

Mighty metals

Imaginative learning project for year 3/4, 2020



You're an engineer a scientist, a maker of men (iron men of course). Explore the scientific world of forces and magnetism, metals and materials. Expand your mind as you test and trial, build and move. Which force is at play as you slide down a slide or swing on a swing? Can you explain why magnets repel and attract? Can you make a penny look shiny and new or build a steel band from pots and pans? If you were a metal, which one would you be? Gold, a shimmering, precious and costly mineral? Or steel, that strong and useful alloy? Maybe you're iron, malleable and easy to shape but ready to rust. Maybe you're not a metal at all, but a force to be reckoned with.

DT & Science Focus

- Shell structures are hollow 3D structures with a thin outer covering eg a box
- Frame structures are made from thin, rigid components such as a tent frame
- Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object
- Sliders move from side to side or up and down and are often used to make moving parts in books
- Axles are shaft on which wheels can rotate to make a moving vehicle
- Cams are devices that can convert circular motion into up and down motion
- A metal is a solid material, found in rocks. Each metal has different properties
- Metals can be mixed to make new materials with different properties. The mixed metals are called alloys

Key Vocabulary

- ⇒ **Alloy:** a metal created by combining two or more metals, or a metal with a non-metal
- ⇒ **Emboss:** to decorate the surface of an object with a design that is raised to stand out
- ⇒ **Magnetic:** acting as a magnet attracting iron and steel objects
- ⇒ **Malleable:** capable of changing shape and not breaking when hammered or pressed
- ⇒ **Mineral:** a solid substance that naturally forms into crystals in the ground. Some metals are contained in ore rocks as minerals
- ⇒ **Prototype:** the first version of a machine on which further versions are based
- ⇒ **Repel:** a force acting between things pushing them apart

Homework Projects

- ◆ Research some of the tasks carried out by robots. What tasks do you think robots could do in the future?
- ◆ Use non-fiction books and the web to find out about a metal of your choice. Write down your findings as a list of facts
- ◆ Search the web to find artwork made using metal and make a collage or scrapbook of downloaded images
- ◆ Choose and find out all you can about a musical instrument made from metal. It could be an orchestral instrument or something more unusual. Create a presentation with photos and sound clips of your chosen instrument
- ◆ Find out about King Midas and his golden touch