

# Chemistry

	Day	Date	Quiz/Video	Is it done?	Assignment	Is it done?
33	Monday	5/4/2020			test on chapter 19	
34	Tuesday	5/5/2020			vocab practice final 1	
35	Wednesday	5/6/2020			take test - vocab final 1	
36	Thursday	5/7/2020			vocab practice final 2	
37	Friday	5/8/2020			"field trip day" - try to do something fun	
38	Monday	5/11/2020			take test - vocab final 2	
39	Tuesday	5/12/2020			vocab practice final 3	
40	Wednesday	5/13/2020			take test - vocab final 3	
41	Thursday	5/14/2020	PF1a		problems practice final (1st half to 31)	
42	Friday	5/15/2020	PF1b		problems practice final (2nd half to 67)	
	Monday	5/18/2020	I will email the test in the AM		take test - problems final (1st half to 31)	
	How many total did you do:					

Zoom session happen Mon/Wed/Fri at 1:00 for those needing any help

**We usually do these during a school day in May.**  
**Please return this form at the 5-18 dropoff/pickup day.**  
**It helps TMR to work up a class schedule for next year.**  
**Thank you.**

Name _____ I expect to be _____ at CCA _____ <b>Math</b> _____ General Math _____ Pre-Algebra _____ <b>French:</b> _____ Yes _____ <b>Spanish:</b> _____ Yes _____ <b>English</b> _____ <b>Lunch Help</b> _____ <b>9th-12th:</b> _____ Accelerated _____ <b>11th/12th:</b> _____ Physics _____ <b>Electives (Rank your choices starting with 1 for your first choice, ranking anything you think you might take)</b> Art _____ Boys Only _____ Child Dev _____ College + Career _____	Grade Next Year _____ Elsewhere _____ Algebra 1 _____ Geometry _____ No _____ No _____ Regular _____ Environmental _____ Computers _____ Cook \$ _____ Debate _____ Drama _____	2020-21 Pre-Schedule Form Don't Know _____ Trigonometry _____ Calculus _____ Level _____ Level _____ Girls Only _____ Health _____ Keyboarding _____ Money Mgmt _____ Speech _____ Video Classics _____ Worship Team _____
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Name \_\_\_\_\_

1. Who ran the first controlled nuclear reaction in 1942?

2-9. Name and describe 4 other scientists.

10. What is a nuclear reaction?

11. What is radioactivity?

12. Too many or too few \_\_\_\_\_ can cause an isotope to be radioactive.

13-30. Name three types of rays that Rutherford found. Give the Greek letter, the charge, the penetrating power, the danger level, and one other fact for one of them. For two of them, give the shorthand way to write them in equations. For the one without a shorthand way to write it, tell why it does not need one.

31. Collectively, these three types of radiation are called \_\_\_\_\_.

32. If you are exposed to enough of any form of radioactivity, you can develop \_\_\_\_\_.

33. What is a transmutation?

34. Transmutations are the result of \_\_\_\_\_, which causes radioactive elements to give off emissions in the first place.

35. What is a decay series?

36. What is a stable substance?

37. Who was the first scientist to create a transmutation?

38. What does a cyclotron do?

39. What is artificial radioactivity?
40. What is a positron?
41. What is electron capture?
42. \_\_\_\_\_ are manmade elements that do not exist in nature. They fill in gaps in the periodic table.
43. \_\_\_\_\_ are manmade elements whose atomic numbers exceed 92. They have extended the periodic table.
- 44-8. Give a shorthand way to represent a positron, a deuteron, a triton, proton, and a neutron.
49. What is the half-life of an element?
50. What can speed or slow that process?
51. How long can a half-life be?
52. Do radioactive substances “disappear?” Why/why not?
53. \_\_\_\_\_ are used to detect and measure radiation in various environments.
- 54-6. The newer SI unit used to measure radioactivity is the \_\_\_\_\_. Define it. What is its abbreviation?
- 57-9. The older unit used to measure radioactivity is the \_\_\_\_\_. Define it. What is its abbreviation?
- 60-7. Name and explain the four uses of radioactive isotopes that they discussed in 19.5.
68. What is nuclear fission?
69. What is a chain reaction?
70. What is a critical mass?
71. Why was Germany not the first to develop an atomic bomb?

