



Minerals, Ores, Gangue and Waste

Lesson: Minerals, Ores, Gangue and Waste

INTRODUCTION:

A few metals such as gold, silver and platinum can be found as **native metals**. Most metals however are found as compounds in which the metals are combined with one or more other elements, most commonly with sulfur or oxygen. Both native metals and these compounds are called minerals and they occur within the rocks of the Earth's crust.

A mineral may be used as a source for a particular metal only when the metal is present in concentrations high enough to be produced at a reasonable profit. Metals are usually found in ores which usually also contain gangue minerals.

YOU WILL NEED:

Lump of rock cake: a cake baked with at least three different inclusions, for example: nuts, sultanas, cherries (or a muesli bar), Tweezers, Binocular microscope, Electronic balance, Paper, Petri dishes (two)

INSTRUCTIONS:

1. Read through all instructions and construct and draw up tables to record the required results.
2. Weigh your rock cake sample using an electronic balance.
3. Identify the ore mineral (cherries), gangue minerals (nuts and sultanas) and waste rock (cake mixture) in your sample, using the binocular microscope.
4. Estimate & record the percentage composition of the ore and gangue minerals.
5. Label and weigh two petri dishes. Record their weight in a table.
6. Use tweezers to separate the ore mineral from your sample and place it in a petri dish.
7. Record the weight of ore mineral.
8. Use tweezers to separate the gangue minerals from your sample and place them in a petri dish.
9. Record the weight of gangue minerals.
10. Calculate the percentage composition of ore, gangue minerals and waste rock in your sample.

RESULTS:

Students to record all required data and construct suitable tables to present their data.