

Name: _____

WORKSHEET 2.3: Bohr Diagrams Practice

Draw a semi-circle Bohr Diagram for each ATOM or ION.

Remember, for ATOMS, use the Atomic Number to determine the # of electrons.

For IONS, add or subtract electrons by looking at the ion charge.

<p>Hydrogen atom</p> <p><i>ion</i></p> $\begin{array}{l} \text{H} \\ 1\text{P} \\ 0\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{H} \\ 1\text{P} \\ 0\text{n} \end{array}} \right\} 1\text{e}$ $\begin{array}{l} \text{H}^+ \\ 1\text{P} \\ 0\text{n} \end{array}$	<p>Helium atom</p> $\begin{array}{l} \text{He} \\ 2\text{P} \\ 2\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{He} \\ 2\text{P} \\ 2\text{n} \end{array}} \right\} 2\text{e}$
<p>Lithium ion</p> <p><i>metal</i></p> $\begin{array}{l} \text{Li}^+ \\ 3\text{P} \\ 4\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{Li}^+ \\ 3\text{P} \\ 4\text{n} \end{array}} \right\} 2\text{e}$	<p>Beryllium ion</p> <p><i>metal</i></p> $\begin{array}{l} \text{Be}^{2+} \\ 4\text{P} \\ 5\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{Be}^{2+} \\ 4\text{P} \\ 5\text{n} \end{array}} \right\} 2\text{e}$
<p>Argon atom</p> $\begin{array}{l} \text{Ar} \\ 18\text{p} \\ 22\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{Ar} \\ 18\text{p} \\ 22\text{n} \end{array}} \right\} 2\text{e} \quad \left. \vphantom{\begin{array}{l} \text{Ar} \\ 18\text{p} \\ 22\text{n} \end{array}} \right\} 8\text{e} \quad \left. \vphantom{\begin{array}{l} \text{Ar} \\ 18\text{p} \\ 22\text{n} \end{array}} \right\} 8\text{e}$	<p>Chloride ion</p> <p><i>non-metal</i></p> $\begin{array}{l} \text{Cl}^- \\ 17\text{p} \\ 19\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{Cl}^- \\ 17\text{p} \\ 19\text{n} \end{array}} \right\} 2\text{e} \quad \left. \vphantom{\begin{array}{l} \text{Cl}^- \\ 17\text{p} \\ 19\text{n} \end{array}} \right\} 8\text{e} \quad \left. \vphantom{\begin{array}{l} \text{Cl}^- \\ 17\text{p} \\ 19\text{n} \end{array}} \right\} 8\text{e}$
<p>Phosphide ion</p> <p><i>non-metal</i></p> <p><i>P³⁻</i></p> $\begin{array}{l} \text{P}^{3-} \\ 15\text{p} \\ 16\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{P}^{3-} \\ 15\text{p} \\ 16\text{n} \end{array}} \right\} 2\text{e} \quad \left. \vphantom{\begin{array}{l} \text{P}^{3-} \\ 15\text{p} \\ 16\text{n} \end{array}} \right\} 8\text{e} \quad \left. \vphantom{\begin{array}{l} \text{P}^{3-} \\ 15\text{p} \\ 16\text{n} \end{array}} \right\} 8\text{e}$	<p>Magnesium atom</p> $\begin{array}{l} \text{Mg} \\ 12\text{p} \\ 12\text{n} \end{array} \left. \vphantom{\begin{array}{l} \text{Mg} \\ 12\text{p} \\ 12\text{n} \end{array}} \right\} 2\text{e} \quad \left. \vphantom{\begin{array}{l} \text{Mg} \\ 12\text{p} \\ 12\text{n} \end{array}} \right\} 8\text{e} \quad \left. \vphantom{\begin{array}{l} \text{Mg} \\ 12\text{p} \\ 12\text{n} \end{array}} \right\} 2\text{e}$

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<p>Nitride ion</p> $\begin{array}{c} N^{3-} \\ 7p \\ 7n \end{array} \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \begin{array}{l} 2e \\ 8e \end{array}$	<p>Potassium atom</p> $\begin{array}{c} K \\ 19p \\ 20n \end{array} \left. \begin{array}{l} \\ \\ \\ \\ \end{array} \right\} \begin{array}{l} 2e \\ 8e \\ 8e \\ 1e \end{array}$
<p>Calcium atom</p> $\begin{array}{c} Ca \\ 20p \\ 20n \end{array} \left. \begin{array}{l} \\ \\ \\ \\ \end{array} \right\} \begin{array}{l} 2e \\ 8e \\ 8e \\ 2e \end{array}$	<p>Bromine atom</p> $\begin{array}{c} Br \\ 35p \\ 45n \end{array} \left. \begin{array}{l} \\ \\ \\ \\ \end{array} \right\} \begin{array}{l} 2e \\ 8e \\ 18e \\ 7e \end{array}$

**larger elements do not follow

2, 8, 8, 18

but always have "8" max in valence shell

