**Geology Revision Year 8:**

# Explain colour of streak, hardness, lustre.

Streak: A mineral's streak is the colour it has when ground to a powder

Colour: The **colour** is a constant and predictable component of the **mineral**.

Hardness: Hardness is measured by the resistance which a smooth surface offers to abrasion. The degree of hardness is determined by observing the comparative ease or difficulty with which one mineral is scratched by another.

* 1. Define an ore. A naturally occurring mineral containing a valuable constituent (such as metal) for which it is mined and worked
  2. State an example in a sentence. In China, for example, tungsten, tantalum, tin and gold are mined and ore is imported from other countries.

3. Explain the difference between and element and a compound.

The **difference between an element and a compound** is that an element is a substance made of same type of atoms, whereas a compound is made of different elements in definite proportions.

1. Explain the use of these terms: open cut mining; underground mining

**Open-pit**, **open-cast** or **open cut mining** is a surface mining technique of extracting rock or minerals from the earth by their removal from an open pit or borrow.

Underground Mining. Underground Mining is generally used for areas where the mineral seam is too far underground for open cut mining to be of use. A tunnel, called a decline, is created to allow workers and machinery to reach the location of the minerals.

1. Describe a situation when open-cut mining is the most appropriate method of extracting ore?

When minerals and deposits are found close to the surface and spread across a large distance, the best way to **mine** is to **use** the **open cut mining** method

1. State three things an Environmental Impact Assessment considers.

**The impacts** on the physical **environment**, as well as social, cultural, and health **impacts**.

1. Define a mineral

**Minerals** are substances that are formed naturally in the Earth. **Minerals** are usually solid, inorganic, have a crystal structure, and form naturally by geological processes. A **mineral** can be made of single chemical element or more usually a compound

1. Describe how igneous rocks form

**Igneous** rocks are formed when hot magma (melted rock) is rapidly cooled, either by hitting underground air pockets or by flowing from the mouth of a volcano as lava.

1. What is the difference between extrusive and intrusive

The major **difference between** the two are: **intrusive** rocks are made from slowly cooling magma below the earth surface, while **extrusive** rocks are made above the earth’s surface.

1. How does this affect crystal size?

Rocks that cool below the earth’s surface cool very slowly which creates large crystals, while extrusive rocks that cool above the earth’s surface has much smaller crystals, or none at all.

1. Give examples of both an extrusive and an intrusive rock

**Examples of intrusive** igneous rocks are diorite, gabbro, granite, pegmatite, and peridotite.

**Extrusive** **examples** include basalt, rhyolite, andesite, and obsidian.

1. What four processes must be followed to extract resources from the earth?

1. Finding a Deposit

2. Establishing a Mine

3. Mining

4. Refinement

1. List the advantages of an open cut mine over an underground mine

The **Advantages of Open Pit Mining**. **Open pit mining** does offer some **advantages** over traditional deep shaft **mining**. **Pit mining** is more cost effective than shaft **mining** because more ore can be extracted and more quickly. The working conditions are safer for the **miners** because there is no risk of cave in or toxic gas.

1. What steps are often taken to rehabilitate an abandoned minesite?

Ideally at the start of mining, this soil would be set aside, somewhere it won’t blow or wash away, until the mine closes and the soil can be replaced.

Removal of highwall highwall material into final landform position

Revegetation can be often seeded with a grazing mix of native and introduced species. An alternative is to use tubestock — young plants grown in pots to the point where they can be transplanted into the ground — but this is labour intensive and expensive.

Another issue with rehabilitating old mine sites is the legacy of acid mine drainage, or acidic, mineral-rich run-off from the mining operation. New trials of using bacteria is helping tackle this. Using naturally occurring bacteria that feed on the sulfates in the water, and in the process generate alkalinity that can neutralise the acid. These bacteria can also help recover any residual metals in the water. The bacteria can be put to work in a number of ways, such as in a bioreactor or in permeable, reactive barriers that are put in across the flow path of groundwater.

1. Describe two environmental risks for exploration?

Vulnerable Species may be impacted

Mine may release toxins to the environment

1. List three problems for water running off minesites. Heavy metals runoff, pollution and risks of floods
2. Describe the difference between weathering and erosion and give examples of both

The primary **difference** between **weathering** and **erosion** is that **weathering** occurs in place whereas **erosion** involves movement to a new location. Both are caused by similar factors of wind, water, ice, temperature, and even biological action.