

Chemistry Distance Learning Packet – CP and Honors

- 1) Midterm Tic Tac Toe Assignments – Please complete the sheets for your class, **PAY ATTENTION TO THE HEADER ON EACH SHEET TO COMPLETE THE ONE FOR YOUR CLASS**
- 2) Midterm Study Review Questions (50 multiple choice): May be completed online through Microsoft Teams or on the hard copy.
- 3) Textbook Reference Sheets – A list of topics and page references for the CP Chemistry Textbook and Honors Chemistry Textbook
- 4) Workbook Reference Sheet – CP Only
- 5) Periodic Table and Equation Sheet
- 6) Instructions to access Microsoft Teams.
- 7) Instructions to Access the Online Textbook is posted in Teams and on Teachers' Websites

You are expected to complete 1 assignment per day. Each assignment should take approximately 60 minutes to complete. There are 9 total tic-tac-toe assignments (3 per unit covered so far) and one culminating assessment (the study review questions).

Rubric for The Tic-Tac-Toe: Each Grid is worth 100 points for an assignment total of 300 points. Point values for each assignment square is listed below:

30	30	40
30	30	40
30	30	40

Office Hours for teachers: Weekdays: 10-11am and 2-3pm

Email addresses:

Remind: To 81010 text the following:

Mrs. Bedard: sbedard@dorchester2.k12.sc.us

Remind: @bedardchem

Ms. Causey: mcausey@dorchester2.k12.sc.us

Remind: 1st: @d3f6h6 3rd: @3d84d9 4th: @9a65dg

Mr. Cook: edcook@dorchester2.k12.sc.us

Remind: @chemcooker

Mrs. Mellott: smellott@dorchester2.k12.sc.us

Remind: @chemellott

Ms. Ritchie: emritchie@dorchester2.k12.sc.us

Remind: @2ndsemhc

Sign in and get started with Teams

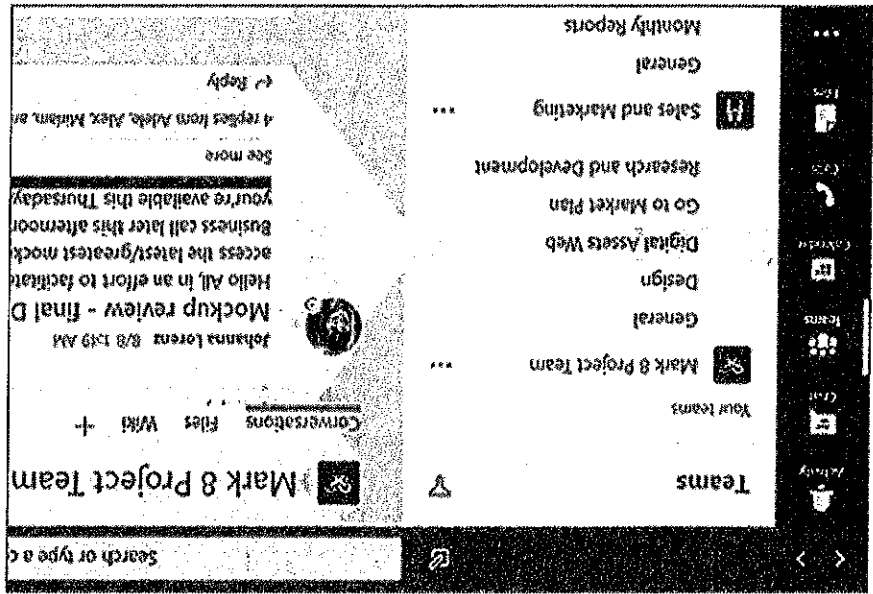
Go to <https://www.office.com/>

1. Sign in with your Office 365 username and password.
 - The student user name and password is there **PowerSchool information**. The same information used to login to computers at school.
 - For example: Username: **jsmith@dorchester2.k12.sc.us**
 - Password: Password

A *team* is a collection of people, conversations, files, and tools — all in one place. A *channel* is a discussion in a team, dedicated to a department, project, or topic.

The best way to get familiar with teams and channels is to pick a team and channel and start exploring!

1. Select **Teams** on the left side of the app and then pick a team.
2. Select a channel and explore the **Conversations**, **Files**, and other tabs.



