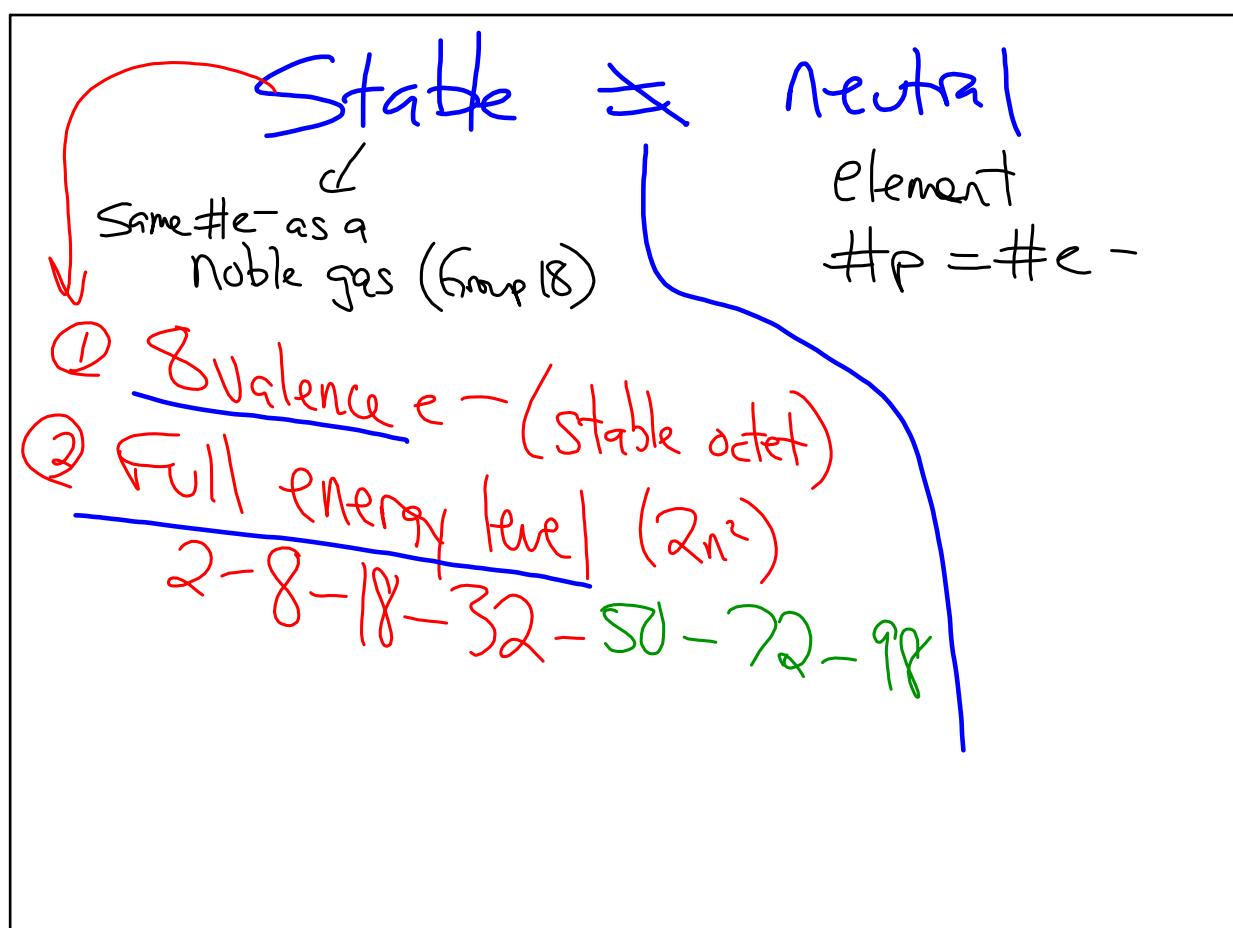


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e-dot → represents valence  $e^-_{14}$

Diagram illustrating electron configurations:

- Crossed-out structure:** Shows  $\overline{PP}$  above  $P_1$  and  $P_2$ . A blue 'X' is drawn through it.
- Simplified structure:** Shows  $\overline{PP}$  above  $P$ .
- Detailed Orbital Diagram:**
  - Period 1 (P<sub>1</sub>):** Contains one  $s$  orbital with two electrons ( $\uparrow\downarrow$ ).
  - Period 2 (P<sub>2</sub>):** Contains one  $s$  orbital with two electrons ( $\uparrow\downarrow$ ) and three  $p$  orbitals, each with two electrons ( $\uparrow\downarrow$ ).
  - Period 3 (P<sub>3</sub>):** Contains one  $s$  orbital with two electrons ( $\uparrow\downarrow$ ), three  $p$  orbitals, each with two electrons ( $\uparrow\downarrow$ ), and five  $d$  orbitals, each with two electrons ( $\uparrow\downarrow$ ).

