Reactivity
Lesson 13 - Metal Ores

Chemistry - Key Stage 3

Miss Fenner

A naturally occurring **rock** that contains enough metal to make it worthwhile to extract it.

A naturally occurring rock that contains enough **metal** to make it worthwhile to extract it.

State ONE consideration to think about when deciding if extracting the metal from an ore is worthwhile.

Time, money or effort.

Independent Practice

1. Write a definition for the term ore.

2. Give an example of an ore.

3. Explain why may it not be worthwhile to extract a metal from its ore?

Independent Practice

1. A naturally occurring rock that contains enough metal to make it worthwhile to extract it.

2. Examples include bauxite (the ore for aluminium), magnetite (the ore for iron) and smithsonite (the ore for zinc).

3. If an ore doesn't contain very much metal it may not be worth the time, effort and money needed to extract it.

Metals are found pure if they are...

Option 1

Unreactive

Option 2

Reactive

Aluminium is reactive so will be found...

Option 1

Pure

Option 2

As an ore

Iron is less reactive than carbon. Can it be extracted from its ore using carbon?

Option 1

Yes!

Option 2

Definitely not

Independent Practice

1. Write a rule that explains whether a metal will be found as an ore or pure.

2. Write a rule that explains whether a metal can be extracted from its ore using carbon or not.

Independent Practice

1. If a metal is reactive it will be found as an **ore**. If a metal is not reactive it will be found **pure**.

2. If a metal is **less reactive** than carbon it **can** be extracted from its ore using carbon. If a metal is **more reactive** than carbon it **cannot** be extracted from its ore using carbon.

What type of compound do ores contain?

Option 1

Metal oxides

Option 2

Metal carbonates

Iron oxide + **Carbon** → Iron + Carbon dioxide

Zinc oxide + Carbon → Zinc + Carbon dioxide

Independent Practice

1. Write a word equation to show how tin can be extracted from its ore using carbon.

2. Write a balanced symbol equation for q1. Tin oxide = SnO

3. Write a word equation to show how iron can be extracted from its ore using carbon.

4. Challenge question! Write a balanced symbol equation for q3. Iron oxide = Fe_2O_3

Independent Practice

1. Tin oxide + carbon → tin + carbon dioxide

2. $2SnO + C \rightarrow 2Sn + CO_2$

3. Iron oxide + carbon → iron + carbon dioxide

4. Challenge answer! $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$