HONORS CHEMISTRY MIDDLEMAN 10 FACTOR REVIEW

Refer to the instruction sheet for how to complete these assignments. You will do nine assignments total (3 for each overarching unit).

<p>Create a vocabulary list of 15 terms from the unit. Give the term, definition, and example.</p> <p>Chapters by topic are listed on the "Honors Chemistry Unit Reference Sheet".</p> <p>You may use your notes, the textbook readings, or videos provided to cover the Unit 1 topics listed above.</p>	<p>Create a visual including 5 vocabulary terms from the unit in one graphic.</p> <p>Visual may be print or digital. Options: infographic, PowToon, comic strip, Flipbook etc.</p>	<p>Create and record yourself giving a 5 minute lesson on the topic to someone - or -create a narrated PowerPoint or YouTube video</p>
<p>Make a poster – it can be as colorful and creative as you like. It must include at least 1 vocabulary term from the unit and have a visual example to explain it.</p>	<p>Write a story using a topic from the unit</p> <p>Role: Who or what are you as the writer for example: student, a teacher, a chemist, a public/history figure like Mendeleev</p> <p>Choose 1 audience from the following: 1) early elementary aged child 2) grandparent 3) peer</p> <p>Format: Written clearly or typed</p>	<p>Create a total of 10 questions including at least 5 that have relevant real world/cultural examples.</p> <p>At least 5 of these questions should be free response.</p> <p>You also need to include a key with worked out solutions to all problems. All work must be shown.</p>
<p>Watch the assigned video(s) on the "Honors Chemistry Unit Reference Sheet" and write thorough notes.</p>	<p>Write a school appropriate song, rap or create a tik tok to demonstrate, teach or review a topic in the unit</p> <p>Submit it in print or with a link to the online access</p>	<p>Read the relevant chapter(s) for the unit and write your own thorough notes or complete the assigned pages in the Reading and Study workbook that you were given in class.</p> <p>Chapters by topic are listed on the</p> <p>To access textbook online refer to remind for login information.</p>

Honors Chemistry Unit Reference Sheet

Lab Safety 101

TOPICS: lab safety, accuracy and precision, significant figures, density, measurement, classification of matter, properties and changes of matter

-Lab Safety --15 T and 22 T-front of textbook <https://www.youtube.com/watch?v=gi3DeFY0ctw>

-Units, Density, Scientific Notation: pg. 32-39 <https://www.youtube.com/watch?v=7tVeb13TSs8>

-Accuracy and Precision/Error/ Significant Figures: pg. 47-54 <https://www.youtube.com/watch?v=b38hFWVEIwI>

-Classification of Matter, physical and Chemical properties and changes; Mixtures: pg. 70-87

<https://www.youtube.com/watch?v=PwZl1CXw3Ng>

-Parts of Atoms; Isotopes: pg. 115-121 <https://www.youtube.com/watch?v=65dDZuIFhtg>

Naming Compounds and Chemical Reactions

Topics: periodic table basics, organization of the atom, naming ionic and molecular compounds, balancing equations, types of reactions, predicting products

-Ionic Naming/ Compounds: pg. 206-224

<https://www.youtube.com/watch?v=WwC3k2723IM>

<https://www.youtube.com/watch?v=Qf07-8Jhpc>

<https://www.youtube.com/watch?v=5BwmedLrRmw&list=PLZ6mfas08HCbX61SrgVMlDjDshASbUQdz&index=2>

<https://www.youtube.com/watch?v=Rq0A-AHdB74>

-Covalent Naming/ Covalent: pg. 248-252

<https://www.youtube.com/watch?v=PKA4CZwbZWU>

<https://www.youtube.com/watch?v=DejKvR4pRw>

-Chemical Reactions: pg. 282-307

Types <https://www.youtube.com/watch?v=z0187f8gqfU>

Predicting products <https://www.youtube.com/watch?v=R0uMFBPqYWU>

Balancing equations <https://www.youtube.com/watch?v=eNsVaUCzVLA>

Mole Calculations and Stoichiometry

Topics: the mole, percent composition, mole ratios, mole conversions, stoichiometry

-Chapter 10 The Mole: pg. 318-355

-Chapter 11 Stoichiometry: pg. 366-389

<https://www.youtube.com/watch?v=WQI-35dq50g&list=PLytGGfInD9dVvn0TUB okuD-2cqC0h0US&index=13>