72. What scientists in the US approached the President about the atomic bomb?
73. What US President first authorized the research on the atomic bomb?
74. What was the code name for the research?
75. Where and when was the first bomb tested?
76. What US president made the final decision to drop the first atomic bomb?
77. Where was it dropped?
78. When was the second one dropped?
79. Where was it dropped?
80. What is nuclear fusion?
- 81-2. On the sun, \_\_\_\_\_ is lost and exchanged for \_\_\_\_\_.
83. To maintain a fusion reaction, \_\_\_\_\_ must be constantly supplied.
84. In a hydrogen/thermonuclear bomb, \_\_\_\_\_ supplies it.
- 85-7. What are the three parts of a nuclear power plant?
88. What controls the heat in a nuclear fission power reactor?
89. Why can't an explosion occur in a nuclear fission reactor?
- 90-3. Name four problems with nuclear fission power plants.
- 94-7. Where and when did two meltdowns occur?
98. Is radon a naturally occurring or a manmade problem?
99. How does radon gas harm the body?
100. Wasn't that fun?

**Problems (2 points each)**

**Complete and balance a nuclear chemical equation.**

1. Beryllium-9 plus a proton results in the formation of another element and the release of an alpha particle.
2. Oxygen-16 plus a neutron results in the formation of another element and the release of an alpha particle.
3. Cobalt-60 decays by beta emission.
4. Praseodymium-140 (Pr) decays by positron emission.
5. Lithium-7 plus a proton results in the formation of another element and the release of a neutron.
6. Einsteinium-253 (Es) plus an alpha particle results in the formation of another element and the release of a neutron.
7. Cadmium-113 absorbs a neutron to form an isotope of cadmium and gamma rays.
8. Uranium-232 decays by alpha emission.
9. Zinc-65 undergoes electron capture to give a new element.
10. Nickel-58 is bombarded with a proton, and an alpha particle is emitted.
11. Tritium is prepared by bombarding lithium-6 with a neutron.
12. Palladium-108 is bombarded with an alpha particle, and a proton is emitted.
13. An element has a half-life of 16 hours. There are 48 g now. In how many hours will there be 3 g?
14. An element has a half-life of 16 hours. If there are 72 g now, how much will there be in 4 days?
15. An element has a half-life of 16 hours. If there are 60 g now, how much will there be in 48 hours?
- ec. There are 144 g of an element now. In 72 hours, there will be 2.25 g. What is the half-life?

1. What is chemistry?
- 2-7. Name and describe the parts of the scientific method.
8. What is alchemy?
9. Who is considered to be the father of chemistry?
10. What is the greatest honor a scientist can receive?
11. Who dominated chemistry until World War I?
12. Who has dominated since then?
13. What is weight?
14. What is mass?
15. What is matter?
16. How is mass different from weight?
17. What is volume?
18. What is the formula for computing volume?
19. What is the formula for computing density?
- 20-1. With what two systems can things be measured?
- 22-3. Tell two good things about one of the systems.
- 24-8. With what unit do we measure density of gases, volume, length, density of solids/liquids, mass?
- 29-34. Name and describe three temperature scales.
- 35-8. What digits are significant digits?
- 39-40. What do you do with significant digits when multiplying/dividing?

What do you do with significant digits when adding/subtracting?

What is the point of scientific notation?

44. What is the formula for Celsius becoming Fahrenheit?

45. What is the formula for Fahrenheit becoming Celsius?

46. What is the formula for Kelvin becoming Celsius?

47. What is the formula for Celsius becoming Kelvin?

48-77. Tell me all the metric prefix information that you know.

78. Matter exists in three \_\_\_\_\_ - solid, liquid, and gas.

79. What is heterogeneous matter?

80. What is homogeneous matter?

81. What is an element?

82. What is a compound?

83. What is a molecule?

84. What is an atom?

85. What is bigger, a molecule or an atom?

86. What is the difference between a physical property and a chemical property?

87. What is the difference between a physical change and a physical property?

88. What is energy?

89. What is heat energy?

90. What is kinetic energy?



91. What is potential energy?
- 92-3. The unit for heat energy is the \_\_\_\_\_ or the \_\_\_\_\_.
94. What is the specific heat of a substance?
95. What equation do we use with specific heat problems?
96. State the law of conservation of mass.
97. State the law of conservation of energy.
98. Where are nonmetals found on the periodic table?
99. Where are metals found?
100. Where are metalloids found?

