

# Exercise 4.3a

## Box Orbital Notation

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Per: \_\_\_\_\_

**DIRECTIONS:** Write each of the following rules in your own words.

Aufbau Principle: \_\_\_\_\_

Hund's Rule: \_\_\_\_\_

Pauli Exclusion Principle: \_\_\_\_\_

**DIRECTIONS:** Fill in the diagrams below with the appropriate arrows. Follow all three rules above.

Ar = \_\_\_\_\_ electrons

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d

Cl = \_\_\_\_\_ electrons

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d

Mg<sup>2+</sup> = \_\_\_\_\_ electrons

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d

Mo = \_\_\_\_\_ electrons

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d

P<sup>3-</sup> = \_\_\_\_\_ electrons

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d

Ni<sup>2+</sup> = \_\_\_\_\_ electrons

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d

**DIRECTIONS:** Below each of the following write the name of the rule that is violated in the diagram.

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d
↑↓	↑↓	↑↓	↑↓	↑↓	↑↓	↑↑	↑	↑	

Rule(s) = \_\_\_\_\_

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d
↑↓	↑↓	↑↓	↑↓	↑↓	↑↓	↑↓	↑	↑	↑

Rule(s) = \_\_\_\_\_

1s	2s	2p	3s	3p	4s	3d	4p	5s	4d
↑↓	↑↓	↑↓	↑↓	↑↓	↑↓	↑↓			

Rule(s) = \_\_\_\_\_

**DIRECTIONS:** On the back side of the page, make box orbital diagrams for:

- a) Si<sup>4+</sup>      b) O<sup>2-</sup>      c) K<sup>+</sup>      d) Li<sup>+</sup>      e) Cl<sup>-</sup>      f) Mn<sup>3+</sup>      g) C<sup>4+</sup>