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Glue on this side

## Earth's Resources

1	I can name some resources that humans use from the Earth and I can describe what it means for these resources to be limited
2	I can suggest methods to extend the time left before various resources from the Earth become depleted
3	I can discuss the efficacy of recycling
4	<b>I can list human activities that impact on the climate by producing carbon dioxide</b>
5	I can explain the impact of human activities on the climate by producing carbon dioxide
6	<b>I can suggest ways that the level of carbon dioxide in the atmosphere can be reduced</b>

1	electrolysis	Using electricity to split up a compound into its elements.
2	extraction	Separation of a metal from a metal compound.
3	natural resources	Materials from the Earth, its atmosphere, and the oceans, which act as raw materials for making a variety of products.
4	ore	A naturally occurring rock that contains enough of a mineral to make it worth getting the mineral – and then the metal it includes – out of the rock.
5	recycling	Collecting and processing a material so that it can be used again.

Prior knowledge from KS2: At KS2 you will have covered the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials.

**Future learning:**  
In GCSE chemistry you will also cover in more detail how the Earth's atmosphere has changed and consequences of global warming. You will also learn more about sustainable development and nutrient cycles in biology.

**Why?**  
The impact of the change in the atmosphere is affecting resources, wildlife and is a huge issue around the world.

**Careers:**  
Aerospace engineer  
Climatologist  
Meteorologist  
Geologist

## Recycling

- **Recycling** is the collecting and processing of materials that have been used so that the resources can be used again
- Recycling can have both advantages and disadvantages:

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Resources will last longer</li> <li>• It uses less energy than extracting new materials</li> <li>• It reduces waste and pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Separating rubbish can be seen as a nuisance</li> <li>• The lorries collecting recycling produce pollution</li> <li>• Some materials are easier to recycle than others</li> </ul>

## Extracting metals




- Metals are a **natural resource**, with most being found joined with other elements in compounds
- Naturally occurring metals and their compounds are known as **minerals**
- An **ore** is a naturally occurring rock which contains enough of a mineral to be worth extracting
- An example of an ore is Bauxite, which contains aluminium hydroxide

- When metals are extracted they first have to be separated from other minerals in the ore, then they need to undergo a chemical reaction to separate them from the other element that they are joined to in a compound
- If a metal is below carbon in the reactivity series, it can be extracted by reacting it with carbon in a displacement reaction
- As carbon is more reactive it will take the place of the metal in the compound, leaving the metal on its own:  
 $\text{carbon} + \text{metal oxide} \rightarrow \text{metal} + \text{carbon dioxide}$   
 $\text{carbon} + \text{copper oxide} \rightarrow \text{copper} + \text{carbon dioxide}$
- If the metal is above carbon in the reactivity series, **electrolysis** can be used, this involves separating the metal by using electricity

### Reactivity series

magnesium  
aluminium  
carbon  
zinc  
iron  
lead  
copper

Complete some of the tasks below to reach a total of \_\_\_\_\_ points over this unit of work – Highlight the box once completed.

Topic	1 Point	2 Points	4 Points	6 Points	10 Points
 Uses of metals	Make an acronym to remember the reactivity series	Create a poster explaining where metals can be found on the periodic table, and different properties of metals	Write a paragraph explaining what happens in an endothermic reaction in terms of bond breaking and making. Write it as though you are explaining to someone who knows nothing about chemistry	'Aluminium can be extracted using carbon'. Is this statement correct or not? Why?	Write down a method of extracting copper using carbon. Include the independent, dependent and control variables.
 Extraction of metals	Write a poem to remember the different methods of extracting metals. Include native metals too!	Create a glossary with pictures of keywords from today's lesson.	Compare the advantages and disadvantages of using electrolysis and carbon to extract metals from ores	Draw the scientific diagrams for the equipment used in extracting copper using carbon. Explain what these pieces of equipment were used for	Research what electrolysis is. Draw a diagram and write a small paragraph explaining what it is and how it works.
 Recycling of metals	Write a list of recyclable and non-recyclable materials	Write a short story about what would happen if we didn't recycle	Write a letter to your local MP stating what recycling is and why it is so important.	'Recycling should not be done because it is expensive'. Do you agree or disagree with this statement? Justify your answer	Find out the reasons why some materials cannot be recycled and what can be done with these materials instead