101-22. Fill in the elements and their symbols:

Uranium	
Chromium	
Carbon	
Manganese	
Helium	
Boron	
Gold	
Cobalt	
Neon	
Argon	
Platinum	
Bismuth	
	Si
	Ni
	Se
	As
	Sb
	Ra
	Kr
	Be
	Ti
	Xe

123. What unit is used to measure masses of atoms?
124. What is the element that was used as the basis for the scale for masses of atoms?
125. What is the mass of that element?
126. Who proposed an atomic theory in the early part of the 19<sup>th</sup> century?

127. Who came up with a better description of the atom in 1911?

128-43. Every atom is composed of 3 types of subatomic particles. List them, give an abbreviation, tell what mass they each have, and tell what charge they each have. Also draw a picture to describe where they are located.

144. Which of those subatomic particles causes electrical phenomena?

145. What is the atomic number?

146. What is the mass number?

147. What is an ion?

148. What are isotopes?

149. What causes isotopes?

150. Why are atomic masses not always close to whole numbers?

151. How many energy levels are there?

152-8. List how many electrons it takes to fill each of those levels.

159-62. How many sublevels are there on level 1, level 2, level 3, and level 4?

163. The electrons in the highest principal energy level in an atom are called \_\_\_\_\_.

164-71. Name the four electron sublevels and tell how many electrons they can contain.

172-5. Draw the picture to show the order in which all of the sublevels are filled.

176. When was the periodic table first published?

177-9. What two people published one? Which one was superior, and how?

180. The elements in the periodic table today are arranged in order of increasing \_\_\_\_\_.

181. The appearance of elements with similar chemical properties at regular intervals is known as the \_\_\_\_\_.

182-4. How many columns are there, what are they called, and what do the elements in the same column have in common?

185-7. How many rows are there, what are they called, and what does the row number tell you?

188-92. Name and tell the column number of the five groups we learned about

193-4. Name the two series of elements that are placed at the bottom of the table instead of in the row where they should go (to keep the table from becoming too wide and cumbersome).

195. Which are the long periods?

196. Which are the short periods?

197. What is a chemical bond?

198-201. Name and define two kinds of bonds.

202. Bonds are formed through the interactions among the \_\_\_\_\_ of the atoms.

203. Atoms attempt to obtain a stable configuration of \_\_\_\_\_ electrons.

204-5. Two exceptions to this rule are the elements \_\_\_\_\_ and \_\_\_\_\_.

206-7. Atoms with 4 electrons will tend to \_\_\_\_\_ electrons. \_\_\_\_\_ is an example of this.

208-10. Atoms with 5, 6, or 7 electrons will tend to \_\_\_\_\_ electrons. These elements are the \_\_\_\_\_, and their ions have a \_\_\_\_\_ charge.

211-3. Atoms with 1, 2, or 3 electrons will tend to \_\_\_\_\_ electrons. These elements are the \_\_\_\_\_, and their ions have a \_\_\_\_\_ charge.

214. Some elements, called \_\_\_\_\_, don't bond with other atoms.

215-6. A \_\_\_\_\_ is any ion carrying a positive charge, and a \_\_\_\_\_ is a negatively charged ion.

217. How can the periodic table give you the charge on an ion?

218. The sum of the oxidation numbers in a compound is \_\_\_\_\_.

219-20. What is a diatomic molecule? Name 7 of them.

221. \_\_\_\_\_ are a method of expressing electrons among atoms in a molecule using the octet rule and dots to represent electrons.

222. A \_\_\_\_\_ is a chemical bond in which two atoms share three pairs of electrons.

223. A \_\_\_\_\_ is a chemical bond in which two atoms share two pairs of electrons.

224. When writing formulas, in most cases, which ion is written first?

225. What are ternary compounds?

226. What are binary compounds?

227-9. What two kinds of names do compounds have? Which is more common?

230-9. What are the Greek prefixes for each number from 1 to 10?

240. What is the exception for one of the prefixes?

241. What is one other exception?

242. The \_\_\_\_\_ of nomenclature in modern use inserts a Roman numeral in parentheses immediately following the name of a metal with a variable ionic charge.

