

CHE 101 - Homework - Ch 7f  
Periodic Trends

p. 214-216

Score: \_\_\_\_/20

Name: \_\_\_\_\_

Date: \_\_\_\_\_

[8 pt] 1. Answer each of the following questions about the relative size of atoms and ions. Explain your answer in the space provided.

(a) Explain why the atomic radius of atoms increases down a column.

(b) Explain why the atomic radius of atoms decreases across a row.

(c) Explain why a sodium cation is smaller than a sodium atom.

(d) Explain why a Bromine anion is bigger than a bromine atom.

[4 pt] 2. Write two equations showing the ionization of a Mg atom to a  $\text{Mg}^{+1}$  cation and then to a  $\text{Mg}^{2+}$  cation. Be sure to include energy in the equation. Is the reaction endothermic or exothermic.

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[6 pt] 3. Answer each of the following questions about the Ionization Energy of atoms. Explain your answer in the space provided.

(a) Why does IE energy increase as you remove more and more electrons from an atom?

(b) Explain why IE decreases as you go down a column.

(c) Explain why IE increases as you go across a row.

[2 pt] 4. Explain the unusually large increase in ionization energy needed to remove the third electron from beryllium compared with that needed for the second electron (See Table 11.1)