




Chemistry – Unit 2 Review

1. What is a horizontal row in the periodic table called? *period*
2. What does the atomic number represent? *# of protons*
3. What subatomic particles are in the nucleus? *protons + neutrons*
4. What is a vertical column in the periodic table called? *group, family*
5. What type of element is a good conductor of heat and electricity? *metals*
6. What is periodic law? *when atoms are arranged by increasing atomic #, repeating patterns can be observed.*
7. Who originally arranged the periodic table? *Mendeleev*
8. What was used to arrange the original periodic table? *atomic mass + properties*
9. How is the **modern** periodic table arranged? *increasing atomic # (increasing # protons)*
10. Do elements in the same column, or the same period, behave the same properties? *column, group, family*
11. What does the mass number represent? *protons + neutrons*
12. Most elements are (metals, nonmetals or metalloids)? *metals*
13. Where are the nonmetals located on the periodic table? *right of staircase*
14. What kind of element is a poor conductor of electricity? *nonmetal*
15. What does the staircase on the periodic table do for us? *divides the metals + nonmetals*

Create a table of the properties and locations of the metals, nonmetals and metalloids.

Metals	Nonmetals	Metalloids
<i>left</i>  shiny, is lustrous bendable, malleable able to be pulled into a	<i>right</i>  solids, liquids, gases poor conductors of heat + electricity	<i>along</i>  properties of both metals + nonmetal semi-conductors

wire → ductile
good conductors of heat + electricity

solid → brittle

Complete the table below.

	Alkali metals	Alkaline Earth Metals	Halogens	Noble Gases
Location on the Periodic Table	Group 1	Group 2	Group 17	Group 18
Characteristics (include reactivity)	metals - extremely reactive w/ H ₂ O - more reactive	metals - less reactive but still react w/ H ₂ O	nonmetals F, Cl, Br - colorful gases I - silver, purple solid	nonmetals - gases - colorless - non reactive

as go down the P.T.

Label the periodic table below with arrows to demonstrate the trends of electronegativity and atomic radius as you go left to right on the periodic table and as you go top to bottom on the periodic table.

atomic radius increase
electronegativity decrease

atomic radius decreases →
electronegativity increases

highest @ 4.0
no electronegativity for noble gases

1 H 1.008	2 He 4.0026											17 Cl 35.453	18 Ar 39.948				
3 Li 6.941	4 Be 9.0122											19 K 39.098	20 Ca 40.078	35 Br 79.904	36 Kr 83.798		
5 Na 22.990	6 Mg 24.305	7 Al 26.982	8 Si 28.086	9 P 30.974	10 S 32.06	11 Cl 35.453	12 Ar 39.948	13 Ga 69.723	14 Ge 72.630	15 As 74.922	16 Se 78.972	33 As 74.922	34 Kr 83.798				
19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.867	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.693	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.630	33 As 74.922	34 Se 78.972	35 Br 79.904	36 Kr 83.798
37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.94	43 Tc 98.906	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57-71 Lanthanide series	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89-103 Actinide series	104 Rf 261	105 Db (262)	106 Sg (263)	107 Bh (264)	108 Hs (265)	109 Mt (266)	110 Ds (271)	111 Rg (272)	112 Cn (285)	113 Nh (286)	114 Fl (289)	115 Mc (290)	116 Lv (293)	117 Ts (294)	118 Og (294)

↑ ↓
↑ ↓
↑ ↓
Hertz (Hz)

of waves to pass a given pt. - Hertz (Hz)

16. Define wavelength. Define Frequency. What is the relationship between them? - inverse
distance between 2 crests of a wave or 2 adjacent points on a wave

17. The colors of a flame test result from...

electrons moving from excited state to ground state + releasing energy in the visible range

18. In which case are higher energy photons released with Li⁺, which gives off a red light, or Cu²⁺, which give off green light?

Green light = higher energy photon

19. In the visible spectrum, which would be representative of the light energy from lowest to highest energy?

low energy ← R O Y G B I V → high energy

20. Explain how do electrons create colors in a bright-line emission spectrum?

e^- going from ~~to~~ excited to ground state

21. Light is emitted from a gaseous atom when an electron returns from an excited to its ground state.

22. Why can the emission spectrum be used to determine the composition of a material?

every element has its own electron arrangement + its own

23. Define frequency

emission spectrum

See #16

24. What is the trend observed between wavelength and energy in the electromagnetic spectrum?

$\lambda \downarrow E \uparrow$ $\lambda \uparrow E \downarrow$ indirect

25. Draw the electromagnetic spectrum. Be sure to label all the different types of energy, high energy, low energy, long wavelength, short wavelength, high frequency and low frequency.

See periodic table

26. What does the superscript (the number written up high like an exponent) in an electron configuration refer to?

of electrons in an orbital

27. What do the letter s, p, d and f describe? shape of the orbital

○ sphere ↘ dumbbell ∞

28. What does the coefficient in an electron configuration describe?

↙ energy level

29. What is the electron configuration of the element Li?

$1s^2 2s^1$

30. What is the electron configuration of **chlorine**?

$1s^2 2s^2 2p^6 3s^2 3p^5$

31. What is the electron configuration of **iron**?

$[Ar] 4s^2 3d^6$ / $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$

32. Which is the correct noble gas configuration for **sulfur**?

$[Ne] 3s^2 3p^4$

33. What is the long form configuration for the calcium ion?

Ca^{2+} $1s^2 2s^2 2p^6 3s^2 3p^6$

34. What is the long form configuration for the iodine ion?

I^-

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6$

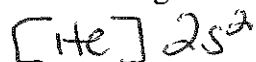
35. What is the long form configuration for the phosphorus ion?

P^{3-}

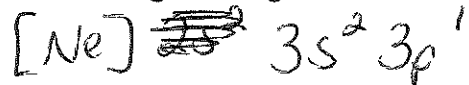
$1s^2 2s^2 2p^6 3s^2 3p^6$

36. What element has the electron configuration of. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$ Zn

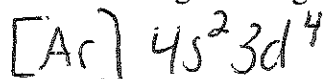
37. What is the correct noble gas configuration (kernel structure) for Beryllium?



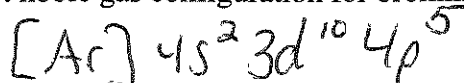
38. What is the correct noble gas configuration for aluminum?



39. What is the correct noble gas configuration for chromium?



40. What is the correct noble gas configuration for bromine?



41. What are the letters assigned to the orbital shapes? s, p, d, f see #27

42. Which shape best describe a s-orbital?

sphere

43. What describes an electrons in an atom ^{that} have the lowest possible energies.

ground state electrons

44. What element has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^2$ Silicon

45. Which element has the following electron configuration: $[Ar] 4s^2 3d^{10} 4p^5$? bromine

Fill in the boxes with the correct orbital shape – s, p, d or f

