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**IDX G9 GEOGRAPHY S STUDY GUIDE ISSUE 3**

**By Gorden**

(start writing here, good luck…)

**Plate Tectonics**

The Theory of Continental Drift

- Proposed by Alfred Wegener (1915)

- Suggested that Earth's crust slowly moves across the surface.

- Named it Pangaea, which existed 200 million years ago.

- Evidence Supporting Continental Drift

1. The apparent fit of the continents.

2. Fossil correlation between continents.

3. Rock and mountain correlation.

4. Paleoclimate data.

Plate Tectonics

- A scientific theory describing the motion of Earth's plates.

- Tectonic processes began 3.3–3.5 billion years ago

Supercontinents

- Earth's continents have repeatedly collided and broken apart over its history.

- Supercontinents influence:

- Ocean currents.

- Climate and weather patterns.

- Biodiversity.

Tectonic Plates

- Major tectonic plates include:

- Eurasian, North American, South American, African, Antarctic, Indo-Australian, Pacific.

- Plates move at about 2–10 cm per year

Types of Plate Boundaries

1. Divergent Boundaries:

- Plates move apart, creating new crust.

- Example: Mid-Atlantic Ridge

- On land: Great Rift Valley in Africa

- Driven by rising magma beneath the crust.

2. Convergent Boundaries:

- Plates collide, leading to crust destruction.

- Types:

- Continent-Continent: Forms mountains

- Continent-Ocean: Denser oceanic plate subducts beneath the continental plate, forming volcanic arcs.

- Ocean-Ocean: One oceanic plate subducts, creating volcanic island arcs

3. Transform Boundaries:

- Plates slide past each other horizontally.

Folding and Faulting

- Folding:

- Rocks bend due to compressional forces, creating folds and, eventually, metamorphic rocks under pressure.

- Faulting:

- Rocks break dueto tension or compression, forming faults where blocks of crust move relative to each other.

Hot Spots

- Areas where magma rises through weakened portions of crust, forming volcanic islands.

**Natural Disasters**

Natural Disasters

- Defined as the impact of natural hazards that cause significant human, financial, or environmental loss.

Volcanoes:

- A volcano is a mountain or hill with a vent that releases lava, steam, and ash.

How Volcanoes Form

- Occur at divergent, convergent boundaries, and hot spots.

- Divergent Volcanoes:

- Found at plate boundaries where plates pull apart

- Convergent Volcanoes:

- Occur where plates collide, causing subduction:

- Ocean-Ocean: Form volcanic island arcs

- Ocean-Continent: Form mountains

- Continent-Continent: Build tall mountain ranges

- Hot Spot Volcanoes:

- Located within tectonic plates

- Caused by rising magma from the mantle.

Volcano Types

1. Cinder Cone Volcanoes:

- Small, steep sided cones made of pyroclastic.

- near fault lines and subduction zones.

2. Shield :

- Large, gently sloping domes formed by mafic lava.

3. Stratovolcanoes:

- Tall, cone shaped volcanoes with steep slopes.

- Layers of lava and ash; most dangerous type.

4. Caldera:

- Large volcanic craters formed after massive eruptions.

Lava Types

- Mafic Lava:

- Low viscosity

- Felsic Lava:

- High viscosity

Volcanic Activity

- Active

- Dormant

- Extinct

- Volcanic Explosivity Index :

- Measure eruption intensity