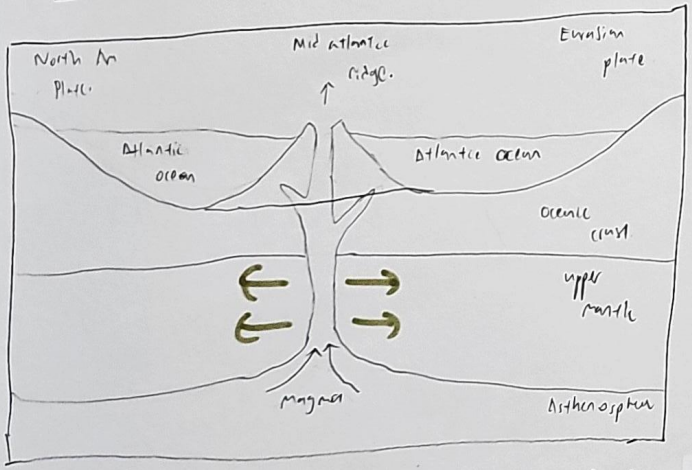
Tectonics ☺

Divergent plate boundaries ←→ *

- There are 2 types of divergent plate boundaries.

↳ O-O and C-C

1. Oceanic (oceanic ridges) / volcanoes involved *



- 2 plates (oceanic) diverge → fractures form along plate boundary
→ Magma rises @ zone of divergence → ridge of new ocean floor created
- Magma builds up at various points on the ridge → solidifies → undersea volcanoes → After some time they grow above ocean level (volcanic islands) *

Key example *
- Mid-atlantic ridge, Iceland, Azores island chain

2. ~~Subduction~~ continental ☺ (Rift valley) / volcanoes sometimes involved *

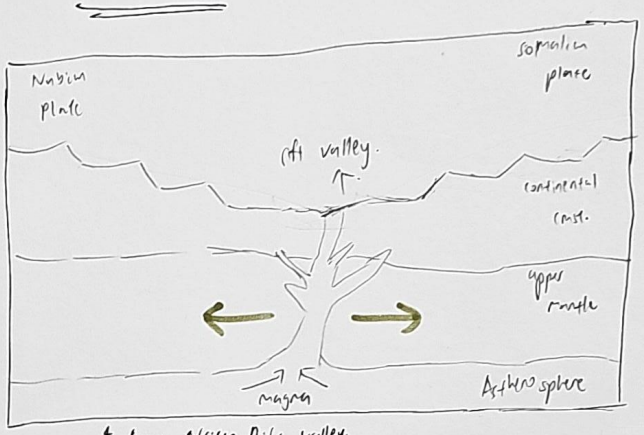
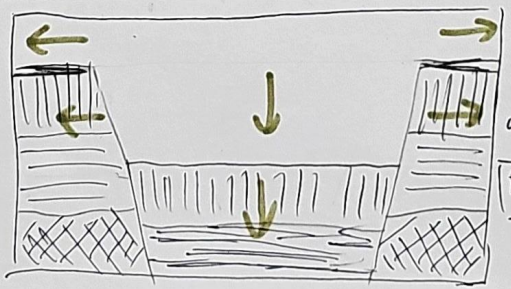


Diagram of East African Rift valley

- Continental plates diverge → they're stretched → fractures form
→ land between the 2 plates sink → linear depression forms
→ rift valley.

as when the crust stretches, it thins causing it to sink

Key Examples *
- East African Rift valley system (East African Rift system)
- Iceland rift valley due to divergence of the Eurasian & North Am plate

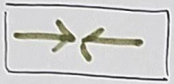


In some cases, volcanoes form near / in the rift valley. Explanation same as any other volcanoes formation

Examples
- Mount Kilimanjaro (volcano)

Tectonics pt 2. ☺

Convergent plate boundaries



- 3 types of convergent plate boundary
  - ↳ O-O, C-C and O-C

1. Oceanic – Oceanic boundary

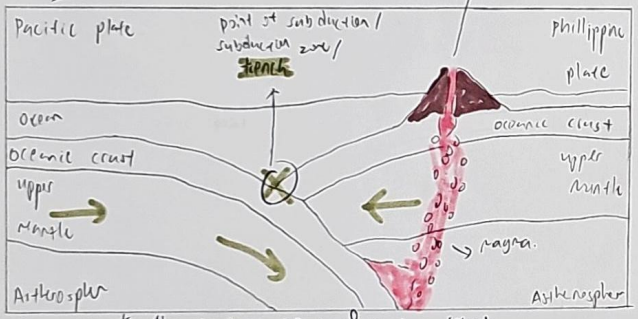
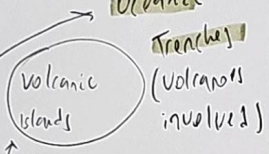


