

Regents  
Review!!



Mrs. T's  
Chem Talk  
Regents Chem

# Mrs. T

Who Am I?



- Mrs. Lizabeth Tumminello
- Chemistry Teacher
- Sanford H Calhoun High School
- Merrick, NY

# Average Atomic Mass

Base your answers to questions 8 through 10 on the information below

## Naturally Occurring Isotopes of Sulfur.

Isotopes	Atomic Mass (atomic mass unit, u)	Natural Abundance (%)
$^{32}\text{S}$	31.97	94.93
$^{33}\text{S}$	32.97	0.76
$^{34}\text{S}$	33.97	4.29
$^{36}\text{S}$	35.97	0.02

## Nuclear Reactions

7. In which reaction is mass converted to energy by the process of fission?



## Titrations

7. Complete the equation representing this titration reaction by writing the formulas of the products.



## Mole-Mole Conversions



## LeChatelier's Principal



## Redox Reactions





# Titration Calculation

Information related to a titration experiment is given in the balanced equation and table below.



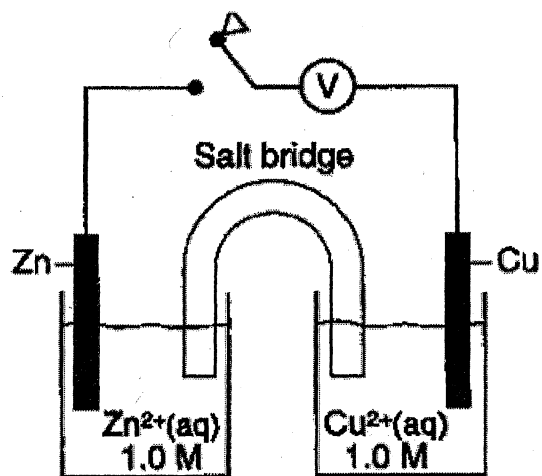
## Titration Experiment Results

volume of $\text{H}_2\text{SO}_4(\text{aq})$ used	12.0 mL
concentration of $\text{H}_2\text{SO}_4(\text{aq})$	?
volume of $\text{KOH}(\text{aq})$ used	36.0 mL
concentration of $\text{KOH}(\text{aq})$	0.16 M

BARF



## Parts of a Voltaic Cell

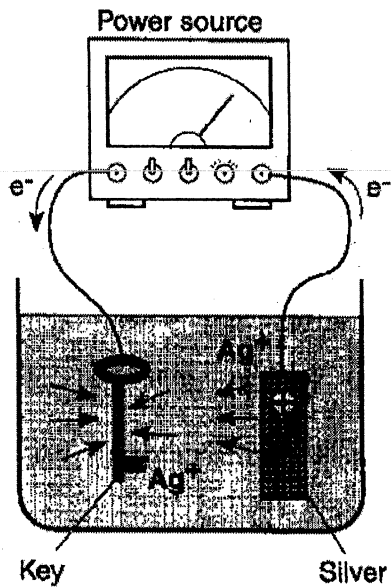


What occurs when the switch is closed?

- (A) Zn is reduced.
- (B) Cu is oxidized.
- (C) Electrons flow from Cu to Zn.
- (D) Electrons flow from Zn to Cu.**

# Parts of an Electrolytic Cell

Which statement best describes the key?



## Formula Writing

Which formula represents strontium phosphate?

- (A)  $\text{SrPO}_4$                       (B)  $\text{Sr}_3\text{PO}_8$   
(C)  $\text{Sr}_2(\text{PO}_4)_3$                 (D)  $\text{Sr}_3(\text{PO}_4)_2$

What is the chemical formula for iron(III) oxide?

- (A)  $\text{FeO}$                               (B)  $\text{Fe}_2\text{O}_3$   
(C)  $\text{Fe}_3\text{O}$                             (D)  $\text{Fe}_3\text{O}_2$

Which formula represents copper(I) oxide?

- (A)  $\text{CuO}$                                 (B)  $\text{CuO}_2$   
(C)  $\text{Cu}_2\text{O}$                               (D)  $\text{Cu}_2\text{O}_2$

# Naming Compounds

What is the IUPAC name for the compound FeS?

