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| How to draw boxes and arrows for larger atoms  CλeMis+ry: http://genest.weebly.com  Stop in for help every day at lunch and Tues, Weds., &Thurs after school!  After-hours question? Email me at home: [eagenest@madison.k12.wi.us](mailto:eagenest@madison.k12.wi.us) |  | Name\_\_\_\_\_\_\_\_\_  Period\_\_\_\_\_\_\_\_ |

1. From memory, write your ‘pine tree’ mnemonic device, without looking at your notes:
2. Write the boxes and arrows configuration and the modern shorthand configuration (1s2 2s2 2p6 etc) for each:
   1. strontium (atomic # 38)

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| Boxes and arrows: | Shorthand: |

* 1. zinc (atomic # 30)

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| Boxes and arrows: | Shorthand: |

* 1. helium (atomic # = 2)

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| Boxes and arrows: | Shorthand: |

* 1. zirconium (atomic # = 40)

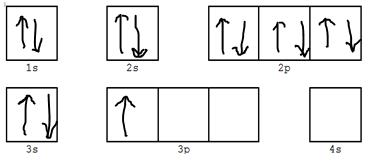
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| Boxes and arrows: | Shorthand: |

1. Place the following events in chronological order (1 = first, 4 = last) to describe how an electron absorbs and emits energy:

* electron absorbs energy at ground state. \_\_\_\_\_\_
* electron jumps to excited state. \_\_\_\_\_\_
* atom is energized with electricity. \_\_\_\_\_\_
* electron falls to ground state. \_\_\_\_\_\_

\*\* Put a star by the step where light is emitted.

1. Write the electron shorthand configuration (like 1s22s2, etc)) for an atom of neutral phosphourous
2. What element is this? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. For 1s22s22p63s23p64s23d104p2
   1. how many electrons are in each shell
   2. what element is this?
2. How many e- are in the valence shell of

1s22s22p63s23p64s23d104p65s24d105p1

1. For 1s22s22p63s1
   1. how many electrons are in each shell
   2. what element is this?