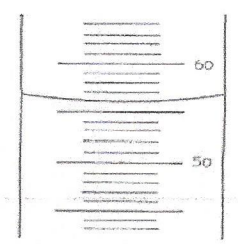
8. What mass does the triple beam balance measure to the nearest tenth (0.1) g? 622.9 g



9. What length does the ruler measure the paperclip to the nearest tenth (0.1) cm? 5.1 cm



10. What volume does the graduated cylinder measure? 56 ml



11. Hypothesis: The GE light bulbs last longer than generic light bulbs.

Independent Variable (IV) HO LONG THEY LAST

Dependent Variable (DV) LIGHT BULBS

12. What is the charge and location of the following subatomic particles in the atom?

Protons +, NUCLEUS

Neutrons Neutral, NUCLEUS

Electrons -, ELECTRON CLOUD

13. What are the outermost electrons of an atom called? VALENCE ELECTRONS

14. Mendeleev published the first periodic table. He arranged all the known elements in order of

Increasing ATOMIC MASS

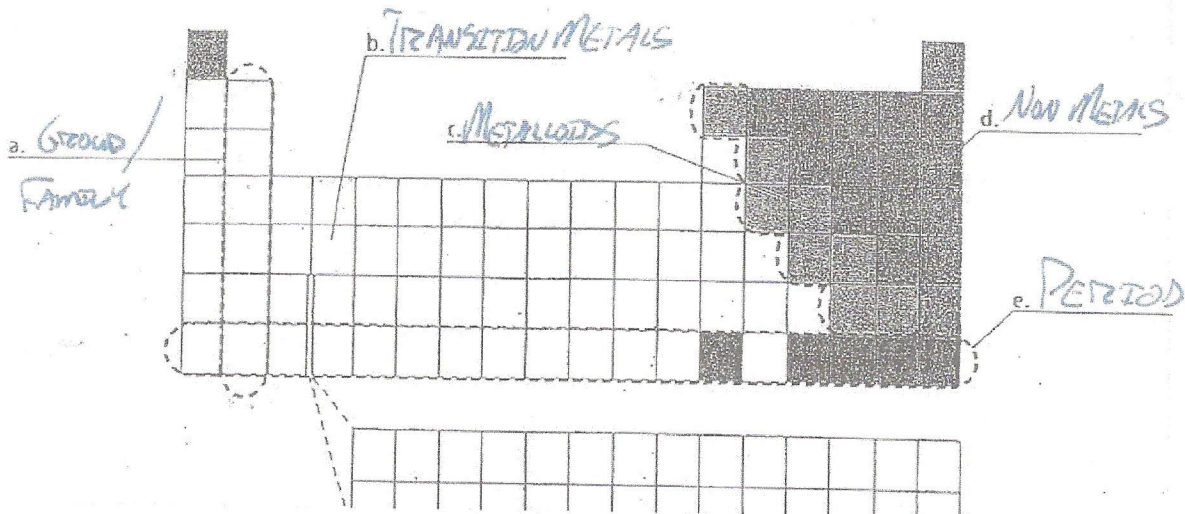
15. Define these terms which are used to describe metals:

Ductile = CAN BE FORMED INTO WIRES

Malleable = CAN BE POUNDED INTO SHEETS

Luster = SHINY

16. Label the periodic table outline below.



17. What are the names of the following families on the periodic table?

a. Group 1: ALKALI METALS

b. Group 2: ALKALINE EARTH METALS

c. Group 17: HALOGENS

d. Group 18: NOBLE GASES

18. Which group from would be the least reactive, or most stable, group? NOBLE GASES

Why? FULL EXTERIOR OF VALENCE ELECTRONS / OUTER SHELL FULL

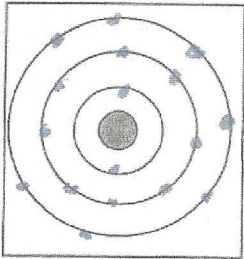
19. Answer the following questions based on this Family of elements from the periodic table.