The periodic table

www.webelements.com

		Key:																																																																																																																																																																																																																																																																																																																																																																																																																							
		Element Name		Atomic number		Symbol		Atomic weight (mean relative mass)																																																																																																																																																																																																																																																																																																																																																																																																																	
1	Hydrogen	1	H	1.008	2	Helium	2	He	4.0026	3	Lithium	3	Li	6.94	4	Beryllium	4	Be	9.0122	5	Sodium	11	Na	22.990	6	Magnesium	12	Mg	24.305	7	Aluminum	13	Al	26.982	8	Silicon	14	Si	28.085	9	Phosphorus	15	P	30.974	10	Sulfur	16	S	32.06	11	Chlorine	17	Cl	35.45	12	Argon	18	Ar	39.948	13	Potassium	19	K	39.098	14	Calcium	20	Ca	40.078(4)	15	Scandium	21	Sc	44.956	16	Titanium	22	Ti	47.887	17	Vanadium	23	V	50.942	18	Chromium	24	Cr	51.996	19	Manganese	25	Mn	54.938	20	Iron	26	Fe	55.845(2)	21	Cobalt	27	Co	58.933	22	Nickel	28	Ni	58.693	23	Copper	29	Cu	63.546(3)	24	Zinc	30	Zn	65.38(2)	25	Gallium	31	Ga	69.723	26	Germanium	32	Ge	72.630(8)	27	Arsenic	33	As	74.922	28	Selenium	34	Se	78.971(8)	29	Bromine	35	Br	79.904	30	Krypton	36	Kr	83.798(2)	31	Rubidium	37	Rb	85.468	32	Strontium	38	Sr	87.62	33	Yttrium	39	Y	88.905	34	Zirconium	40	Zr	91.224(2)	35	Niobium	41	Nb	92.906(2)	36	Molybdenum	42	Mo	95.95	37	Technetium	43	Tc	98.906(1)	38	Ruthenium	44	Ru	101.07(2)	39	Rhodium	45	Rh	102.91	40	Palladium	46	Pd	106.42	41	Silver	47	Ag	107.87	42	Cadmium	48	Cd	112.41	43	Indium	49	In	114.82	44	Tin	50	Sn	118.71	45	Antimony	51	Sb	121.76	46	Tellurium	52	Te	127.6(3)	47	Iodine	53	I	126.90	48	Xenon	54	Xe	131.29	49	Cesium	55	Cs	132.91	50	Barium	56	Ba	137.33	51	Lanthanum	57	La	138.91	52	Hafnium	72	Hf	178.49(2)	53	Tantalum	73	Ta	180.95	54	Tungsten	74	W	183.84	55	Rhenium	75	Re	186.21	56	Osmium	76	Os	190.23(2)	57	Iridium	77	Ir	192.22	58	Rhodium	78	Pt	195.08	59	Gold	79	Au	196.97	60	Mercury	80	Hg	200.59	61	Thallium	81	Tl	204.38	62	Lead	82	Pb	207.2	63	Bismuth	83	Bi	208.98	64	Polonium	84	Po	209	65	Astatine	85	At	209	66	Radium	86	Ra	226	67	Francium	87	Fr	223	68	Rutherfordium	104	Rf	261	69	Dubnium	105	Db	262	70	Seaborgium	106	Sg	266	71	Bohrium	107	Bh	264	72	Hassium	108	Hs	277	73	Mt	109	Mt	268	74	Darmstadtium	110	Ds	271	75	Roentgenium	111	Rg	272	76	Copernicium	112	Cn	285	77	Nihonium	113	Nh	284	78	Flerovium	114	Fl	289	79	Moscovium	115	Mc	288	80	Livermorium	116	Lv	293	81	Tennessine	117	Ts	289	82	Oganesson	118	Og	294

*lanthanoids
**actinoids

Lanthanum	Cerium	Praseodymium	Neodymium	Promethium	Samarium	Europium	Gadolinium	Terbium	Dysprosium	Hoium	Erbium	Thulium	Ytterbium
57	58	59	60	61	62	63	64	65	66	67	68	69	70
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb
138.91	140.12	140.91	144.24	144.91	150.35(2)	151.96	157.25(3)	158.93	162.50	164.93	167.26	168.93	173.05
Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No
227.03	232.04	231.04	238.03	237.05	244.06	243.06	247.07	247.07	251.08	252.09	257.10	258.10	259.10

