# Predicting an Element's Group and Period

Several scientists, including Newlands, Meyer, and Mendeleev worked on classification systems that grouped elements according to their properties. They found that these properties repeated in a regular or periodic manner. This fact was used to predict properties of undiscovered elements.

Review electron arrangement from your textbook. In Table 1, write the maximum number of electrons that can fill each energy level on the blanks in the table heading. Write the total number of electrons for each element in the first column labeled Total. For each element, assign the correct number of electrons to each energy level. Complete Table 2 by using the information from the six elements studied.

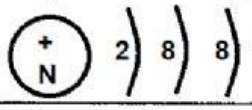



**Table 1**

| Element | | Electrons | | |
|---|---|---|---|---|
| | Total Electrons | Level 1 | Level 2 | Level 3 |
| 1. Argon | | | | |
| 2. Carbon | | | | |
| 3. Helium | | | | |
| 4. Lithium | | | | |
| 5. Silicon | | | | |
| 6. Sodium | | | | |

**Table 2** Use the chart above to fill out the chart below

| Element | Energy level of outer electrons | Located in period | Number of outer electrons | Located in group |
|---|---|---|---|---|
| 7. Ar | | | | |
| 8. C | | | | |
| 9. He | | | | |
| 10. Li | | | | |
| 11. Si | | | | |
| 12. Na | | | | |

13. How is the element's period related to the number of energy levels over which its electrons are spread? _____

14. How can you predict an element's group and period? _____

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