Learning Journey – 9D Mendeleev's Genius Part 2
Metals

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 the bonding between metals, non-metals and metals with non-metals seeing how this affects their properties.

We will develop our learning by studying the following each lesson:	RAG	Skills in Science checklist
9D.05 Metallic Bonding • Describe the arrangement of atoms and electrons in metallic bonds • Draw diagrams for the bonding in metals		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.06 Metal Alloys • Explain how the structure of metals and alloys affects their properties • Explain why alloys are harder than pure metals in terms of the layers of atoms		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.07 Alkali metals • Describe the trends in the Alkali metals group 1. • Explain the pattern of reactivity in group 1		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.08 Reactivity series 1 • Describe the order of metals and carbon in the reactivity series		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.09 Reactivity series 2 • Describe the order of metals and carbon in the reactivity series • Be able to work out the reactivity series of metals using displacement		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication
9D.10 Extracting metals • Describe the uses of carbon in obtaining metals from metal oxides (ores) • Describe the use of electrolysis in obtaining metals from their ore		☐ Scientific Methods ☐ Practical ☐ Number Skills ☐ Application ☐ Communication

Key Vocabulary

Mendeleev	**Delocalised**	**Periodic table**	**Atomic Number**	**Reactions**	**Reletive atomic mass**	**Abundance**	**Pure metal**	**Non-metal**
Metalloid	**Compounds**	**Reactivity**	**displacement**	**Alloy**	**Force**	**Atoms**	**Metal**	**Element**

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.