Symbols and names: the symbols and names of the elements, and their spellings are those recommended by the International Union of Pure and Applied Chemistry (IUPAC - <http://www.iupac.org/>). In some countries, the spellings aluminium, caesium, and sulphur are usual. Group labels: the numeric system (1-8) used here is the current IUPAC convention. Atomic weights (mean relative masses): these are the IUPAC 2013 values and given to 5 significant figures. The last significant figure of each value is considered reliable to 4,1 except where a larger uncertainty is given in parentheses. IUPAC representative values are given for those elements having an atomic weight interval (H, Li, B, C, N, O, Si, Cl, Tl). Elements for which the atomic weight is listed within square brackets have no stable nuclides and are represented by the element's longest lived isotope reported in the IUPAC 2013 values except Tl for which the value of Tl-205 is given as that is the most commonly used isotope.

Chemistry Equation Sheet

Key

Variable	Meaning	Variable	Meaning
c	Specific heat	m	Mass
D	Density	n	Molality
Σ	"sum of"	ΔS	Change in entropy
ΔG	Change in Gibbs free energy	f	Total time
ΔH	Change in enthalpy	T	Half-life
l	# ions in solution	T_0	Original sample
M	molarity	P	Pressure
		q	Change in temperature
		V	Volume

Measurement		Nuclear Chemistry	
$\% \text{ error} = \frac{ \text{experimental value} - \text{accepted value} }{\text{accepted value}} \times 100$		$N = N_0 \left(\frac{1}{2}\right)^t$	
$D = \frac{m}{V}$		Nuclear Radiation Types = $\alpha, \beta, \gamma, \delta, \nu, \epsilon, \mu, e$	
Solutions		Gas Laws	
$M = \frac{\text{mol}}{L}$	$\frac{S_1}{P_1} = \frac{S_2}{P_2}$	$P_1 V_1 = P_2 V_2$	$\frac{V_1}{T_1} = \frac{V_2}{T_2}$
$m = \frac{\text{mol}}{\text{kg}}$	$M_1 V_1 = M_2 V_2$	$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$	$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$
	$\% \text{ mass} = \frac{\text{mass solute}}{\text{mass solution}} \times 100$	$R = 0.0821 \frac{L \times \text{atm}}{\text{mol} \times K}$	
Calculations Using Chemical Formulas			
Avogadro's Number = 6.02×10^{23} particles/mol			
Standard Pressures = 1 atm, 101.3 kPa, 760 mm Hg			
molar volume = $22.4 \frac{L}{\text{mol}}$ at STP			
Stoichiometry		Acids and Bases	
$\% \text{ yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100$		$\text{rate} = \frac{(\text{molar mass})_B}{(\text{molar mass})_A}$	Standard Temperature = 273 K
Thermodynamics and kinetics			
$\Delta H_{\text{rxn}} = \sum \Delta H_f^\circ (\text{products}) - \sum \Delta H_f^\circ (\text{reactants})$	$pH = -\log[H^+]$	$pOH = -\log[OH^-]$	$pH + pOH = 14$
$q = mc(\Delta T)$	$10^{-pH} = [H^+]$	$10^{-pOH} = [OH^-]$	$n_A M_A V_A = n_B M_B V_B$
$\Delta G_{\text{sys}} = \Delta H_{\text{sys}} - T(\Delta S_{\text{sys}})$	$q = \frac{(\Delta H)_{\text{m}}}{(\text{molar mass})}$	$pH + pOH = 14$	$K_{sp} = 1 \times 10^{-14} = [H^+][OH^-]$

