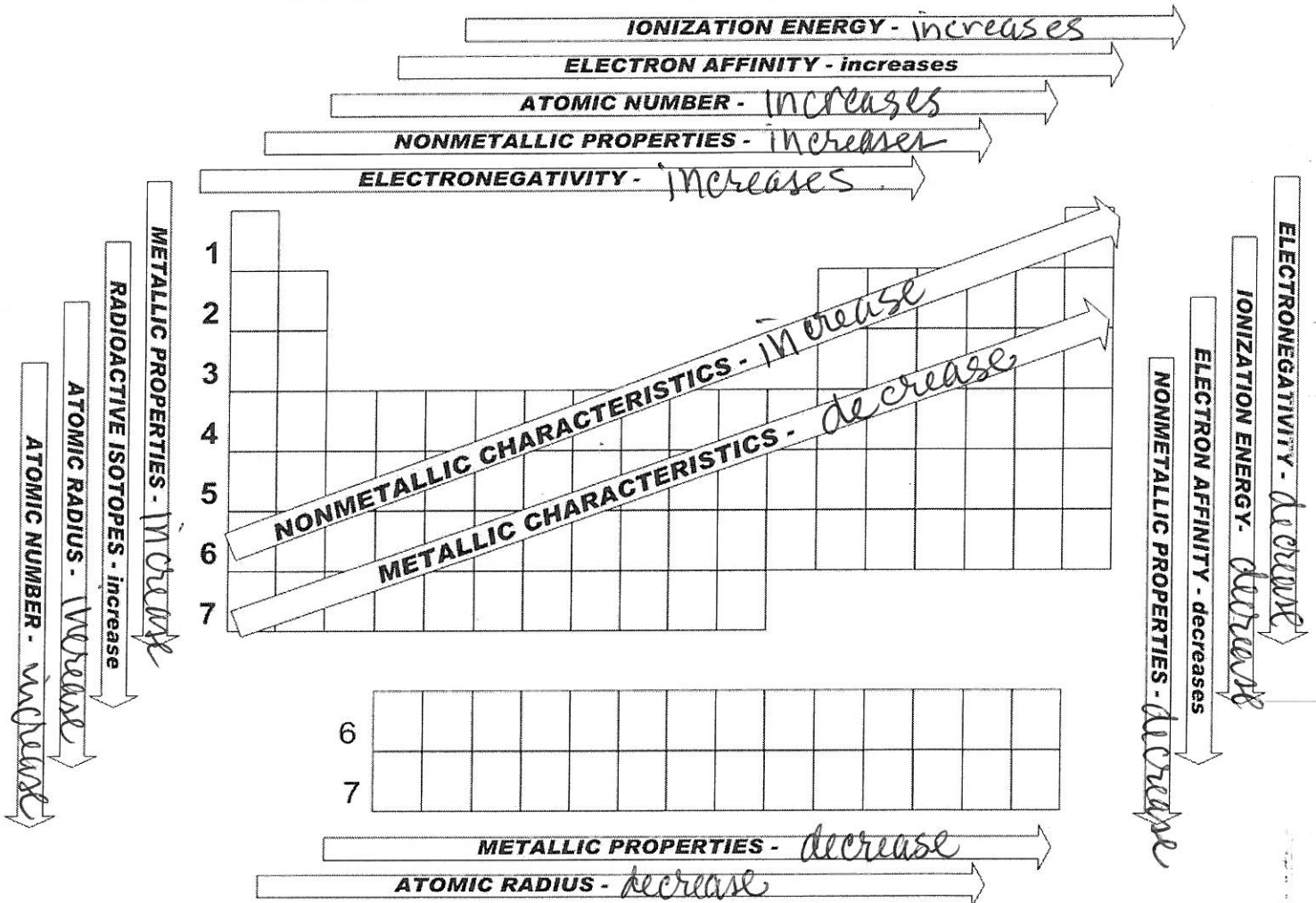


Name Answer Key Date/Period \_\_\_\_\_

**Review Worksheet** Periodic Table

1. For each directional trend label, designate if it is DECREASES or INCREASES.

**TRENDS IN THE PERIODIC TABLE**



2. Rank the following elements by increasing atomic radius: carbon, aluminum, oxygen, and potassium.

*oxygen, carbon, aluminum, potassium*

3. Rank the following elements by increasing electronegativity: carbon, aluminum, oxygen, and potassium.

*potassium, aluminum, carbon, oxygen.*

4. Why do elements in the same family (group) generally have similar properties?

*generally have the same # of valence and type of valence electron.*

5. What trend in ionization energy occurs across a period on the periodic table? What causes this trend?

$L \rightarrow R$  increasing, smaller radii  $\Rightarrow$  greater electron/proton interaction.

6. What trend in atomic radius occurs down a group in the periodic table? What causes this trend?

larger radii; more protons  $\&$  electrons

7. State the modern periodic law. The properties of the elements repeat periodically when the elements are arranged in increasing order by their atomic #

