

## Development of the Atom & Periodic Table

### Reading – pages 19-26

1. What property was used to order the elements in the early periodic table?
2. What property is used to order the modern periodic table?
3. Which particles did Rutherford fire at gold leaf?
4. Complete the table to explain Rutherford's findings:

| Observations                                             | Explanation | What this told him about the atom |
|----------------------------------------------------------|-------------|-----------------------------------|
| Most alpha particles went straight through the gold leaf |             |                                   |
| A few were deflected by a large angle                    |             |                                   |
| A small number came straight back                        |             |                                   |

5. Which particle did Chadwick discover in the nucleus?
6. What does the 'period' (horizontal row) an atom is in tell us?
7. Why did Mendeleev leave gaps in his periodic table?
8. What is the name for the group 1 elements?
9. Which group are known as the 'halogens'?
10. What happens to the attraction between the electrons in the outer shell and the nucleus as you go down a group?

### Apply

1. Describe the 'plum pudding' model of the atom

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2. Describe the nuclear model of the atom

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3. Explain why group 1 are known as the alkali metals.

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4. Write the word/ balanced symbol equation for the reaction of lithium with water.

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5. Describe what you would SEE when lithium reacts with water

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6. Why is the reaction between potassium and water more vigorous than the reaction of lithium?  
Explain in terms of electrons.

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7. Explain why Lithium and Sodium are both in group 1. Include their electron arrangements in your answer.

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8. Why do the halogens get less reactive going down the group?

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9. Why are the noble gases unreactive?

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10. Describe the trend in boiling point in the noble gases as you go down the group.

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Extend

Explain why light bulbs, which have metal filaments that get very hot when switched on, are filled with Argon rather than air.

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Explain how you can prove that chlorine is more reactive than bromine using a solution of chlorine water and a solution of potassium bromide salt. Include the expected result.

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