Table of Solubilities in Water

	acetate	bromide	carbonate	chloride	chromate	hydroxide	iodide	nitrate	phosphate	sulfate	sulfide
1-nearly insoluble											
ss-slightly soluble											
s-soluble											
d-decomposes											
n-not isolated											
aluminum	ss	s	n	s	n	i	s	s	i	s	d
ammonium	s	s	s	s	s	s	s	s	s	s	s
barium	s	s	i	s	i	s	s	s	i	d	s
calcium	s	s	i	s	s	ss	s	s	i	ss	d
copper (I)	s	s	i	s	i	i	n	s	i	s	i
Iron (II)	s	s	i	s	n	i	n	s	i	s	i
Iron (III)	s	s	n	s	i	i	n	s	i	ss	d
lead	s	ss	i	ss	i	i	ss	s	i	i	i
magnesium	s	s	i	s	s	i	s	s	i	s	d
mercury (I)	ss	i	i	i	ss	n	i	s	i	ss	i
mercury (II)	s	ss	i	s	ss	i	i	s	i	d	i
potassium	s	s	s	s	s	s	s	s	s	s	s
silver	ss	i	i	i	ss	n	i	s	i	ss	i
sodium	s	s	s	s	s	s	s	s	s	s	s
zinc	s	s	i	s	s	i	s	s	i	s	i

- Most sodium, potassium, and ammonium compounds are soluble in water
- Most nitrates, acetates, and chlorates are soluble.
- Most chlorides are soluble, except those of silver, mercury (I), and lead. Lead (II) chloride is soluble in hot water.
- Most sulfates are soluble, except those of barium, strontium, and lead.
- Most carbonates, phosphates, and silicates are insoluble, except those of sodium, potassium, and ammonium.
- Most sulfides are insoluble, except those of calcium, strontium, sodium, potassium, and ammonium.

More Active	Activity Series		Polyatomic Ions
↓	Metals	Nonmetals	Ammonium
	Li	Fluorine, F ₂	Acetate
	K	Chlorine, Cl ₂	Carbonate
	Ba	Bromine, Br ₂	Chlorite
	Sr	Iodine, I ₂	Chlorate
	Ca		Chromate
	Na		Cyanide
	Mg		Dichromate
	Al		Hydrogen Carbonate
	Zn		Hydrogen phosphate
	Fe		Hydroxide
	Ni		Hypochlorite
	Sn		Nitrate
	Pb		Nitrite
	Hydrogen, H ₂		Perchlorate
Cu		Permanganate	
Hg		Peroxide	
Ag		Phosphate	
Au		Sulfate	
		Sulfite	
Less Active			