- (A) iron(II) sulfate                      (B) iron(III) sulfate  
(C) **iron(II) sulfide**                      (D) Iron(III) sulfide

Which is the correct name for this formula:  $\text{NO}_3$ ?

- A) mononitrogen trioxide              (B) nitrogen oxide  
(C) **nitrogen trioxide**                      (D) nitrogen tetroxide

## Balancing Equations

8. Balance the equation, using the smallest whole-number coefficients.



4. Balance the equation below using the smallest whole-number coefficients. [1]



# MSNAP-Molecular Polarity-Bond Polarity

8. \_\_\_\_\_ Which molecule contains a nonpolar covalent bond?



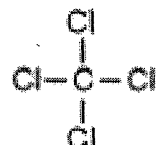
(1)



(2)



(3)

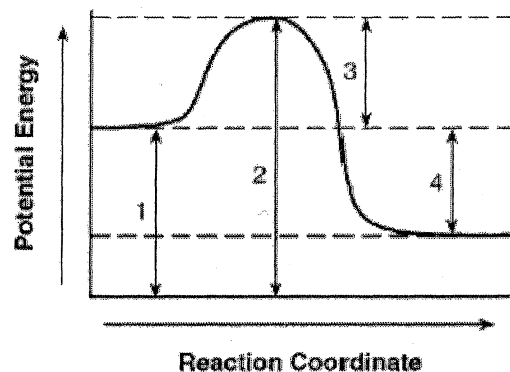


(4)



# Potential Energy (PE) Diagrams

17. Given the potential energy diagram for a reaction:



Which interval on this diagram represents the difference between the potential energy of the products and the potential energy of the reactants?

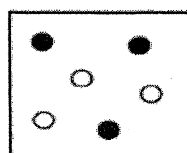
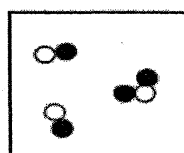
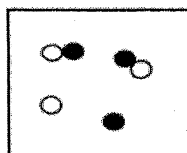
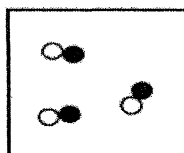
- (1) 1
- (2) 2

