Year 8
Subject: Science (Chemistry/Geology
Topic/Unit: Our Wonderful Earth: Structure, Rocks, and Resources
When: Half Term 6

Huntington School
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Overview: Why this? Why now?
This unit explores the complex systems that form and sustain our planet. By understanding the Earth's internal structure, atmospheric evolution, and the formation of materials, students can better appreciate how geological processes shape the world and why sustainable resource management is essential for future generations.

Building on...building to:
This work builds on foundational knowledge of states of matter and basic chemical reactions. It leads to an advanced understanding of the rock cycle, tectonic theory, and the chemical properties of advanced materials, preparing students for Key Stage 4 studies in environmental chemistry and earth science.

Sequence summary:
1. **Earth's Structure:** Analysing seismic wave data (P and S waves) to identify the crust, mantle, outer core, and inner core.
2. **Atmospheric Evolution:** Comparing the early atmosphere's volcanic gases (carbon dioxide, methane) with the modern nitrogen-oxygen rich atmosphere developed through photosynthesis.
3. **Continental Drift:** Examining Alfred Wegener's theory of Pangaea using fossil and rock layer evidence.
4. **The Rock Cycle:** Investigating weathering (physical, chemical, and biological) and the processes of sedimentation, compaction, and cementation.
5. **Rock Types:** Distinguishing between igneous (intrusive vs. extrusive), sedimentary, and metamorphic rocks based on crystal size, layers, and porosity.
6. **Fossilization:** Exploring the life of Mary Anning and the stages required to preserve biological remains.
7. **Earth's Resources:** Classifying materials as natural, synthetic, finite, or renewable.
8. **Advanced Materials:** Defining alloys and composites and investigating how reinforcements like steel improve material properties.

Key Vocabulary:
Mantle, **tectonic plates**, Pangaea, **igneous**, sedimentary, metamorphic, **weathering**, fossilization, **composite**, and sustainability.

Assessments:
Students will have completed their final assessment of Year 8 and will review key concepts as part of their feedback.

Able and interested:
Higher-attaining students can investigate the "magnetic impression" left by seafloor spreading. They may also research the high-performance applications of carbon-fibre composites in modern technology.

Inclusion, Personal Development and Wider Skills:
Mathematical proficiency is developed through calculating pie chart angles for atmospheric data. Career awareness is fostered by exploring the roles of **seismologists** and palaeontologists.

Homework and Independent Learning:
Students will be set weekly homework activities through the Sparx online learning platform.