**Yellow Box Annotations:**

- Main group "on time":** Refers to the first two periods.
- z per. late:** Refers to the third period.
- Period late:** Refers to the third period.

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**Ca**

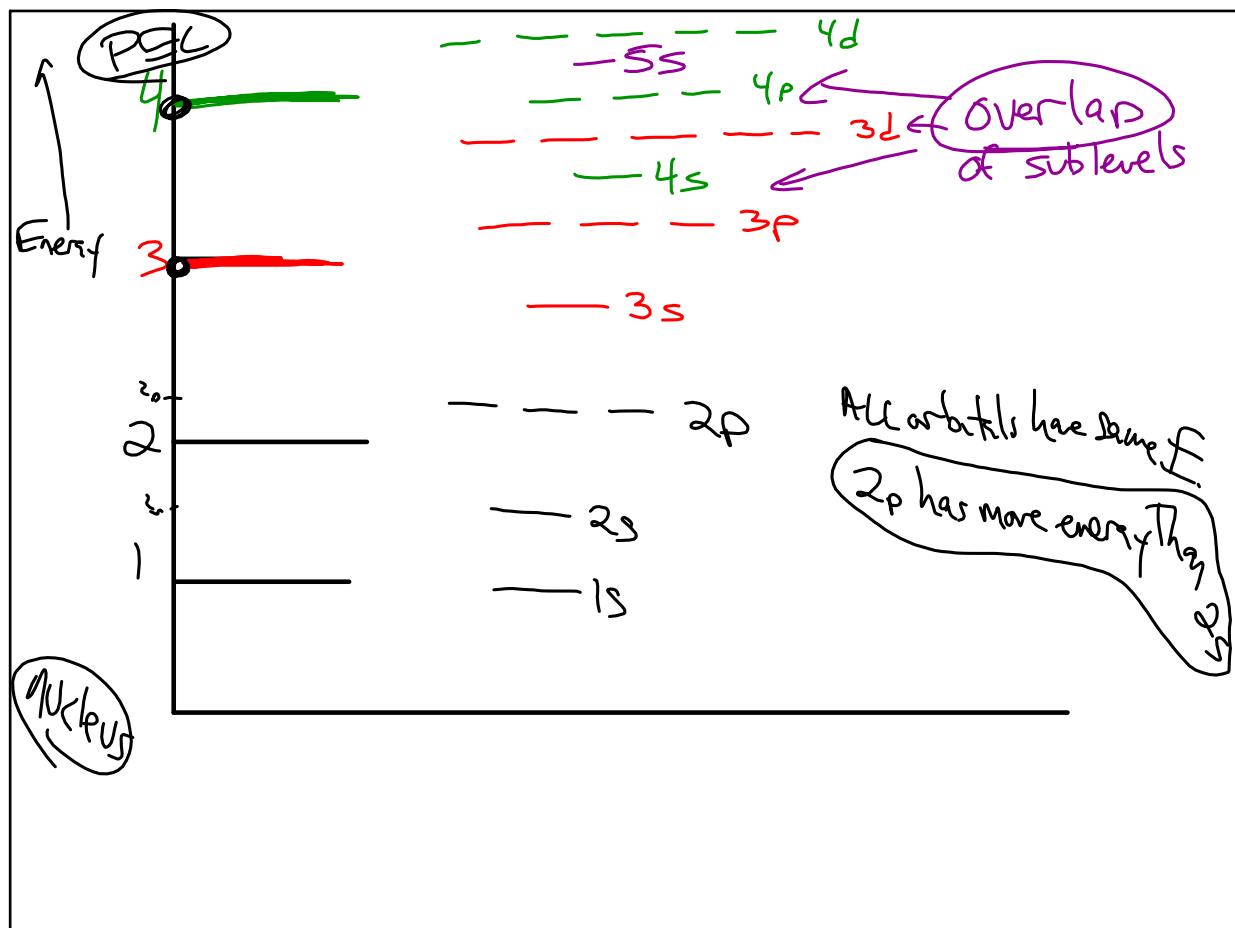
2 valence electrons  
2-8-8-2

**Diagonal Rule**

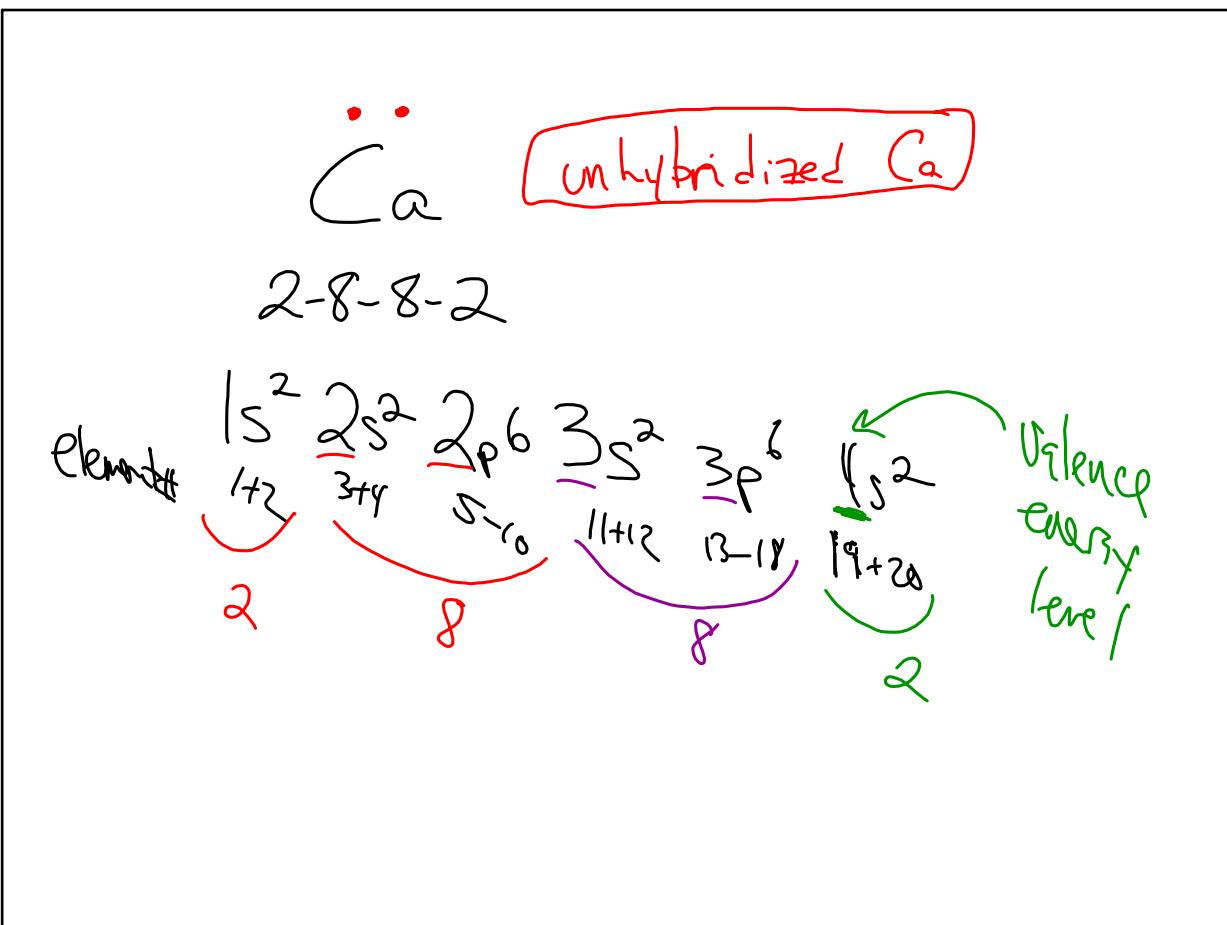
Diagram illustrating the filling of atomic orbitals according to the Aufbau principle (Diagonal Rule):

- The orbitals are represented by diagonal lines sloping upwards from left to right.
- The orbitals are labeled with quantum numbers:
  - Row 1: 1s
  - Row 2: 2s, 2p
  - Row 3: 3s, 3p, 3d
  - Row 4: 4s, 4p, 4d, 4f
  - Row 5: 5s, 5p, 5d, 5f, 5g
  - Row 6: 6s, 6p, 6d, 6f, 6g, 6h
  - Row 7: 7s, 7p, 7d, 7f, 7g, 7h
- The orbitals are filled in a sequential manner, starting from the lowest energy level (1s) and moving diagonally across the rows.

