Denudation is the breaking down of the landforms of the earth through erosion and weathering.

Weathering is the breaking down of rocks and minerals by physical pressures and chemical reactions.

Erosion is the breakdown of rocks and minerals but includes the transportation of these pieces. This occurs by glaciers, rivers, wind and waves. The materials are then deposited and forms new landforms

Physical Weathering - Involve forces in the physical environment.

1. Frost Fracture: Water seeps into cracks and freezes into ice. The water expands and cracks the rock. (Pot holes)
2. Temperature change: As rocks heat and cool they expand and contract causing cracks to develop.
3. Exfoliation: Coarse grained igneous rocks that break along curved surfaces like an onion skin. This happens as the rocks expand.
4. Plant growth: The roots of a plant cause cracks to develop
5. Animals: The animal allows new rock to be exposed to weathering.

Chemical Weathering: This often happens as solutions of rainwater and chemicals in the environment form and reactions take place in one of three ways:

1. In **solution** components from industrial pollution creates weak acids which helps break the rocks down.
2. **Hydrolysis**: Carbonic acid reacts with a silicate and the potassium, sodium and magnesium in the rock are dissolved and carried away.
3. **Oxidation**: This is a reaction of metallic minerals in the rock with oxygen in the water. This oxide creates a weaker mineral and the rock easily breaks down

Rivers As Agents of Erosion:

A river takes the water in an area and moves it towards the sea. The area drained by a river is called a **drainage basin**. Different drainage basins are separated from each other by a high point of land called a **divide**.

Rivers have a life cycle much like a person. The stages of the cycle are youthful, mature and old age.

Create a chart that identifies in point form the characteristics of each of these three stages in your notebooks. Now answer the questions 5, 6, and 7 from the text on page 28.

Erosional and Depositional Processes

Rivers erode in two directions: Vertically and laterally.

Vertical erosion: The river erodes the bottom of the channel. This happens through a series of actions. The first is called **hydraulic pressure** which is the force of the river to move loose rock and material to a new location downstream. The second is called **corrosion** and is caused when water becomes acidic because of chemicals in the environment. This breaks rock down and they are carried in solution. The third way erosion takes place is through **abrasion** when rocks and materials scrape the bottom of the stream breaking materials into smaller and smaller pieces

Lateral Erosion: Rivers also erode the sides of their channels. This is what causes turns or meanders to develop in the river. The outside of a turn erodes more quickly than the inside. The reason is that the water is moving faster on the outside of a turn. The inside of the turn is slower and so material may even be deposited there as the river slows down.

A river carries material in one of three ways then. First material may be dissolved in **solution**, secondly material may be **suspended** in the water making it appear to be muddy and thirdly rock may **bounce and roll** down stream on the river bed. As the water becomes more still, larger particles may fall to the river bottom. This often happens at a rivers mouth and deposits of material form a delta. Three types of deltas may form:

1. Arcuate deltas: These have a curved or “arc” shape
2. Digitate deltas: These look like fingers extending into the water.
3. Estuarine deltas: These are along tidal bays where river currents meet tidal currents. Tidal mud flats form along the mouth of the river.