Name	
North Shore Chemistry	

Period: _	
Date:	

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## **Shorthand Noble Gas Electron Configurations**

Follow these steps to write shorthand noble gas electron configurations.

**Step 1**: Find the symbol for the element on a periodic table.

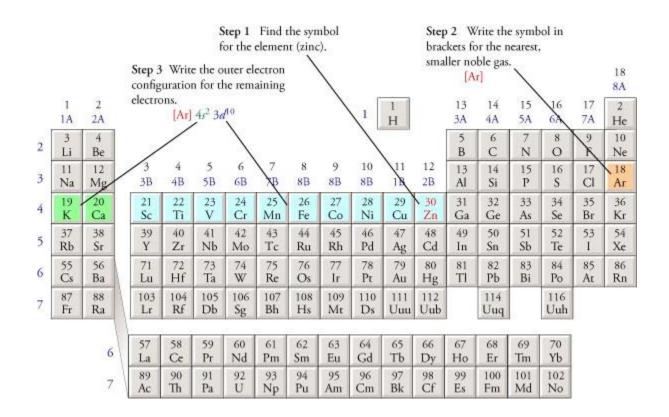
For example, to write an abbreviated electron configuration for zinc atoms, we first find Zn on the periodic table (see below).

**Step 2**: Write the symbol in brackets for the noble gas located at the far right of the period above the element you wish to describe.

For zinc, we move up to the third period and across to Ar (see below). To describe the first 18 electrons of a zinc atom, we write "[Ar]".

**Step 3:** Move back down a row (to the row containing the element you wish to describe) and to the far left. Following the elements in the row from left to right, write the outer-electron configuration associated with each column until you reach the element you are describing.

For zinc, we need to describe the  $19^{th}$  through the  $30^{th}$  electrons. The atomic numbers 19 and 20 are in the fourth row of the s block, so the  $19^{th}$  and  $20^{th}$  electrons for each zinc atom enter the  $4s^2$  sublevel. The atomic numbers 21 through 30 are in the first row of the d block, so the  $21^{st}$  to the  $30^{th}$  electrons for each zinc atom fill the 3d sublevel (see below). Zinc, with atomic number 30, has the abbreviated configuration **[Ar]**  $4s^2$   $3d^{10}$ 



## **Shorthand Noble Gas Electron Configurations**

**Directions:** Use the periodic table to fill in the following data table with the appropriate information.

Element	Atomic Number	# of electrons	Shorthand Electron Configuration	How many valence electrons?	Lewis Valence Electron Dot Diagram
Thallium					
Germanium					
Lead					
	85				
		54			
Iodine					
	20				
Neon					
	31				
Xenon					
Chlorine					
	12				
		9			