Diagram of the Marianas trench & Marianas islands



- when 2 oceanic plates converge → denser oceanic plate / faster moving oceanic plate will subduct under the less dense plate of the slower moving plate → At point of subduction → trench created
- The subducted oceanic plate melts of the mantle material → creating magma → rises above and through the crust → forming undersea volcanoes, → build up → forms volcanic islands → creation of a chain / arc of volcanic islands
- Earthquakes might occur due to friction created due to the rock masses when the plate subducts under.

Key Examples ★
- Marianas Trench & Islands → pacific and Ph plate
- Ring of fire are its created islands.

2. Continental – Continental (Fold Mountains) // (no volcanoes involved).

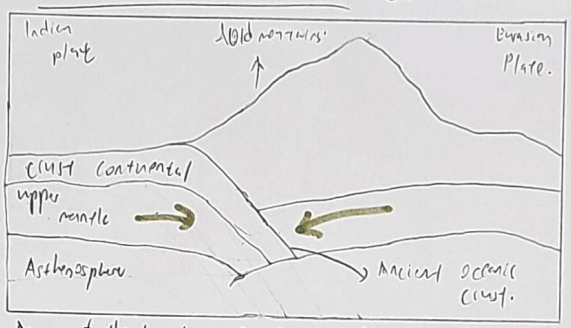
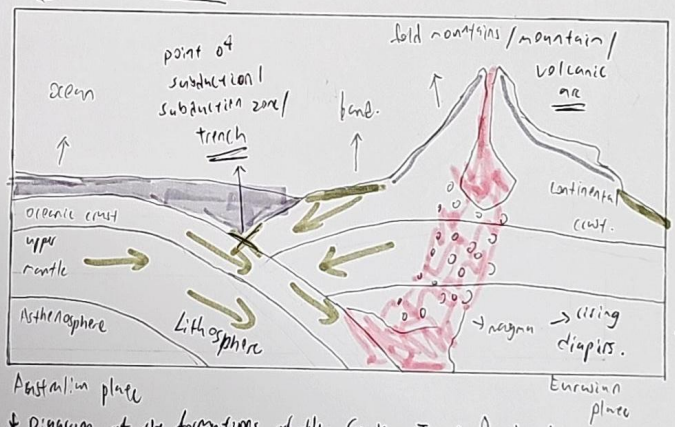


Diagram of the himalayas (fold mountains)

- when 2 plates (continental) converges → crust compress → buckles & folds → folds crust
- This is because the 2 plates are too thick and buoyant to subduct. → causes plates to break & slide along fractures in crust. → layers of rock fold either up or to its side
- forms mountains and plateaus.

Key Example ★
- Formation of the himalayas by Eurasian & Indian plate converging

3. Oceanic – Continental convergence



★ Diagram of the formations of the Sunda Trench & the Andean volcano / mountains. ranges

Key examples ★
- Sunda Trench, Andean volcanoes / mountain range / arc
  - ↳ Australian and Eurasian Plate
    - ↳ southern coast of Sumatra, Indo
- Peru – Chile trench, Andes mountain range
  - ↳ Nazca Plate with South Am plate
    - ↳ western edge of South Am/ Chile and Peru.

- when the 2 plates converge, → denser ocean plate subducts under continental plate which is less dense → At point of subduction → trench created
- when continental plate converges it buckles & fold
- beneath the continental plate → subducted plate (continental) melts → form magma. → rises thru crust → give rise to volcanoes & it's eruptions.