8. How are the electron configurations of the noble gases similar?

they are completely filled

9. For each of the following elements, name the chemical group, or family. Then determine the number of valence electrons for each element.

Element	Group name	Number of valence electrons
Rb	Alkali metals.	1
Te	metalloid	6
Ca	Alkali earth metal	2
Xe	Noble/Inert gas.	8

10. Write the electron configuration of copper, its +1 ion, and its +2 ion.

Cu  $1s^2 2s^2 2p^6 3s^2 4s^2 3d^9$   
 Cu<sup>1+</sup>  $\longrightarrow 3d^8$   
 Cu<sup>2+</sup>  $\longrightarrow 3d^7$

11. Define frequency, wavelength, and amplitude.

frequency - number of waves that pass a point per unit of time

wavelength - distance between similar points in a set of waves

amplitude - distance from crest (or trough) to the imaginary center line.

12. Compare and contrast the terms **malleability** and **ductility**.

malleability - ability to be hammered into shapes  
 ductility - ability to be stretched into wires.

13. What is an orbital? The region in space where there is a probability of finding an electron.

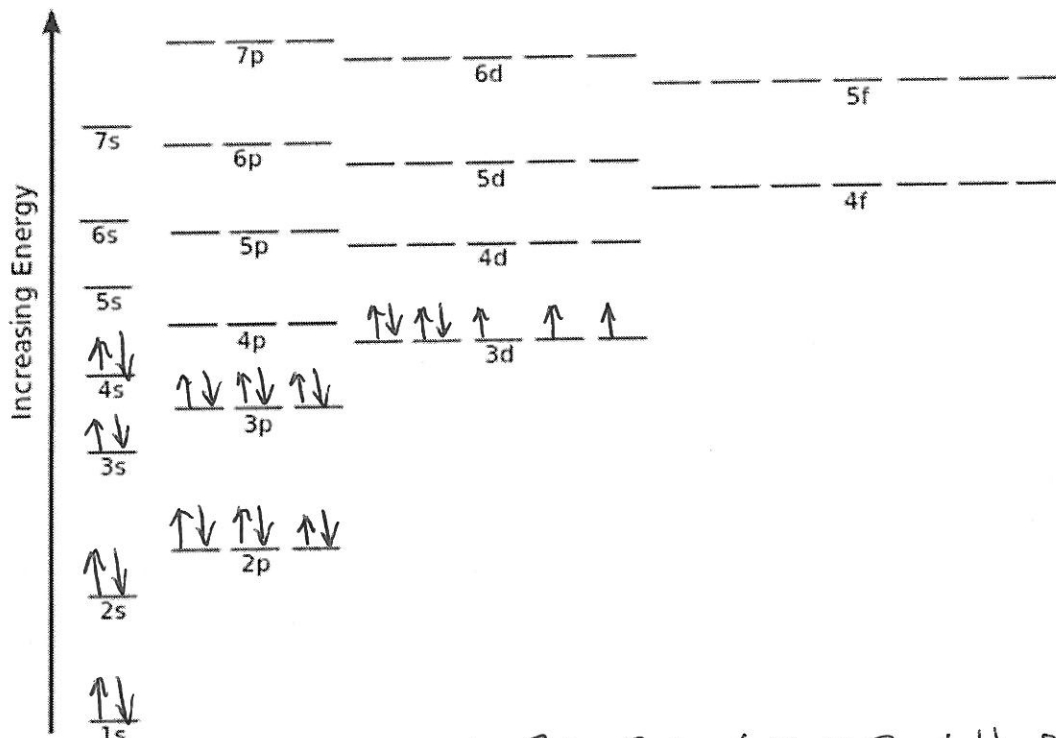
14. Write the electron configuration and noble gas abbreviation for following elements.