Spring 2020 Mid term Review

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- Use the activity series of metals to complete a balanced chemical equation for the following single replacement reaction.
 $\text{Ag}(s) + \text{KNO}_3(aq) \rightarrow$
 - $\text{AgNO}_3 + \text{K}$
 - $\text{AgK} + \text{NO}_3$
 - AgKNO_3
 - No reaction takes place because silver is less reactive than potassium.
- A compound composed of cations and anions is called Al_2O_3 .
 - diatomic molecule
 - polar compound
 - covalent molecule
 - ionic compound
- Express the product of 2.2 mm and 3.00 mm using the correct number of significant digits.
 - 10 mm²
 - 11 mm²
 - 11.0 mm²
 - 11.00 mm²
- What is the formula unit of aluminum oxide?
 - AlO
 - Al₃O
 - AlO₃
 - Al₂O₃
- In the reaction $2\text{CO}(g) + \text{O}_2(g) \rightarrow 2\text{CO}_2(g)$, what is the ratio of moles of oxygen used to moles of CO₂ produced?
 - 1:1
 - 2:1
 - 1:2
 - 2:2
- How many molecules are in 2.10 mol CO₂?
 - 2.53×10^{24} molecules
 - 3.79×10^{24} molecules
 - 3.49×10^{-24} molecules
 - 1.26×10^{24} molecules
- Which of the following is a physical property?
 - explosive
 - combustible
 - melting point
 - ability to rust
- In the chemical equation $\text{H}_2\text{O}_2(l) \rightarrow \text{H}_2\text{O}(l) + \text{O}_2(g)$, the O₂ is a _____.
 - catalyst
 - solid
 - product
 - reactant
- Which of the following involves a chemical change?
 - mixing
 - melting
 - grinding
 - decomposing
- Which of the following measurements contains two significant figures?
 - 0.004 00 L
 - 0.004 04 L
 - 0.004 44 L
 - 0.004 40 L
- What are the coefficients that will balance the skeleton equation below?
 $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$
 - 1, 1, 2
 - 1, 3, 3
 - 3, 1, 2
 - 1, 3, 2
- Which of the following elements exists as a diatomic molecule?
 - neon
 - lithium
 - nitrogen
 - sulfur
- In the chemical reaction in which sucrose is heated and decomposes to form carbon dioxide and water, which of the following is a reactant?
 - sucrose
 - carbon dioxide
 - water
 - heat
- How many moles of aluminum are needed to react completely with 1.2 mol of FeO?
 $2\text{Al}(s) + 3\text{FeO}(s) \rightarrow 3\text{Fe}(s) + \text{Al}_2\text{O}_3(s)$; The molar mass of FeO is 71.85 g/mol.
 - 1.2 mol
 - 0.8 mol
 - 1.6 mol
 - 2.4 mol
- In a double-replacement reaction, the products are always molecular.
 - reactants are two ionic compounds.
 - reactants are two elements.
 - products are a new element and a new compound.
 - What is the formula unit of sodium nitride?
 - NaN
 - Ne₂N
 - Na₂N
 - NaN₃
- What are the correct formulas and coefficients for the products of the following double-replacement reaction?
 $\text{KOH} + \text{H}_3\text{PO}_4 \rightarrow$
 - $\text{K}_3\text{PO}_4 + 3\text{H}_2\text{O}$
 - $\text{K}_3\text{PO}_4 + 2\text{H}_2\text{O}$
 - $\text{K}_3\text{PO}_4 + 3\text{H}_2\text{O}$
 - $\text{H}_3\text{RO} + \text{PO}_4\text{OH}$
- Which group of measurements is the most precise? (Each group of measurements is for a different object.)
 - 2 g, 3 g, 4 g
 - 2.0 g, 3.0 g, 4.0 g
 - 2 g, 2.5 g, 3 g
 - 1 g, 3 g, 5 g
- What is the mass in grams of 5.90 mol C₈H₁₈?
 - 0.0512 g
 - 19.4 g
 - 389 g
 - 673 g
- What is the percent composition of carbon in heptane, C₇H₁₆?
 - 12%
 - 19%
 - 68%
 - 84%
- How many moles of CaBr₂ are in 5.0 grams of CaBr₂?
 - 2.5×10^{-2} mol
 - 4.2×10^{-2} mol
 - 4.0×10^1 mol
 - 1.0×10^3 mol
- The products of a combustion reaction include
 - water, carbon dioxide, and carbon monoxide.
 - hydrogen, water, and carbon dioxide.
 - hydrogen and carbon monoxide.
 - hydrogen and water.
- How many moles of tungsten atoms are in 4.8×10^{25} atoms of tungsten?
 - 8.0×10^2 moles
 - 8.0×10^1 moles
 - 1.3×10^{-1} moles
 - 1.3×10^{-2} moles
- When the following equation is balanced, what is the coefficient for HCl?
 $\text{Mg}(s) + \text{HCl}(aq) \rightarrow \text{MgCl}_2(aq) + \text{H}_2(g)$
 - 6
 - 3
 - 1
 - 2
- What is the measurement 111.009 mm rounded off to four significant digits?
 - 111 mm
 - 111.0 mm
 - 111.01 mm
 - 110 mm
- The equation below shows the decomposition of lead nitrate. How many grams of oxygen are produced when 11.5 g NO₂ is formed? The molar mass of NO₂ is 46.01 g/mol.
 $2\text{Pb}(\text{NO}_3)_2(s) \rightarrow 2\text{PbO}(s) + 4\text{NO}_2(g) + \text{O}_2(g)$
 - 1.00 g
 - 2.00 g
 - 2.88 g
 - 32.0 g

