GAINING

Review #2

CAeMis+ry: http://genest.weebly.com

Stop in for help every day at lunch and Tues,&Thurs after school!

Name_____

Period ANSWERS

(Review #1 was the puzzle pieces sheet.)

1. Write a balanced equation for S^{2-} anion losing two electrons:

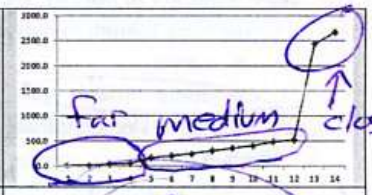
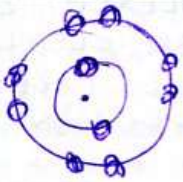
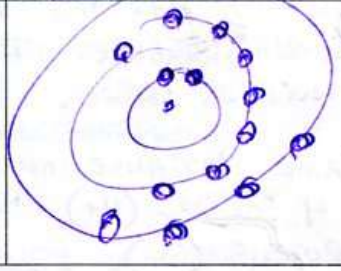
$S^{2-} \rightarrow S + 2e^-$

2. Write a balanced equation for the only stable calcium ion gaining two electrons:

$Ca^{2+} + 2e^- \rightarrow Ca$

3. In the after box redraw what this atom will look like after losing one electron. The charge before 0 The charge after +1 It became a (anion / cation)	Before 	→	After 	HighLow Letter symbol for the after atom? $^{2}_{1}H^{+}$
4. In the after box redraw what this atom will look like after gaining one electron. The charge before 0 The charge after -1	Before 	→	After 	HighLow Letter symbol for the after atom? $^{1}_{1}H^{-}$

5. Draw the Bohr model atom  for each of the following:

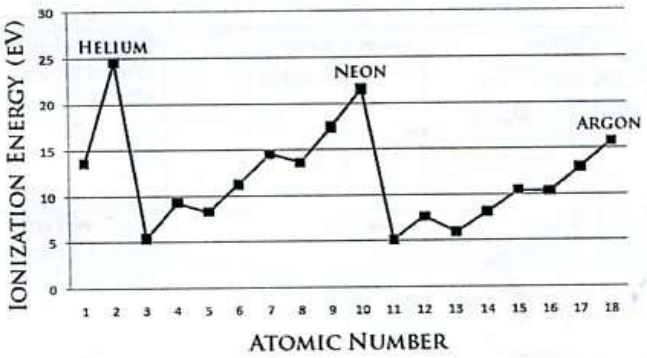
$1s^2 2s^2 2p^1$	a +2 cation of magnesium	 far medium close
		

6. With the help of your Rewrite $[Ar]4s^2 3d^{10} 4p^4$ in the longer version of electron configuration ($1s^2\ 2s^2$ etcetera)

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

Draw the Bohr diagram  for the following three atoms. Label how many protons each has in its nucleus.

neutral helium	neutral lithium	neutral neon
TWO PROTONS	THREE PROTONS	TEN PROTONS



Use the information in the box above to answer the following seven questions.

7. Going from lithium to beryllium removing a valence electron becomes
   a. easier
   b. more difficult
   c. there's no difference

8. Explain what structural feature causes element 2 to be harder to ionize than element 3.

ELEMENT 2 HAS ITS VALENCE E⁻ AT A MUCH CLOSER DISTANCE THAN ELEMENT 3. THEREFORE THE NUCLEUS PROTONS PULL HARDER ON ELEMENT 2 ELECTRONS MAKING THEM HARDER TO REMOVE

9. Explain what structural feature causes element 4 to be harder to ionize than element 3.

ROUGHLY SAME DISTANCE FROM NUCLEUS BUT MORE PROTONS! SO 4 PROTONS (4+) PULL HARDER ON VALENCE e⁻ THAN 3 PROTONS (3+). ERGO, THE e⁻ IS EASIER TO REMOVE.

10. Circle the element in each pair with a greater radius
    d. Al or Cl
    e. K or Ca
    f. H or He

11. Explain what structural feature is the cause of the difference in radius in each pair above?

Going right to left in period the radius increases because the valence e⁻ have less protons pulling on them.

12. Circle the element in each pair with a greater radius

g. N or As
h. Cs or K
i. Ar or Xe

13. Explain what structural feature is the cause of the difference in radius in each pair above?

Going from top to bottom in a group the radius increases the e⁻ are in a farther out orbit

14. for a NEUTRAL atom with the following electron configuration:

Tell how many e- are in each energy level

1st: 2 2nd: 8 3rd: 6 4th: 0 5th: 0

This atom has 6 valence e-

therefore it is (stable / unstable)

Write a Lewis dot diagram (Letter and dots) :S:

Write the last name of each chemist next to the description

15. WOHLER was astonished to find that a 'living substance' (urea) can form from nonliving substances (cyanic acid and ammonia).
16. MENDELEEV Wrote a textbook to help his students memorize the elements more easily.
17. BUNSEN + KIRCHOFF Invented the spectroscope. Discovered that the sun contains sodium.

18. When neutral $^{80}_{37}Rb$ changes into Rb^+ ion, the numbers of some particle(s) change.

a. $^{80}_{37}Rb$ has 37 protons 37 electrons 43 neutrons

b. Rb^+ ion has 37 protons 36 electrons 43 neutrons

19. for a NEUTRAL atom with the following electron configuration:

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

Tell how many e- are in each energy level

1st: 2 2nd: 8 3rd: 18 4th: 18 5th: 5

This atom has 5 valence e-

therefore it is (stable / unstable)

Write a Lewis dot diagram (Letter and dots)

20. For an atom with 8 electrons, 10 protons, and 12 neutrons,

Draw the Bohr orbital	Write the Lewis dot abbreviation	Write the atom symbol with highLow numbers	Does this atom have a stable valence orbital?
	:Ne:	$^{22}_{10}Ne$	no, unstable. It should have an octet!

21. for a NEUTRAL atom with the following electron configuration:

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$

Tell how many e- are in each energy level

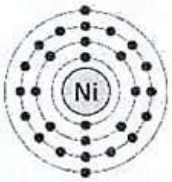
1st: 2 2nd: 8 3rd: 13 4th: 2 5th: 0

This atom has 2 valence e-

therefore it is (stable / unstable)

Write a Lewis dot diagram (Letter and dots) :Ca

22. How many valence electrons are in each of the following?

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$		an atom with 24 protons and 19 electrons	O^{2-}	a neutral $^{32}_{15}P$ atom
2	2	1	8	5

strategy