Element number	Electron configuration	Noble gas abbreviation
37	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2$	$[\text{Kr}] 5s^2$
12	$1s^2 2s^2 2p^6 3s^2$	$[\text{Ne}] 3s^2$
39	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^1$	$[\text{Kr}] 5s^2 4d^1$
9	$1s^2 2s^2 2p^5$	$[\text{He}] 2s^2 2p^5$
17	$1s^2 2s^2 2p^6 3s^2 3p^5$	$[\text{Ne}] 3s^2 3p^5$
32	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^2$	$[\text{Ar}] 4s^2 3d^{10} 4p^2$
8	$1s^2 2s^2 2p^4$	$[\text{He}] 2s^2 2p^4$
14	$1s^2 2s^2 2p^6 3s^2 3p^2$	$[\text{Ne}] 3s^2 3p^2$

15. Give the element for each electron configuration or noble gas abbreviation.

Electron configuration or noble gas abbreviation	Element name
$1s^2 2s^2 2p^3$	Nitrogen
$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^6$	iron
$[1s^2 2s^2 2p^6 3s^2 3p^6]^{2-}$	sulfur
$[\text{Ne}] 3s^2$	magnesium
$[\text{Ar}] 4s^2 3d^6$	iron
$1s^2 2s^2 2p^4$	oxygen
$[1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6]^{2+}$	strontium
$[\text{Kr}] 5s^2$	strontium

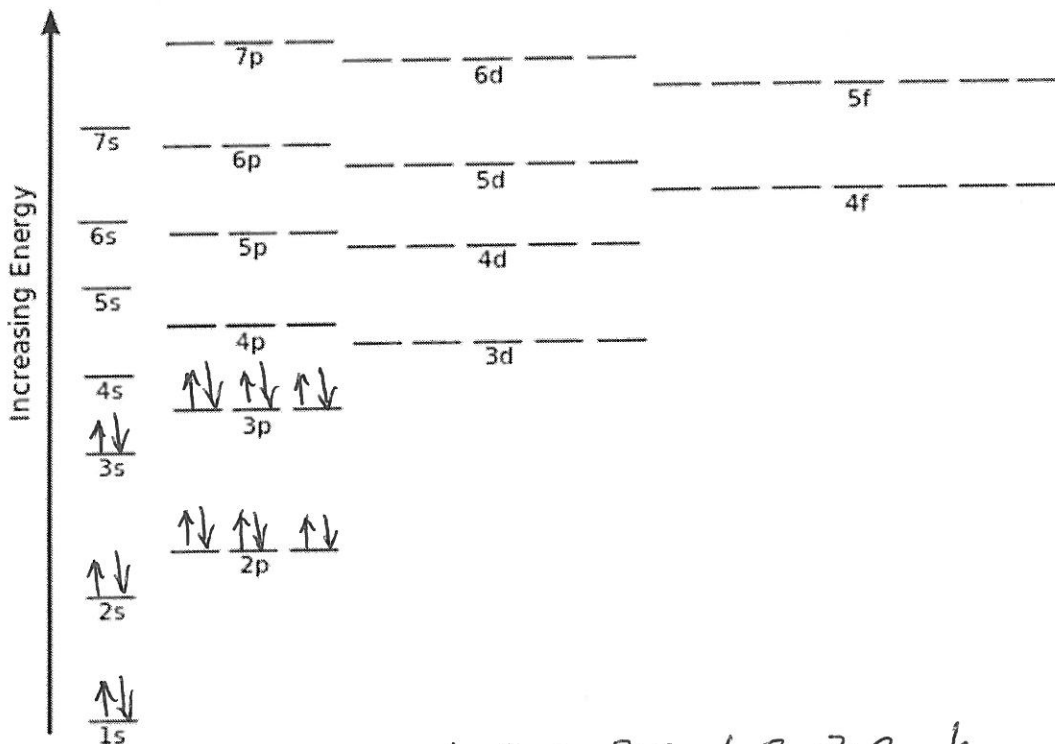
16. Complete the energy diagram for cobalt.



