3.2 Quick Check - Periodic Trends

Check off each item if you can do the question. Write down a question to ask if you cannot do the question.

- **Atomic Radius**
  For each pair, circle the one that is larger. Then write a *short* explanation. (Complete sentence not necessary.)
  - Na   Mg
  - Cl   Br
  - Na   Na$^+$
  - S    S$^{2-}$
  - F$^-$  Ne
  - Ne   Na$^+$
  - F    As
  - Na   Be

- **Explanations**
  Consider the ions, F$^-$ and Na$^+$. Which one has a larger atomic radius? Explain fully.

Consider the neutral atoms, F and Na. Which has a larger atomic radius? Explain fully.

- **Successive Ionization Energies**
  Consider the six successive ionizations energies (in kJ/mol) of mystery element, X.

<table>
<thead>
<tr>
<th>IE$_1$</th>
<th>IE$_2$</th>
<th>IE$_3$</th>
<th>IE$_4$</th>
<th>IE$_5$</th>
<th>IE$_6$</th>
</tr>
</thead>
<tbody>
<tr>
<td>786</td>
<td>1,580</td>
<td>3,230</td>
<td>4,360</td>
<td>16,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>

- Why is each value larger than the previous value?

- How many electrons were in the outer shell of this atom? Explain.