243-4. If you aren't using that system, the <sup>suffix</sup> ~~prefix~~ \_\_\_\_\_ is for the ion with higher charge, and the <sup>suffix</sup> ~~prefix~~ \_\_\_\_\_ is for the ion with the lower charge.

245-6. Some of the negative polyatomic ions have suffixes of \_\_\_\_\_ and \_\_\_\_\_.

247. What is the relationship between those suffixes?

248-9. The prefix \_\_\_\_\_ is a Greek word meaning “under,” and \_\_\_\_\_ means “over.”

250. What is an aqueous solution?

251-6. Define acid, base, and salt. Also give the general formula for each.

257-83.

Formula	Common Name	Systemic Name	Fact (Match)
HCl	_____	_____	_____
H <sub>2</sub> O	_____	_____	_____
C <sub>12</sub> H <sub>22</sub> O <sub>11</sub>	_____	_____	_____
CO <sub>2</sub>	_____	_____	_____
NH <sub>3</sub>	_____	_____	_____
HC <sub>2</sub> H <sub>3</sub> O <sub>2</sub>	_____	_____	_____
NaCl	_____	_____	_____
CH <sub>4</sub>	_____	_____	_____
H <sub>2</sub> SO <sub>4</sub>	_____	_____	_____

- a. cleaner, commercial refrigerant, fertilizer
- b. battery acid, cleaning metals
- c. sweetener
- d. drinking, washing
- e. seasoning
- f. heating for homes and buildings
- g. cleaning metals, stomach acid, swimming pool acid
- h. salad dressing, pickling of some foods
- i. fire extinguishers, freezing substances, greenhouse gas

284. What is a mole of a substance?

285-6. This number is called \_\_\_\_\_, and it is approximately \_\_\_\_\_.

287. What does STP stand for?

288. What is the molar volume of a gas?

289-90. Explain empirical and molecular formulas.

291. What is a chemical reaction?

292. What is a chemical equation?

293-6. Name and describe the two main parts of a chemical equation.

297. What is a catalyst?

298-301. Name and describe the two symbols which serve as separators in chemical equations.

302. What does symbol above or below the arrow mean?

303. What does a triangle above or below the arrow mean?

304-8. Name the five simple types of reactions.

309. What is the key element in a combustion reaction?

310. What else is a combustion reaction called?

311. What is a precipitate?

312-3. -ous acids are created from \_\_\_\_\_ combining with an \_\_\_\_\_ ion.

314. -ic acids are based on \_\_\_\_\_ ions.

315-6. Polyatomic ions are made of \_\_\_\_\_. We find their charges by \_\_\_\_\_.

317-9. Monatomic ions are made of \_\_\_\_\_. Their names all end in \_\_\_\_\_. We find their charges by \_\_\_\_\_.

Name \_\_\_\_\_

## Chemistry Practice Final, Vocabulary, Day 3

320-80. Fill in the table of ions

	Name(s)	Symbol(s) with charge
Hydrogen		
Hydrogen		
Hydroxide		
Oxalate		
Oxygen		
Nitrite		
Nitrate		
Nitrogen		
Phosphate		
Phosphorus		
Dichromate		
Chromate		
Chlorine		
Chlorate		
Chlorite		
Perchlorate		
Hypochlorite		
Sulfur		
Sulfite		
Hydrogen sulfite or bisulfite		
Sulfate		
Hydrogen sulfate or bisulfate		
Hydrogen carbonate or bicarbonate		
Carbonate		
Cyanide		
Lithium		
Bromine		
Iron		
Magnesium		
Barium		
Fluorine		
Aluminum		
Potassium		
Tin		
Permanganate		
Ammonium		
Cadmium		
Strontium		
Sodium		
Iodine		
Calcium		
Copper		
Silver		
Zinc		
Lead		
Mercury		
Acetate		

381. What is stoichiometry?

382-6. Name the five things that a balanced chemical equation gives.

387. What is an excess reagent?

388. What is a limiting reagent?

389. What is the actual yield?

390. What is the theoretical yield?

391. How do you figure out a percent yield?

392-5. Name and define two kinds of reactions, in terms of heat.

396-8. What three things does the kinetic theory say?

399-405. Name the five assumptions of the kinetic molecular theory of gases. Explain two of them.