Tectonics Pt 3 ☺

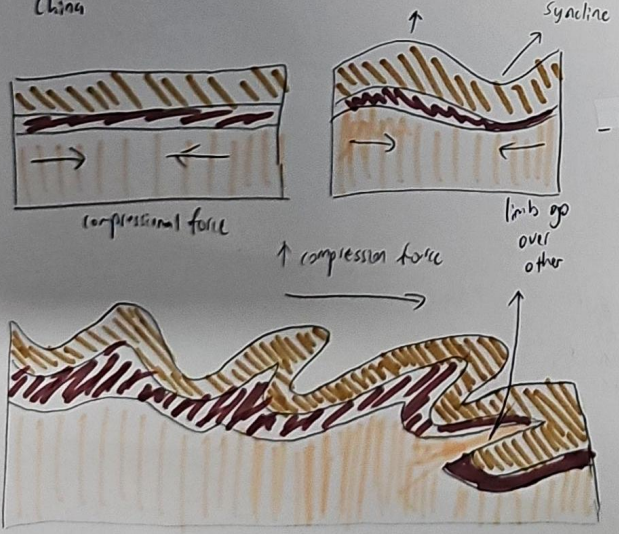
Formations of Landforms *

→ fold mountains, rift valley, block mountains & volcanoes. *
(fold mountains: convergent; rift valley, block mountains: divergent; volcanoes: both)

1. Fold mountains – convergent formation

↳ Formed when layers of rock compressed and folded
↳ they grow to impressive heights.

Key Examples *
↳ Himalayas (India, Nepal or China), Rocky mountains (USA, Canada), Andes (Peru, Chile.)

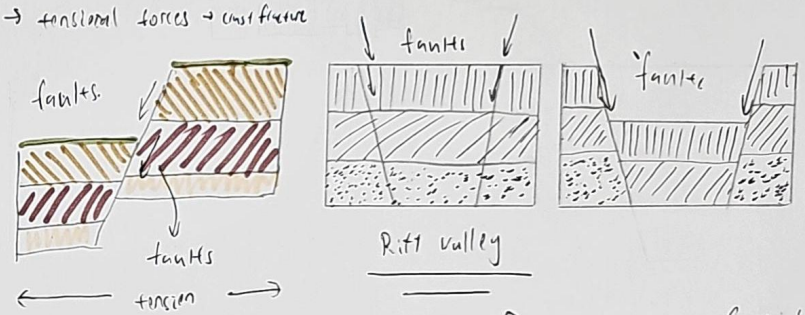


Types of rock
- sedimentary
- igneous
- metamorphic

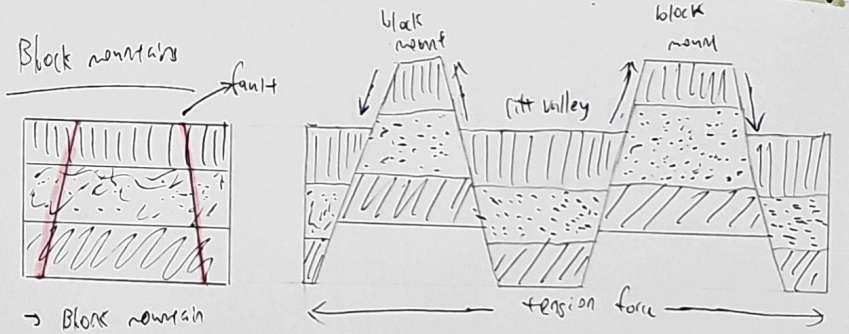
Fold mountains Formation
- convergent → compressional force → immense pressure → layers of rock buckle and fold → causes folding → wave like structures
- In fold rocks, upfold → anticline, downfold → syncline
- due to increasing compressional force on one limb → rock buckle till fracture form → limb moves over other limb

2. Rift valley and Block mountains – divergent boundary

↳ Divergent → pull apart plate → ↑ faults (fracture in rocks)
→ tensional forces → crust fracture



→ section of crust extend along fault line
→ tension → block of land to subside between pair of parallel faults. → Rift valley.



→ Block mountain
↳ ↑ tension → land mass surrounding a block subside → block mountain form
↳ → block of land with steep slopes left standing higher than surrounding land

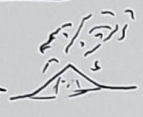
→ Block mountain & Rift valley relation
→ they may appear together sometimes like couples fgt! ☺ ♥

Key Examples * East African Rift Valley
→ Rift valleys
↳ Rhine valley, Dead sea rift

Block mountain
- Black forest — Western USA
- Vosgues — Europe
- Sierra Nevada — Europe

