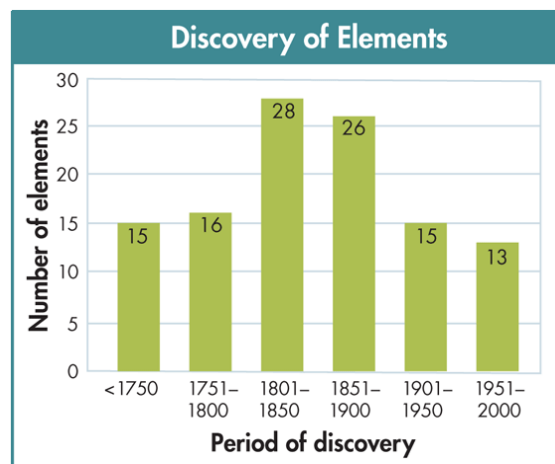


Name: _____ Per: _____ Date: _____

Periodic Table Trends

- The bar graph shows how many elements were discovered before 1750 and in each 50-year period between 1750 and 2000.
 - In which 50-year period were the most elements discovered?
 - What percent of these elements were discovered by 1900?

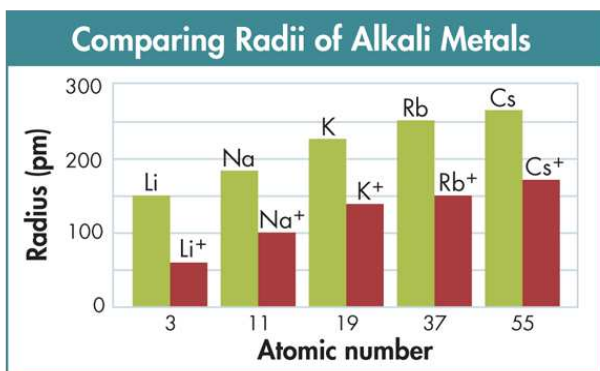


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- Write the symbol of the element or elements that fit each description.
 - A nonmetal in Group 4A
 - The inner transition metal with the lowest atomic number
 - All of the nonmetals for which the atomic number is a multiple of five
 - A metal in Group 5A
- In which pair of elements are the chemical properties of the elements most similar? Explain your reasoning.
 - Sodium and chlorine
 - Nitrogen and phosphorus
 - Boron and oxygen
- Locate each of the following elements on the periodic table and decide whether its atoms are likely to form anions or cations.
 - Sodium
 - Fluorine
 - Calcium
 - Potassium
 - Iodine
 - Beryllium
 - Oxygen
 - lithium

5. Explain why fluorine has a smaller atomic radius than both oxygen and chlorine.
6. Would you expect metals or nonmetals to have higher ionization energies? Give a reason for your answer.
7. In each pair, which ion is larger
- Ca²⁺, Mg²⁺
 - Cl⁻, P³⁻
 - Cu⁺, Cu²⁺
8. List the symbol for all the elements with electron configurations that end as follows. Note: Each n represents an energy level.
- ns^1
 - ns^2np^4
 - ns^2nd^{10}
9. Explain why there should be a connection between an element's electron configuration and its location on the periodic table.
10. What trend is demonstrated by the following series of equations?
- $\text{Li} + 520 \text{ kJ/mol} \rightarrow \text{Li}^+ + \text{e}^-$
 - $\text{O} + 1314 \text{ kJ/mol} \rightarrow \text{O}^+ + \text{e}^-$
 - $\text{F} + 1681 \text{ kJ/mol} \rightarrow \text{F}^+ + \text{e}^-$
 - $\text{Ne} + 2080 \text{ kJ/mol} \rightarrow \text{Ne}^+ + \text{e}^-$

11. The bar graph shows the relationship between atomic and ionic radii for Group 1A elements.



- Describe and explain the trend in atomic radius within the group
- Explain the difference between the size of the atoms and the size of the ions.