Name:_____ Class Period:_____

Unit 9 Day 7: Periodic Trends FRQ Practice

(Laying the Foundation, 6 points)

Answer the following questions using principles of atomic and molecular structure. The elements in the table below (W, X, Y, and Z) are actual elements found in either period 2 or 3 in the periodic table.

Element	First Ionization Energy ($kJ\ mol^{-1}$)	Second Ionization Energy ($kJ\ mol^{-1}$)	Third Ionization Energy ($kJ\ mol^{-1}$)	Fourth Ionization Energy ($kJ\ mol^{-1}$)
W	520	7298	11815	----
X	900	1757	14850	21000
Y	801	2427	3660	25000
Z	496	4562	6910	9543

1) Which of the elements above is an alkaline earth metal? Explain. (2 points)

2) For the alkaline earth metal that you identified above:

   a) Why is the second ionization energy higher than the first ionization energy? Explain using principles of atomic structure. (2 points)

   b) Why is the third ionization energy higher than the second ionization energy? Explain with Coulomb's Law. (2 points)