406-14. Name the five characteristics of gases. Explain four of them.

415. What causes pressure?

416-21. Give six ways to express standard pressure.



422-7. Name and give an equation for 3 gas laws.

428. At 0 K, the volume of a gas is, in theory, \_\_\_\_\_.

429. Give an equation for the combined gas law.

430-1. The \_\_\_\_\_ equation allows scientists to vary not only the temperature, pressure, and volume of a gas, but also its mass. We can state it as the equation \_\_\_\_\_.

432-4. Name the three ways that the molecules of liquids are different from those of gases.

435-40. Describe the 6 general characteristics of liquids.

441. What is evaporation?

442. What is condensation?

443. What will make the boiling point lower?

444. What is distillation?

445. What is surface tension?

446. What is viscosity?

447-9. Name the three ways that the molecules of solids are different.

450-5. Describe the 6 general characteristics of solids.

456. What is sublimation?

457. What is deposition?

458. As a solid melts, does its temperature change?

Name \_\_\_\_\_

Chemistry Final, Vocabulary, Day 1

1. What is chemistry?
- 2-7. Name and describe the parts of the scientific method.
8. What is alchemy?
9. Who is considered to be the father of chemistry?
10. What is the greatest honor a scientist can receive?
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12. Who has dominated since then?
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18. What is the formula for computing volume?
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- 20-1. With what two systems can things be measured?
- 22-3. Tell two good things about one of the systems.
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94. What is the specific heat of a substance?
95. What equation do we use with specific heat problems?
96. State the law of conservation of energy.
97. State the law of conservation of mass.
98. Where are metals found on the periodic table?
99. Where are nonmetals found?
100. Where are metalloids found?
- 101-22. Fill in the elements and their symbols:

Manganese	
Bismuth	
Carbon	
Chromium	
Neon	
Helium	
Gold	
Boron	
Cobalt	
Argon	
Uranium	
Platinum	
	Se
	As
	Ra
	Si
	Sb
	Xe
	Be
	Ni
	Ti
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123. What unit is used to measure masses of atoms?
124. What is the element that was used as the basis for the scale for masses of atoms?
125. What is the mass of that element?
126. Who proposed an atomic theory in the early part of the 19<sup>th</sup> century?

127. Who came up with a better description of the atom in 1911?

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Name \_\_\_\_\_

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- 251-6. Define acid, base, and salt. Also give the general formula for each.

257-83.

Formula	Common Name	Systemic Name	Fact (Match)
$\text{HC}_2\text{H}_3\text{O}_2$	_____	_____	_____
$\text{CO}_2$	_____	_____	_____
$\text{NaCl}$	_____	_____	_____
$\text{H}_2\text{SO}_4$	_____	_____	_____
$\text{CH}_4$	_____	_____	_____
$\text{HCl}$	_____	_____	_____
$\text{C}_{12}\text{H}_{22}\text{O}_{11}$	_____	_____	_____
$\text{NH}_3$	_____	_____	_____
$\text{H}_2\text{O}$	_____	_____	_____

- a. heating for homes and buildings
- b. fire extinguishers, freezing substances, greenhouse gas
- c. salad dressing, pickling of some foods
- d. drinking, washing
- e. cleaner, commercial refrigerant, fertilizer
- f. seasoning
- g. cleaning metals, stomach acid, swimming pool acid
- h. sweetener
- i. battery acid, cleaning metals

284. What is a mole of a substance?
- 285-6. This number is called \_\_\_\_\_, and it is approximately \_\_\_\_\_.



287. What does STP stand for?

288. What is the molar volume of a gas?

289-90. Explain empirical and molecular formulas.

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318-9. Polyatomic ions are made of \_\_\_\_\_. We find their charges by \_\_\_\_\_.