40. Which of the following compounds contains the Mn^{3+} ion?
- MnS
 - $MnBr_2$
 - Mn_2O_3
 - MnO
41. How are chemical formulas of binary ionic compounds generally written?
- cation on left, anion on right
 - anion on left, cation on right
 - Roman numeral first, then anion, then cation
 - subscripts first, then ions
42. Select the correct formula for sulfur hexafluoride.
- S_2F_6
 - F_6SO_3
 - F_6S_2
 - SF_6
43. The molar volume of a gas at STP occupies _____
- 22.4 L
 - 0°C
 - 1 kilogram
 - 12 grams
44. What are the coefficients that will balance the skeleton equation below?
- $$AlCl_3 + NaOH \rightarrow Al(OH)_3 + NaCl$$
- 1, 3, 1, 3
 - 3, 1, 3, 1
 - 1, 1, 1, 3
 - 1, 3, 3, 1
45. The complete combustion of which of the following substances produces carbon dioxide and water?
- C_8H_{18}
 - K_2CO_3
 - $CaHCO_3$
 - NO
46. If a combination reaction takes place between rubidium and bromine, the chemical formula for the product is _____
- $RbBr$
 - Rb_2Br
 - $RbBr_2$
 - $RbBr$
47. In a chemical reaction, the mass of the products _____
- is less than the mass of the reactants.
 - is greater than the mass of the reactants.
 - is equal to the mass of the reactants.
 - has no relationship to the mass of the reactants.
48. At STP, how many liters of oxygen are required to react completely with 3.6 liters of hydrogen to form water?
- $$2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$$
- 1.8 L
 - 3.6 L
 - 2.4 L
 - 2.4 L
49. How many liters of hydrogen gas are needed to react with CS_2 to produce 2.50 L of CH_4 at STP?
- $$4H_2(g) + CS_2(g) \rightarrow CH_4(g) + 2H_2S(g)$$
- 2.50 L
 - 3.00 L
 - 7.50 L
 - 10.0 L
50. _____
What is the length?
- 12.98 cm
 - 13.0 cm
 - 13.00 cm
 - 12.9 cm
27. Express the sum of 7.68 m and 5.0 m using the correct number of significant digits.
- 12.68 m
 - 12.7 m
 - 13 m
 - 19 m
28. How many valence electrons are in a silicon atom?
- 2
 - 4
 - 6
 - 8
29. Iron(III) oxide is formed when iron combines with oxygen in the air. How many grams of Fe_2O_3 are formed when 16.7 g of Fe reacts completely with oxygen? The molar mass of Fe_2O_3 is 159.70 g/mol.
- $$4Fe(s) + 3O_2(g) \rightarrow 2Fe_2O_3(s)$$
- 12.0 g
 - 23.9 g
 - 47.8 g
 - 95.6 g
30. Which conversion factor do you use first to calculate the number of grams of CO_2 produced by the reaction of 50.6 g of CH_4 with O_2 ? The equation for the complete combustion of methane is:
- $$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$$
- 1 mol $CH_4/16.0$ g CH_4
 - 2 mol $O_2/1$ mol CO_2
 - 16.0 g $CH_4/1$ mol CO_2
 - 44.0 g $CO_2/2$ mol CO_2
31. The closeness of a measurement to its true value is a measure of its _____.
- precision
 - accuracy
 - reproducible
 - usefulness
32. What is the molar mass of $(NH_4)_2CO_3$?
- 144 g
 - 138 g
 - 96 g
 - 78 g
33. A substance that can be separated into two or more substances only by a chemical change is a(n) _____.
- solution
 - element
 - mixture
 - compound
34. What is the density of an object having a mass of 8.0 g and a volume of 25 cm^3 ?
- 0.32 g/cm^3
 - 2.0 g/cm^3
 - 3.1 g/cm^3
 - 200 g/cm^3
35. Which of the following is a physical property of water?
- It reacts with calcium metal to produce a basic solution.
 - It can be decomposed by electrolysis.
 - It is composed of hydrogen and oxygen.
 - It melts below room temperature.
36. All atoms are _____
- positively charged, with the number of protons exceeding the number of electrons.
 - negatively charged, with the number of electrons exceeding the number of protons.
 - neutral, with the number of protons equaling the number of electrons.
 - neutral, with the number of protons equaling the number of electrons, which is equal to the number of neutrons.
37. In Bohr's model of the atom, where are the electrons and protons located?
- The electrons move around the protons, which are at the center of the atom.
 - The electrons and protons move throughout the atom.
 - The electrons occupy fixed positions around the protons, which are at the center of the atom.
 - The electrons and protons are located throughout the atom, but they are not free to move.
38. Which of the following elements is in the same period as phosphorus?
- carbon
 - unsgesium
 - nitrogen
 - oxygen
39. Which of the following categories includes the majority of the elements?
- metalloids
 - liquids
 - metals
 - nonmetals