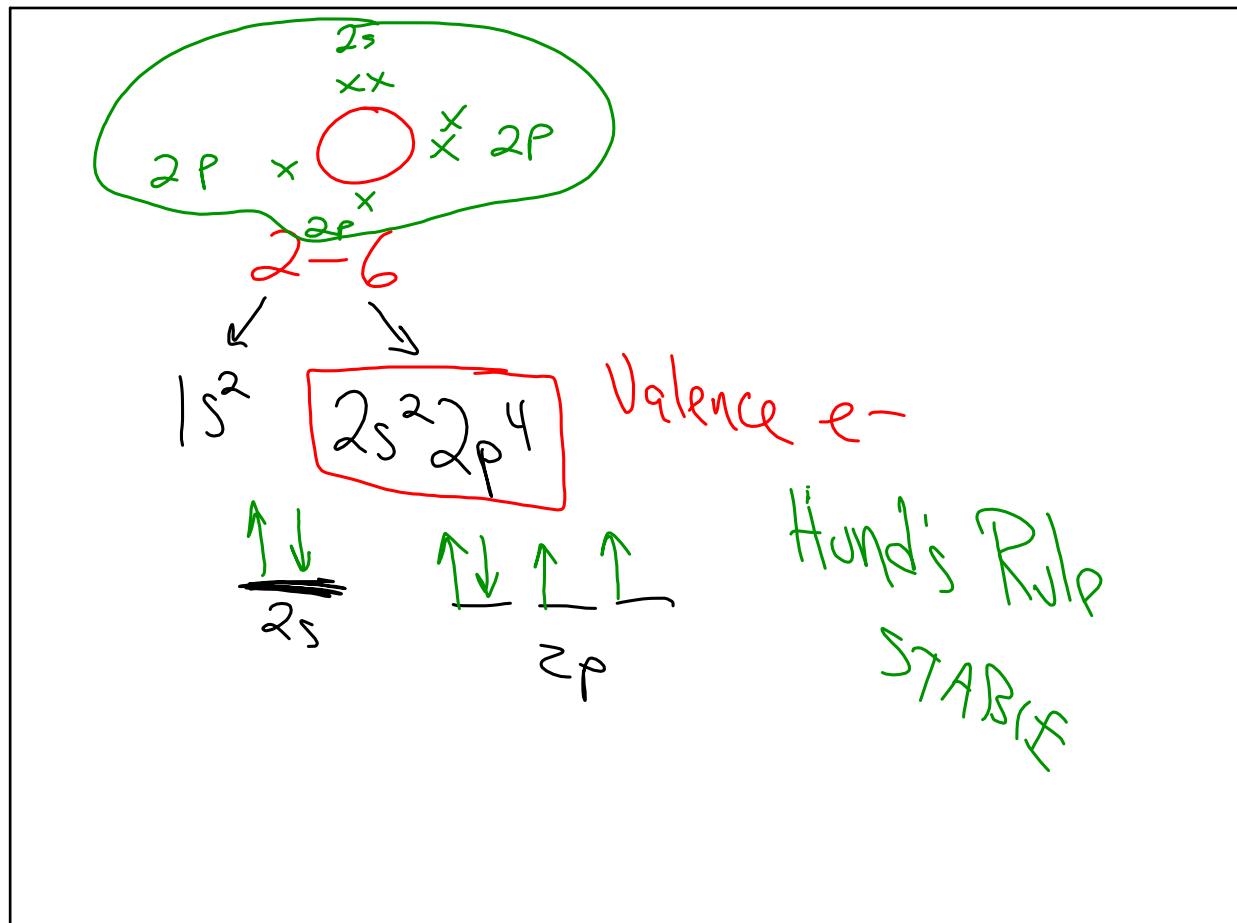
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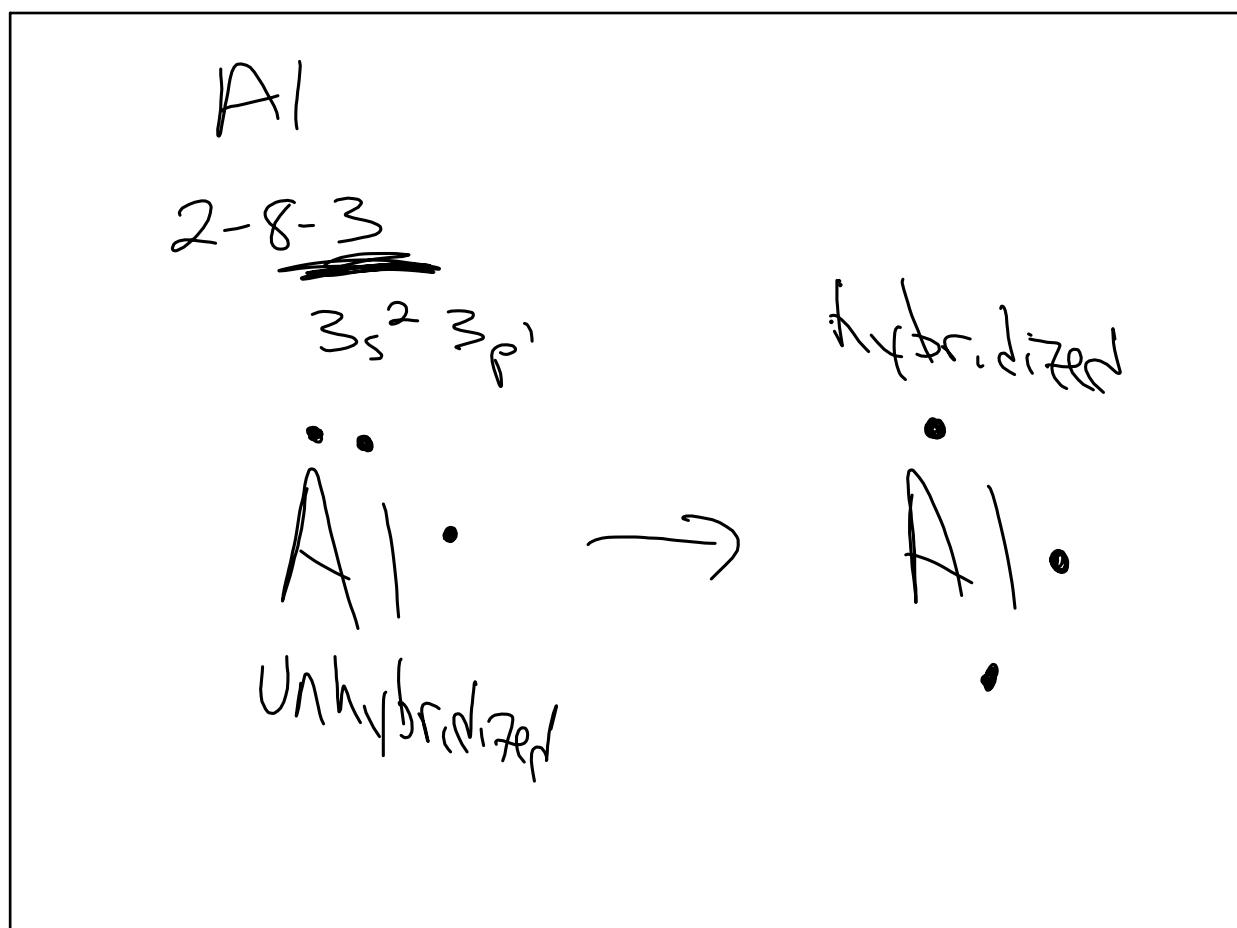
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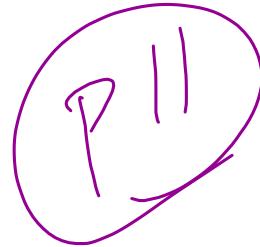
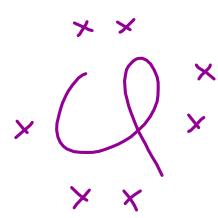
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Oct 19-10:00 AM



or



Oct 19-10:02 AM