

Grade 12 Geography: Geomorphology Study Guide

Grade 12 | Geography | Study Guide | 2024

Free Study Resources for South African Matric Learners

1. Fluvial Geomorphology (Rivers)

River Processes

- Erosion: hydraulic action (water force), abrasion (scraping), corrosion (chemical dissolving), attrition (rocks bumping each other)
- Transportation: traction (rolling), saltation (bouncing), suspension (carried in water), solution (dissolved)
- Deposition: when river loses energy (velocity decreases)

River Landforms

- Upper course: V-shaped valley, waterfalls, rapids, interlocking spurs (downcutting dominates)
- Middle course: meanders, river cliffs (outer bend = erosion), slip-off slopes (inner bend = deposition), bluffs
- Lower course: floodplains, oxbow lakes (cut-off meanders), deltas, levees, braided rivers

2. Drainage Patterns

- Dendritic: tree-like; uniform rock type; most common
- Trellis: right-angle junctions; alternating hard and soft rock bands
- Radial: streams flow outward from a central high point (e.g. volcano)
- Centripetal: streams flow inward toward a depression (e.g. basin)
- Parallel: steep slopes; streams run parallel to each other

3. Slope Processes

- Weathering: physical (freeze-thaw, exfoliation, biological) and chemical (oxidation, carbonation, hydrolysis)
- Mass movement: soil creep (slow), solifluction, rockfall, landslide, mudflow
- Factors: slope angle, material type, vegetation cover, rainfall, human activity

4. Karst Topography (Limestone)

- Formed by carbonation weathering: $\text{CO}_2 + \text{H}_2\text{O} + \text{CaCO}_3 \rightarrow \text{calcium bicarbonate (soluble)}$
- Surface features: sinkholes (dolines), limestone pavements, polje (large depression)
- Underground features: stalactites (from ceiling), stalagmites (from floor), caves

TIP Key exam question type: explain the formation of a specific landform. Structure: name the process, name the conditions needed, explain step-by-step, name the result.