What is the electron configuration?  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^7$

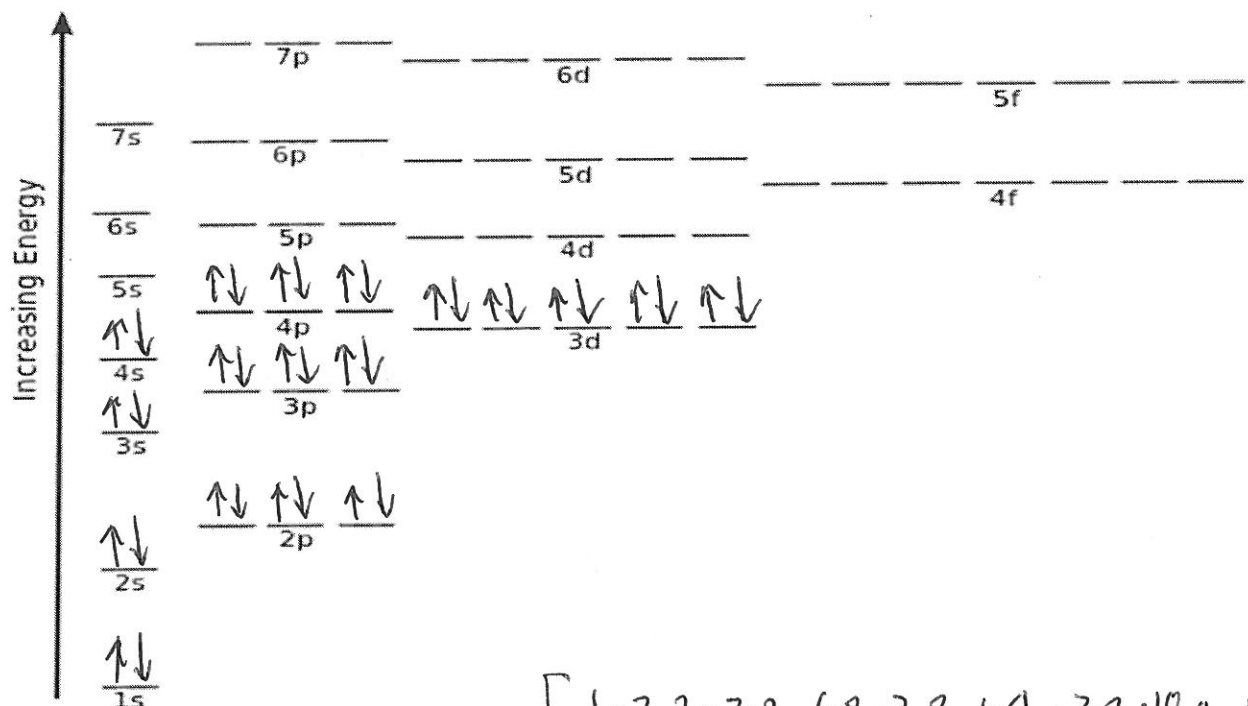
What is the noble gas abbreviation?  $[Ar] 4s^2 3d^7$