4	Be
9.012182	
12	Mg
24.3050	
20	Ca
40.078	
38	Sr
87.62	
56	Ba
137.327	
88	Ra
(226)	

- a. Which element has atomic number 12? Mg
- b. Which element has atomic number 56? Ba
- c. How many neutrons does Be have? 5
- d. How many electrons does Ca have? 20
- e. How many electrons does Sr have? 38
- f. Which element would be the most reactive? Ra
- g. Which element would have the fewest electron shells? Be
- h. Which element has the most subatomic particles? Ra

Write the formula for calculating the number of neutrons in an atom.
MASS# - PROTONS = NEUTRONS

20. Find the element Chlorine (Cl) on the periodic table.

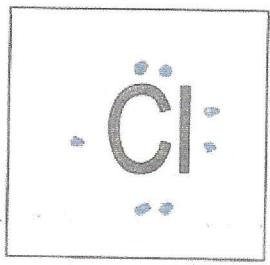


Atomic # 17 = # of protons 17
 # of electrons 17 # of energy levels (period #) 3

Draw the Bohr's Model of electrons on the template to the left.

Draw the Lewis Electron Dot Diagram below.

of valence electrons (group?) 7
 Atomic Mass 35.4
 # of neutrons 18



21. The state of a sample of matter is affected by its ENERGY.

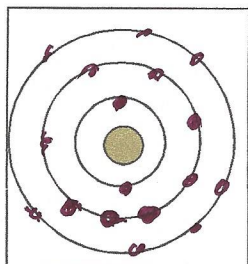
22. The volume of gas increases when the temperature INCREASES.

23. What is the chemical formula for water? H₂O

24. The freezing point of water is 0° C.

25. The boiling point of water is 100° C.

Find the element Chlorine (Cl) on the periodic table.



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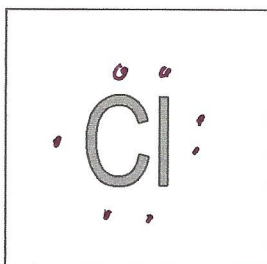
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What is the chemical formula for water? H₂O

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Properties

physical properties	chemical property	physical changes	chemical change	phase changes
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- PHASE CHANGES are a form of physical change because the substance stays the same.
- Flammability, the ability to burn, is an example of a Chemical Property.
- Cutting paper and phase changes are examples of Physical change.
- Burning white paper to become black ashes is a type of Chemical change.
- Physical Properties include color, odor, and shape.

a. Describe the following properties as: Physical or Chemical

Ability to burn: chem ability to react: chem

Color, shape or size: phys density: phys

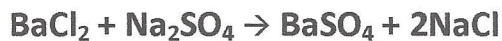
b. Describe the following changes as: Physical or Chemical

Cut paper into two pieces: phys

Iron rusts: chem

Melt ice: phys

Wood burns: chem



Identify the reactants in this chemical equation: $\text{BaCl}_2 + \text{Na}_2\text{SO}_4$

Identify the products in this chemical equation: $\text{BaSO}_4 + 2\text{NaCl}$

In which type of bond are electrons shared? Covalent

In which type of bond are electrons transferred? ionic

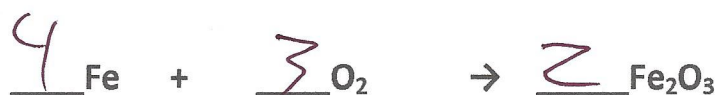
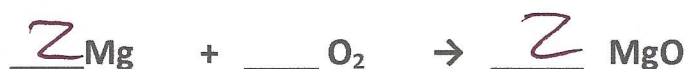
The part of the solution that gets dissolved: solute

The part of the solution that does the dissolving: solvent

Which part is usually the greatest in a solution: solvent

In a solution of Kool-aid drink, sugar and Kool-aid are the solute and the water is the solvent.

Balance the following equations:



Using Oxidation numbers, write the product for the following reactions. (criss cross method)



Write the name for the compounds LiBr. Lithium Bromide, NaOH Sodium Hydroxide

Identify each equation as one of 4 types of chemical reactions.

