

## SOCIAL SCIENCES GRADE 9

### SURFACE FORCES THAT SHAPE THE EARTH

#### WEATHERING

- The earth's crust is made up of solid rock.
- Weathering is the breaking down of rocks into smaller particles
- Weathering is very important as it provides soil.
- Rocks are made up of minerals and these provide nutrients in the soil for the plants.
- People and other animals eat plants and receive minerals.
- Rocks weather in three ways: physical, chemical and biological weathering.

#### 1) Physical weathering (mechanical )

- Is the breakdown of rock by physical forces
- Two kinds of physical weathering is frost shattering and exfoliation
  - a) Frost shattering
    - Is the process in which rocks are broken up when water in the cracks in the rocks freezes and expand.
  - b) Exfoliation
    - When weathering causes rock to break up in layers.
    - The rocks breaks up in layers along these cracks

#### 2) Chemical weathering

- It happens when chemicals in the air or water react with the chemical substances in the rock, weakening them and so causing the rock to break up.

#### 3) Biological weathering

- Is the weathering that results from the actions of living things?
- It can be physical or chemical

#### Impact of human activities on weathering

- Two main ways in which in which activities contribute to weathering is through mining and quarrying and pollution that cause acid rain.
  - a) Mining and quarrying
    - Open pit mining and quarrying increase the surface area of the exposed to water and air .
    - This increase the amount of interaction between chemicals in the air , water and rock.
  - b) Pollution that causes acid rain
    - When people burn fossil fuels in their home, in power stations, factories and motor vehicles, the gases sulphur dioxide and nitrous oxide are added to the air.
    - Sulphur dioxide reacts with water vapour and sunlight to form sulphuric acid and nitric acid.
    - This acid mix with rain water, making it acid.
    - Acid rain causes rocks to weather faster.

### **Erosion and deposition**

- Erosion is the process by which rocks and soil particles are worn away and moved somewhere else.
- Erosion is done by moving agents such as wind, river, sea, and moving ice.
- Deposition is the process by which the transported material stops moving and deposited

#### Activity 1

**1.1 Fill in the missing words in the paragraph below. You will find a list of words at the end of the paragraph.**

**Write down only the number and the correct word.**

Physical weathering happens when rock is broken into smaller pieces due to hot and **1.1.1**\_\_\_\_\_ temperatures. This will cause the rock to expand and **1.1.2**\_\_\_\_\_ making the outer layer of the rock weaker. This type of physical weathering is called **1.1.3**\_\_\_\_\_. In the process of chemical weathering carbon dioxide combines with rain to form **1.1.4**\_\_\_\_\_ which eats away at the rock. Biological weathering is caused by animals and **1.1.5**\_\_\_\_\_.

***/plants/ acid rain/ cold/ contract/ exfoliation***

**(5X2) (10)**