Name \_\_\_\_\_

## Chemistry Final, Vocabulary, Day 3

320-80. Fill in the table of ions

	Name(s)	Symbol(s) with charge
Barium		
Phosphate		
Phosphorus		
Chlorite		
Chlorate		
Perchlorate		
Hypochlorite		
Chlorine		
Cyanide		
Bromine		
Dichromate		
Chromate		
Oxalate		
Oxygen		
Hydrogen		
Hydrogen		
Hydroxide		
Carbonate		
Hydrogen carbonate or bicarbonate		
Nitrogen		
Nitrite		
Nitrate		
Ammonium		
Permanganate		
Magnesium		
Strontium		
Sodium		
Iron		
Iodine		
Calcium		
Cadmium		
Aluminum		
Potassium		
Tin		
Fluorine		
Copper		
Acetate		
Zinc		
Silver		
Mercury		
Lead		
Sulfur		
Sulfate		
Hydrogen sulfate or bisulfate		
Sulfite		
Hydrogen sulfite or bisulfite		
Lithium		

381. What is stoichiometry?

382-6. Name the five things that a balanced chemical equation gives.

387. What is a limiting reagent?

388. What is an excess reagent?

389. What is the theoretical yield?

390. What is the actual yield?

391. How do you figure out a percent yield?

392-5. Name and define two kinds of reactions, in terms of heat.

396-8. What three things does the kinetic theory say?

399-405. Name the five assumptions of the kinetic molecular theory of gases. Explain two of them.

406-14. Name the five characteristics of gases. Explain four of them.

415. What causes pressure?

416-21. Give six ways to express standard pressure.

422-7. Name and give an equation for 3 gas laws.

428. At 0 K, the volume of a gas is, in theory, \_\_\_\_\_.

429. Give an equation for the combined gas law.

430-1. The \_\_\_\_\_ equation allows scientists to vary not only the temperature, pressure, and volume of a gas, but also its mass. We can state it as the equation \_\_\_\_\_.

432-4. Name the three ways that the molecules of liquids are different from those of gases.

435-40. Describe the 6 general characteristics of liquids.

441. What is condensation?

442. What is evaporation?

443. What will make the boiling point lower?

444. What is distillation?

445. What is viscosity?

446. What is surface tension?

447-9. Name the three ways that the molecules of solids are different.

450-5. Describe the 6 general characteristics of solids.

456. What is sublimation?

457. What is deposition?

458. As a solid melts, does its temperature change?

Name \_\_\_\_\_

## Chemistry Practice Final, Problems, Part 1

1-5. How many significant digits are there?

80 500	500.000	.0045	.54000	434,000
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6-10. Make there be three significant digits

.00373456	33	334.5	500 000	.0003
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11-16. Perform the operation, expressing your answer with the proper number of significant digits

94.354 + 5.12	94.43 x 300	92.234 - 18.3
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96.43 / 1005.1	98 000 + 1809	930 x 43.2
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17-8. Write in scientific notation

855 000 000 000	.000 000 000 865
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19-28. Convert. Give an answer with three significant digits and a unit.

6.6 Mm to m	660 000 m to km
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6.3 mm to m	.06 m to cm
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66.3 hm to nm	6.95 hm to Mm
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60 C to F	63 F to C
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663 K to C	634 C to K
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29. How far is 5 miles in inches? (5280 feet in a mile)

30. How long is 5 years in seconds? (365 days in a year)

31. How far is 50 cubits in yards? (18 inches in a cubit)

32. How far is 5 yards in meters? ( $2.54\text{ cm} = 1\text{ inch}$ )

33. If a sample has a mass of 524 g and a density of  $1.48\text{ g/mL}$ , what is its volume in mL?

34. If a sample has a volume of 53 mL and a density of  $2.34\text{ g/mL}$ , what is its mass in g?

35. How many mL of bromine should you use if you need .549 kg (the density is  $3.12\text{ g/mL}$ )?

36. What is the mass in kg of 502 mL of glycerine (the density is  $1.26\text{ g/mL}$ )?

37. What is the volume in liters of 503 g of benzene (the density of benzene is  $.88\text{ g/mL}$ )?

38-42 Put E for element, C for compound, S for solution, M for mixture (heterogeneous), or H for homogeneous mixture.

Sugar	Kool-Aid	bismuth	air	your desk
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43-6 Put PP for physical property, CP for chemical property, PC for physical change, or CC for chemical change.

lead can be shaped	cooking a turkey	cutting the turkey	gasoline can be burned
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47. Chlorine-35 has a mass of 34.97 amu. Chlorine-37 has a mass of 36.97 amu. Chlorine has a mass of 35.46 amu. What is more common, chlorine-35 or chlorine-37? Why?

48. One isotope of an element has a mass of 37 amu and an abundance of 35%. Another isotope has a mass of 39 amu and an abundance of 65%. What is the atomic mass of that element?