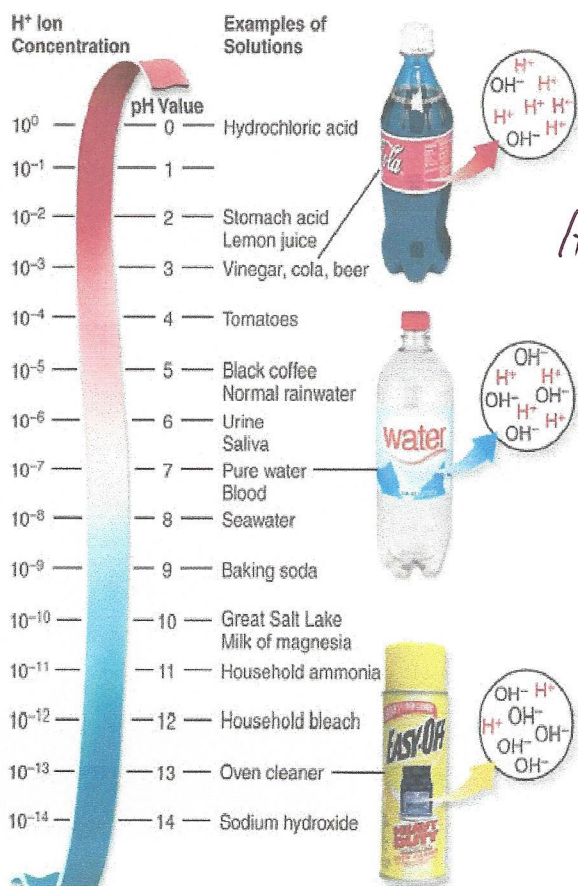
- a) $2\text{HCl} + \text{Zn} \rightarrow \text{ZnCl}_2 + \text{H}_2$ Single Replacement
- b) $2\text{H}_2\text{O}_2 \rightarrow 2\text{H}_2\text{O} + \text{O}_2$ Decomposition
- c) $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$ Double Replacement
- d) $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$ Synthesis

Complete the Table

Isotope/Ion Name	atomic #	mass #	# of protons	# of neutrons	# of electrons
Lithium-7	3	7	3	4	3
Boron-11	5	11	5	6	5
Neon-20	10	20	10	10	10
Mg ⁺²	12	24	12	12	10

Use the pH scale below to answer the following questions:

What is the strongest acid on the scale? Hydrochloric Acid



What is the strongest base on the scale? Sodium Hydroxide

Which substance is neutral? water / blood

Write a neutralization reaction between hydrochloric acid (HCl) and sodium hydroxide (NaOH).



Which food/drink has a pH closest to the pH of stomach acid? Cola

If you are told to clean the oven, would you use an acid or a base? Base

Bodily fluids such as urine, saliva, and blood are close to being Neutral.

Use the pH scale on the left to answer questions 8-11.

C 8. Which of the following substances is the strongest acid on the scale?

- a. Tomatoes
- b. Sea water
- c. Lemon juice

A 9. Which of the following substances is the strongest base on the scale?

- a. Oven cleaner
- b. Baking soda
- c. Bleach

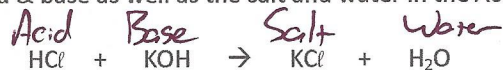
C 10. Which has more OH^- ions?

- a. Coke
- b. Water
- c. Easy-Off

B 11. If you needed to neutralize a reaction of Hydrochloric Acid (HCl), which substance would work best?

- a. Seawater
- b. Sodium Hydroxide
- c. Stomach Acid

Identify the acid & base as well as the salt and water in the Acid/Base neutralization reaction below.



Complete the reaction below:



Litmus paper is a pH indicator we have talked about in class.

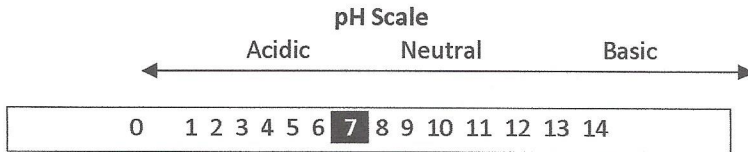
Red litmus paper will turn Blue in the presence of a Base.

Blue litmus paper will turn Red in the presence of a Acid.

Litmus paper is a pH indicator we have used in class.

Red litmus paper will ~~turn~~ ^{stay} red in the presence of a acid.

Blue litmus paper will ~~turn~~ ^{stay} blue in the presence of a Base.



C According to the pH scale above, which of the following pH measurements is basic?

- 7.0
- 3.2
- 10.5

C In a neutralization reaction, an acid and a base combine to form _____.

- water
- a salt
- both a & b

A Which of the following is an acid?

- lemon juice
- water
- soap

C Which of the following is an base?

- lemon juice
- water
- soap

According to the pH scale above, which pH measurements are Basic? 8-14

Neutral? 7 Acidic? 0-7

What type of substances are typically acids? Fruit, Cola, Food, Drinks

What types of substances are typically bases? Cleaning Products, Soap