- (3) 3
- (4) 4

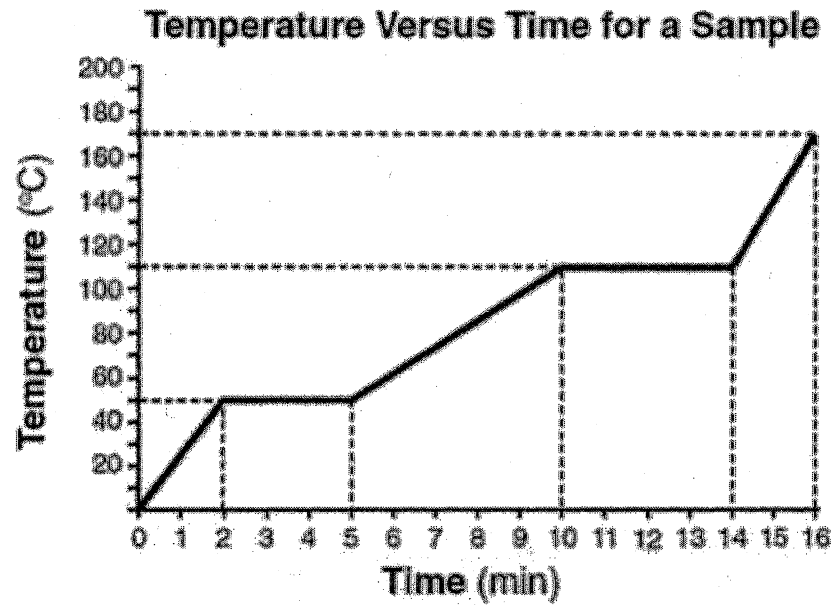
# Pure Substances / Mixtures

13. Which particle model diagram represents only one compound composed of elements X and Z?

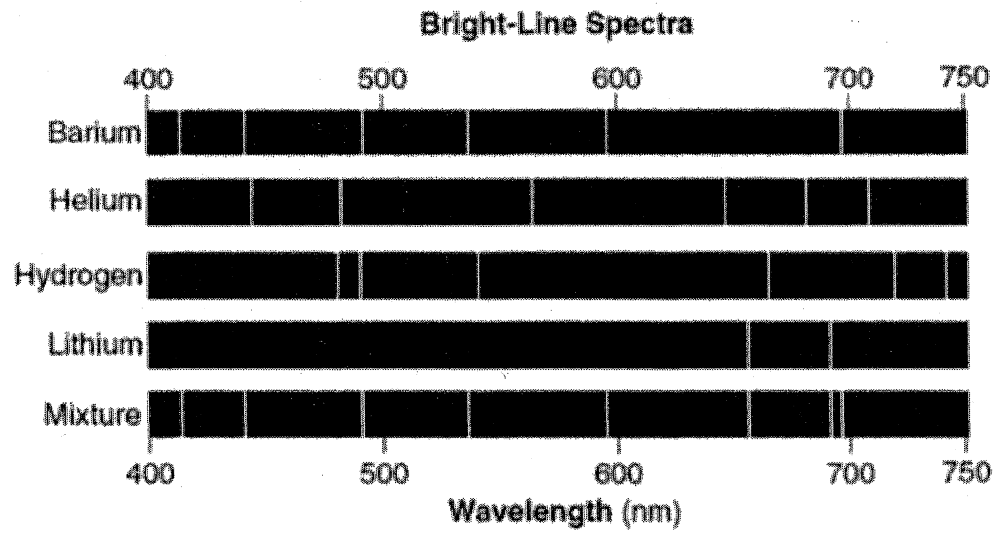
Key	
●	= atom of X
○	= atom of Z



# Heating/Cooling Curves



# Bright-Line Spectrum



# Intermolecular Forces

Name	Formulas	Boiling Point at 1 ATM (°C)
methane	CH <sub>4</sub>	-162
ethane	C <sub>2</sub> H <sub>6</sub>	-89
propane	C <sub>3</sub> H <sub>8</sub>	-42
butane	C <sub>4</sub> H <sub>10</sub>	-0.5
pentane	C <sub>5</sub> H <sub>12</sub>	36

## Combined Gas Law

A piece of magnesium ribbon is reacted with excess hydrochloric acid to produce aqueous magnesium chloride and hydrogen gas. The volume of the dry hydrogen gas produced is 45.6 millimeters. The temperature of the gas is 283 K, and the pressure is 99.5 kilopascals.

Calculate the volume this dry hydrogen gas would occupy at STP.

## Electron Configuration-Atomic-Ionic Radius

Explain, in terms of electrons, why the radius of a calcium ion is smaller than the radius of a calcium atom. [1]

# Lewis-Dot Diagrams

"Which Lewis electron-dot diagram represents calcium oxide?"

| What is the correct Lewis electron-dot structure for the compound magnesium fluoride?

Draw the electron-dot (Lewis) structure for the  $\text{NH}_3$  molecule.

Draw a Lewis electron-dot diagram for a molecule of chlorine,  $\text{Cl}_2$ .



# Mole Calculations

Given the equation:



What is the total number of moles of HCl(g) produced when 3 moles of H<sub>2</sub>(g) is completely consumed?

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The total number of moles represented by 20 grams of CaCO<sub>3</sub> is

How many total moles of KNO<sub>3</sub> must be dissolved in water to make 1.5 liters of a 2.0 M solution?

## Heat Calculations

How many Joules of heat energy are released when 50. grams of water are cooled from 70.°C to 60.°C?

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## Heat Calculations

An 80.0-gram sample of water at  $10.0^{\circ}\text{C}$  absorbs 1680 Joules of heat energy. What is the final temperature of the water?

## Heat Calculations

The temperature of 50.0 grams of water was raised to 50.0°C by the addition of 4200 Joules of heat energy. What was the initial temperature of the water?

(A) 10.0°C

(B) 20.0°C

(C) 30.0°C

(D) 60.0°C

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