49-52 Identify each as a metal (M), nonmetal (N), or metalloid (D).

Sodium	Aluminum	Arsenic	Fluorine
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53. Indicate the number of valence electrons for sulfur

54-5. Which element is more metallic? Why?

Potassium or Sodium

Boron or Lithium

56. Write the electron-dot formula for  $^{128}_{52}\text{Te}$

57. What is the atomic number for Aluminum?

58. What is the atomic mass for Aluminum?

59. Give the symbol for the second noble gas.

60. Give the symbol for the third element in the last group.

61. Give the symbol for the second element in the last period.

62. Give the symbol for the element with an atomic mass of 28.

63. Give the symbol for the element with an atomic number of 28.

64. Diagram the structure, indicating the number of protons and neutrons in the nucleus, and arrange the electrons in principal energy levels for  $^{59}_{27}\text{Co}$

65. Write the electronic configuration in sublevels for  $^{142}_{58}\text{Ce}$

66-7. Write the Lewis structures.

$\text{PCl}_3$

$\text{NO}_3^-$

Name \_\_\_\_\_

Chemistry Practice Final, Problems, Part 2

68-72. Name the compound.



73-8 Write the formula for the compound

magnesium cyanide

lithium sulfite

dinitrogen pentoxide

tetraphosphorus hexoxide

calcium oxide

mercury (II) bromide

79-81. Name the acid.



82-4. Write the formula for the acid.

hydrosulfuric acid

sulfuric acid

nitrous acid

85-7. Put A for all acids, B for bases, and S for salts.



88. Find the molecular or formula mass of  $Ba(C_2H_3O_2)_2$ . Round to the tenths place.

89. Find the molar mass of  $CaCl_2$ . Round to the tenths place.

90. Find the number of moles of aluminum in 8.56 g of aluminum.

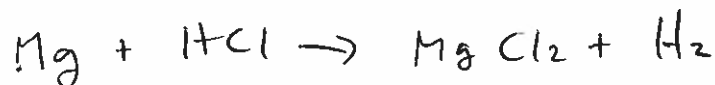
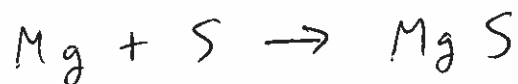
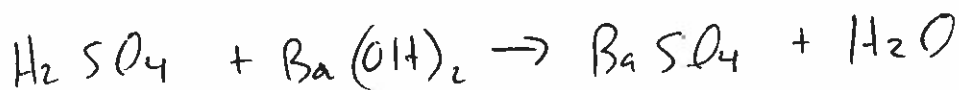
91. Find the number of moles of sulfur in 4.34 kg of sulfur.



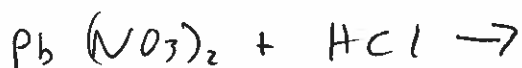
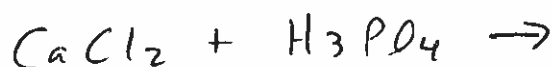
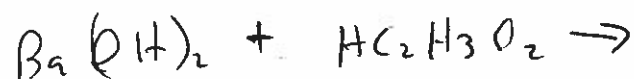
92. Find the number of moles of chlorine in 3.23 moles of iron (III) chloride
93. Find the number of moles of sodium in 4.45 g of sodium carbonate.
94. Find the number of moles of sodium in  $5.32 \times 10^{24}$  atoms of sodium.
95. Find the number of grams of carbon dioxide in 6.45 moles of carbon dioxide
96. Find the number of grams of potassium in  $8.43 \times 10^{24}$  atoms of potassium.
97. Find the number of milligrams of potassium in .00952 mol of potassium
98. Find the number of atoms in .845 mol of oxygen atoms
99. Find the number of molecules in 17 g of carbon dioxide
100. Find the number of moles of gas in 55.3 L of gas at STP.
101. Find the number of moles of oxygen gas molecules in 489 mL of oxygen ( $O_2$ ) at STP

102. Find the number of grams of carbon monoxide gas in 34.9 L of carbon monoxide at STP.
103. Find the number of liters at STP occupied by 9.58 g of hydrogen chloride gas.
104. How many gas particles are there in 75.3 L of the gas at STP?
105. How many liters would  $6.56 \times 10^{24}$  particles of gas occupy at STP?
106. Calculate the percent composition of  $C_4H_6O_3$ .
107. Calculate the number of grams of magnesium in 78.4 g of magnesium nitride
108. Determine the empirical formula for a compound that is 19.0% tin and 81.1% iodine.
109. Determine the molecular formula if a compound is 83.7% carbon and 16.3% hydrogen and has a molecular mass of 86 amu.

