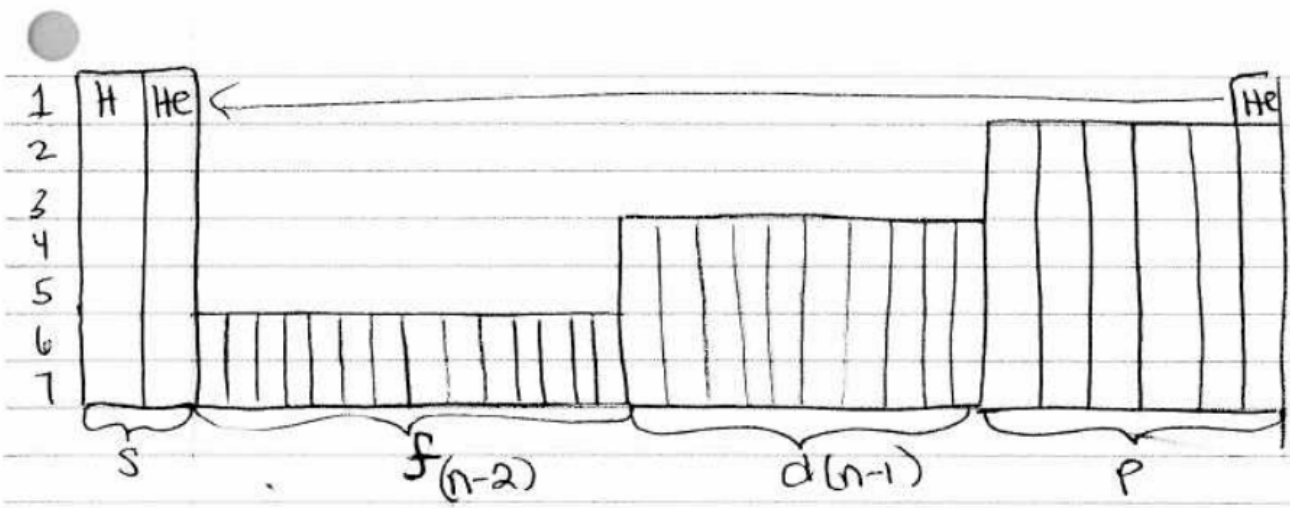


(2)



Energy level n	Sublevels present l	Directions Possible m	e^- per sublevel	max e^- per energy level
1	s	\emptyset	2	2
2	s, p	s = \emptyset p = -1, \emptyset , 1	s = 2 p = 6	8
3	s, p, d	s = \emptyset p = -1, \emptyset , 1 d = -2, -1, \emptyset , 1, 2	s = 2 p = 6 d = 10	18
4 ($\& 5-7$)	s, p, d, f	s = \emptyset p = -1, \emptyset , 1 d = -2, -1, \emptyset , 1, 2 f = -3, -2, -1, \emptyset , 1, 2, 3	s = 2 p = 6 d = 10 f = 14	32

Name: _____ Period: _____ Date: _____
Homework: Quantum Numbers and Electron Configuration

Answer the following questions based on your knowledge of quantum numbers.

1. What is the name of the set of numbers given to electrons in an atom, (the electrons' temporary address).

quantum numbers

n, l, m, s
 $3, 1, 1, +\frac{1}{2}$

p^{15}
 $3p^3$

2. Describe an orbital pair.

the 2 e^- that share a pathway

3. What does Heisenberg's Principle state?

it's impossible to measure speed & location at the same time

4. Which quantum level signifies the number of sublevels?

#2 - azimuthal (l)

5. What is the pathway of an electron called?

orbital

6. What is the maximum number of electrons that the third energy level can have?

$n=3$ max # e^- is $18e^-$

7. What does the magnetic quantum number refer to?

the orbitals direction in space

8. What are the labels for the four principle quantum numbers?

n, l, m, s

9. What does the Pauli Principle state?

the 2 e^- that share an orbital must have opposite spins

10. Which quantum number refers to the size of an electron cloud?

n (energy level)

Answer the following questions pertaining to quantum numbers.

11. If $n=1$, what is the total number of orbitals present?

1

12. If $n=4$, what is the maximum number of electrons that can be present?

32

13. If $n=3$, what is the maximum number of electrons that can be present?

18

14. If $n=2$, what is the total number of orbitals present?

4 ($1s + 3p$)

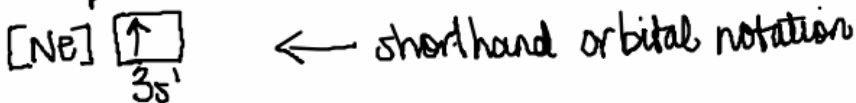
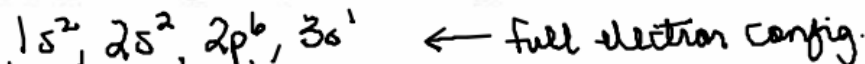
15. If $n=2$, what are the names of the sublevels that exist?

$s + p$

Write the full electron configuration, short hand configuration and orbital notation for the following.

3s¹

16. sodium



d (n-1)
f (n-2)

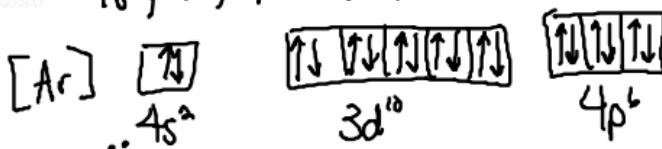
3d⁴

17. Chromium $1s^2, 2s^2, 2p^6, 3s^2, 3p^4, 4s^2, 3d^4$



4p⁶

18. Krypton $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6$



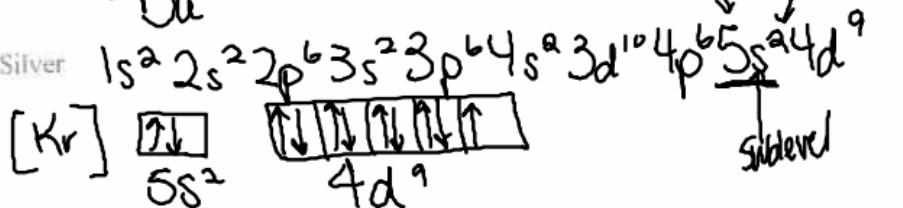
6s²

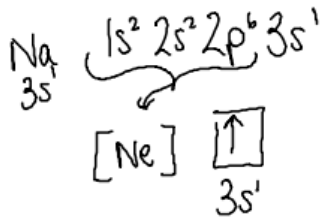
19. Barium $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^{10}, 4p^6, 5s^2, 4d^{10}, 5p^6, 6s^2$



4d⁹

20. Silver





Na·

