How a pencil sharpener is connected to the Earth

Slideshow notes
The text in quotation marks suggests language to tell students how metal and plastic are connected to the Earth.

Slide 1: Title slide

Slide 2: Metal

Slide 3: Metal ore in the ground
• Ask students if they notice anything about the rock. For example: “Can you see the shiny bits in the rock? These are tiny mineral deposits in the rock. Rocks with minerals in them (that can be made into metals) are called ores.”

Slide 4: Extraction
• “Rocks containing minerals (ores) are dug out of the Earth using heavy machinery. This process is called extraction.”

Slide 5: Processing
• “The next part of the story is called processing. The rocks are ground down into smaller pieces and the metal is separated from the rock deposits. The metal pieces are then heated to a high temperature in a blast furnace.”

Slide 6: Liquid (molten) metal
• Ask students if this picture reminds them of anything from Lesson 2. “The extreme heat in the blast furnace melts the metal to a liquid (like how igneous rocks are formed).”

Slide 7: Product
• “The liquid metal can then be used to create metal products. A metal pencil sharpener is cut from a bar of pre-formed metal.”

Slide 8: Plastic

Slide 9: Extraction
• Ask students if they recognize the machinery in the picture. “Plastic is made from oil found in the sedimentary layers of the Earth. Oil is extracted from the Earth and used to make strands of polymers (through a chemical reaction).”

Slide 10: Production of plastic pellets
• “The polymer strands are then cut into smaller pieces called pellets or chips. These pellets are then melted into a liquid.”
Slide 11: Liquid plastic to a mold
• “The liquid plastic is used in different ways to make plastic products. One example is an injection mold (the picture shows an injection mold machine) that is used to make containers.”

Slide 12: Product
• “Many products are made from oil extracted from the ground, for example, plastic pencil sharpeners, while the blade is made of metal.”