110-14. Identify the type of reaction. Balance it also.



115-9. Complete and balance the equation

120. Calculate the number of grams of zinc chloride that can be prepared from 76.5 g of zinc.  $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ 121. Calculate the number of kilograms of iron (III) oxide produced by heating 845 g of iron (II) sulfide?  $4\text{FeS} + 7\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3 + 4\text{SO}_2$ 122. Calculate the number of moles of barium sulfate that can be prepared from 95.6 g of barium chloride.  $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$ 123. Calculate the number of grams of carbon dioxide produced from the burning of .834 mol of ethane ( $\text{C}_2\text{H}_6$ ).  $2\text{C}_2\text{H}_6 + 7\text{O}_2 \rightarrow 4\text{CO}_2 + 6\text{H}_2\text{O}$

124. Calculate the number of moles of hydrogen chloride formed from .732 mol of sodium chloride.  $2\text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{HCl}$

3.4 g of magnesium is treated with 24.6 g of sulfuric acid.  $\text{Mg} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2$

125. How many grams of hydrogen are produced?

126. If .122 g of hydrogen is actually obtained, what is the percent yield?

127. Calculate the number of moles of excess reagent remaining at the end of the reaction.

128. How many liters of hydrogen sulfide can be prepared from 1.63 g of iron (II) sulfide?  $\text{FeS} + 2\text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2\text{S}$

129. How many liters of hydrogen can be produced from .259 mol of aluminum?  $2\text{Al} + 2\text{NaOH} + 2\text{H}_2\text{O} \rightarrow 2\text{NaAlO}_2 + 3\text{H}_2$

130. How many moles of potassium chlorate can be produced from 3.42 L of chlorine gas?  $3\text{Cl}_2 + 6\text{KOH} \rightarrow 5\text{KCl} + \text{KClO}_3 + 3\text{H}_2$

131. Calculate the number of liters of nitrogen that will react in producing 4.62 L of ammonia.  $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$

132. A gas sample has a volume of 385 mL when measured at 30 C and 640 mm Hg. What is its volume at 30 C and 380 mm Hg?

133. A gas sample has a volume of 385 mL when measured at 30 C and 640 mm Hg. What is the temperature of 585 mL at 640 mm Hg?
134. A gas sample has a volume of 385 mL when measured at 30 C and 640 mm Hg. What is the pressure of 385 mL at 40 C?
135. A gas sample has a volume of 385 mL when measured at 30 C and 640 mm Hg. What is its volume in mL at 50 C and 680 mm Hg?
136. A gas sample has a volume of 645 mL when measured at 40 C and 560 mm Hg. What is its volume in liters at STP?
137. Calculate the volume in liters of .245 mol of gas at 58 C and 2.64 atm.
138. Calculate the pressure in atmospheres of .72 mol of gas occupying 2.5 L at 38 C.
139. Calculate the temperature in Celsius of .48 mol of gas occupying 3.65 L at .877 atm.
140. Calculate the number of moles in 5.68 L of gas at 57 C and .334 atm.
141. Calculate the volume in milliliters of 54.3 g of oxygen gas at 1240 torr and 28 C.

142. Calculate the density of carbon dioxide gas in g/L at 34 C and 2.57 atm.
143. How much heat in kilocalories is given off when 48 g of steam condenses?
144. How much heat in kilojoules is needed to vaporize 476 g of water?
145. How much heat energy in kilojoules is required to vaporize .375 mol of water?
146. What is the melting point of ice when a pressure of 75 atm is exerted on it?
147. How much heat in kilocalories is required to convert 34 g of ice at 0 C to steam at 100 C?
148. How much heat in kilojoules is required to convert 75 g of ice at 0 C to steam at 100 C?
149. How many calories are needed to convert 26 g of ice at -15 C to steam at 120 C?
150. How many calories are given off when .754 kg of water freezes?