17. Complete the energy diagram for argon.



What is the electron configuration?  $1s^2 2s^2 2p^6 3s^2 3p^6$

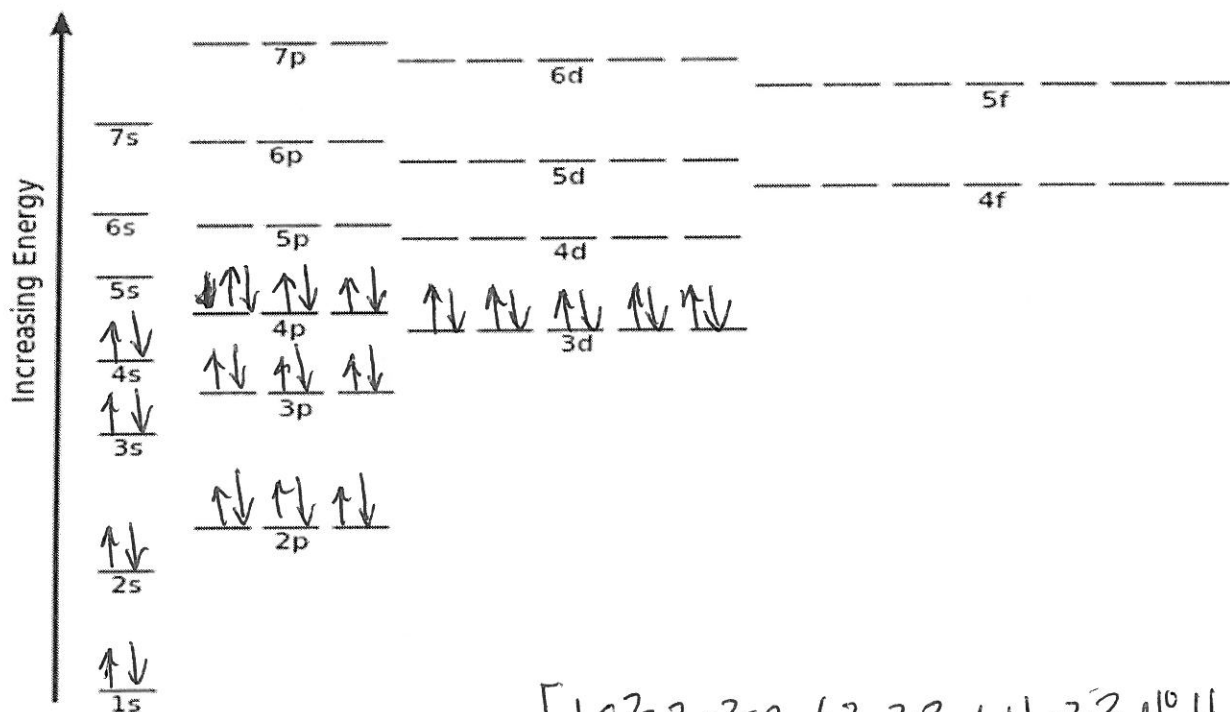
18. Complete the energy diagram for  $\text{Sr}^{2+}$ .



What is the electron configuration?  $[\text{Kr}] 4s^2 3d^{10} 4p^6$

What is the noble gas abbreviation?  $[\text{Kr}]^{2+}$

19. Complete the energy diagram for  $\text{Br}^{1-}$ .



What is the electron configuration?  $[\text{Ar}] 4s^2 3d^{10} 4p^6$

What is the noble gas abbreviation?  $[\text{Ar}] 4s^2 3d^{10} 4p^6$