Learning Journey – 9D Mendeleev's Genius Part 3
The Periodic Table

What have I done previously in my learning journey?	
Previously….	You have learnt about: • the varying physical and chemical properties of different elements • the principles underpinning the Mendeleev Periodic Table • the Periodic Table: periods and groups; metals and non-metals • the properties of metals and non-metals
In this topic…	We will develop our understanding of the periodic table by describing Mendeleev's contribution to the organisation of elements in the periodic table. We will also look at the modern arrangement of metals and non-metals; and look at how atomic structure of the elements relates to their position. We will look at isotopes and describe how they are different to normal atoms of the same element.

We will develop our learning by studying the following each lesson:	RAG	Skills in Science checklist
9D.11 The Halogens • Describe the trends in the Halogens group 7. • Explain the reactivity in group 7		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.12 The Nobel gases • Describe noble gases (group 0) and explain their lack of reactivity • Describe the properties of noble gases, including boiling points, predict trends down the group and describe how their properties depend on the outer shell of electrons •		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.13 Covalent bond small molecules 1 • Describe isotopes as atoms of the same element with different numbers of neutrons • Define relative atomic mass • Calculate relative atomic mass		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.14 Covalent bond small molecules 2 • Recall properties of metals and non-metals • Define a metalloid and state examples • Determine whether a substance is a metal, non-metal or a metalloid		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.15 Covalent bond small molecules 3 • I can describe and identify covalently bonded substances, such as small molecules • I can represent covalent bonds between small molecules using diagrams • I can draw dot and cross diagrams for the molecules of hydrogen, fluorine, chlorine, oxygen, nitrogen		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.16 Covalent bond Giant Structure 1 . Describe and identify covalently bonded substances, such as giant covalent structure . Represent covalent bonds between parts of giant covalent structures using diagrams		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.17 Covalent bond Giant Structure 2 . Explain the properties of graphite, diamond and graphene in terms of their structure and bonding . Explain how to structure of giant covalent structures affects their properties		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.18 Covalent bond Giant Structure 3 . Describe the structure of fullerenes and their uses, including buckminsterfullerene and carbon nanotubes		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication

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9D.19 Covalent bond Giant Structure 3 • Describe polymer properties • Explain how polymer properties make them suitable for their uses		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.20 Comparing covalent bonds • Recall all the different types of Covalent compounds.		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication

Key Vocabulary

Mendeleev	Element	Periodic table	Atomic Number	Isotope	Reletive atomic mass	Abundance	Metal	Non-metal
Metalloid								

Future Learning	You will look at how elements from the periodic table can be chemically joined together, learning about three types of bonds – ionic, covalent and metallic. You will look further at isotopes and learn about those that are unstable and emit radiation – alpha, beta and gamma.
In careers	The periodic table provides chemists with a structured organisation of the known chemical elements from which they can make sense of their physical and chemical properties. Radioactive isotopes are used for blood flow monitoring, cancer treatment, paper mills, carbon dating and smoke alarms. Each isotope used in these applications has a characteristic half-life.