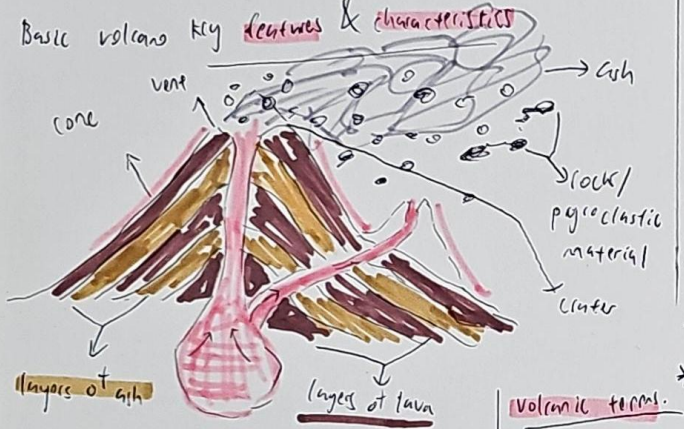
Tectonics pt. 4 ☺ M

Volcanoes



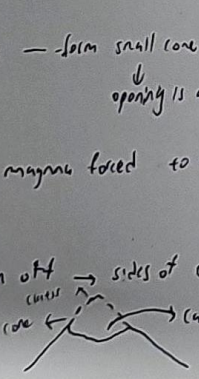
- Mainly found within / Around the Pacific Ring of Fire *

Basic volcano key features & characteristics



Formation & Eruption

- ↑ in magma into chamber → ↑ pressure → eruption
- Stratovolcano eruption → pyroclasts
- Force dependant on pressure
- Eruption of lava over pyroclasts → build volcano / cone
- lava build up around vent → form small cone → opening is a crater
- Vent may be blocked → magma forced to find new exit → secondary cone forms.
- Eruption → summit blown off → sides of crater fall inwards → collapse → caldera forms.



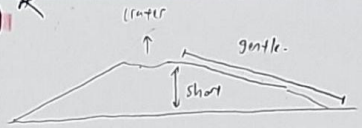
Volcanic terms *

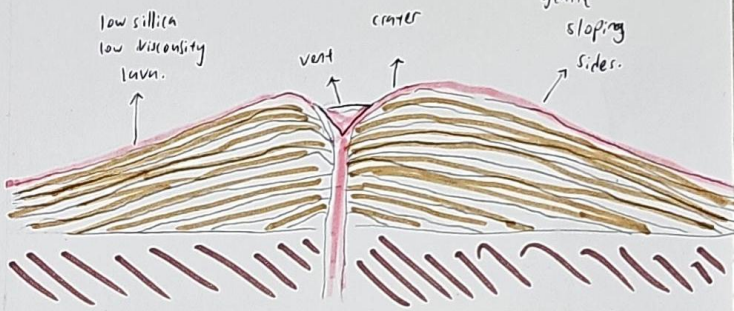
- high silica & high viscosity
- low silica & low viscosity
- pyroclastic flow
- lahars
- volcanic bombs
- ash

Shield Volcanoes (mostly divergent boundary) *

→ gentle sloping sides
→ broad summit
→ formed by / erupts low silica lava
↓
- easily spread outs over large area
- does not trap as much gases. ↳ less eruptive

- Nature of eruption: gentle
- most magma comes from mantle material
- to identify → it is short.
- Example: Mauna Kea (Hawaii), Mt. Washington (Mainland USA)





Stratovolcanoes (mostly convergent)

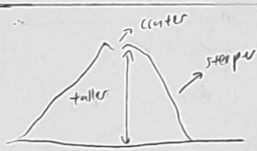
→ developed from eruptions of lava and pyroclastics ↓ ash, rock, volcanic bombs during an eruption

Formation

- Eruption pyroclasts → after they lava erupts → covers pyroclasts → prevents it from erosion. → slowly build up → higher volcanoes with slight concave. (steeper at top, gentler at base)
- Secondary cone may form.

Pyroclastic flow & Lahars.

- Resulted from volcanic eruptions → pyroclastic mix with super heated gas from eruptions → pyroclastic flow created (reaching 200 m/s.) *
- Lahars
  ↳ Pyroclastic mixed with water from melted ice or lakes or sea → form lahars → fast moving mudflows moving at 40 m/s.



- Mt Tambora
- Klychevskay

Examples * .

- Mt. Mayon (Philippines)
- Mt. Pinatubo
- Krakatoa (Pre-eruption)
- Mt Taranaki (NZ)
- Mt Fuji (JPN)
- Mt Etna (IT)
- Great Sitkin Volcano
- Chimborazo