**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_**

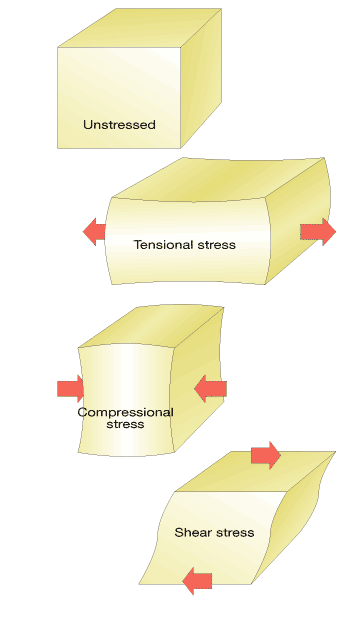
Geology Unit 8 Notes: Deformation of the Earth’s Crust

Folds, Faults, Mountain Building

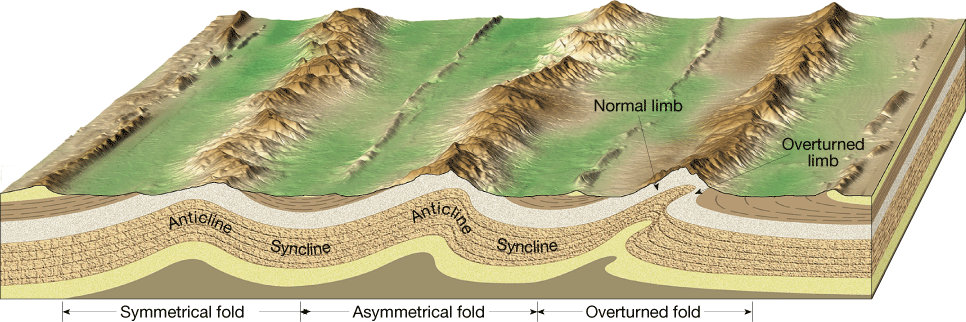
Text Reference: Ch 11 pg 307-325

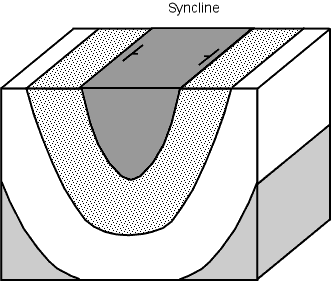
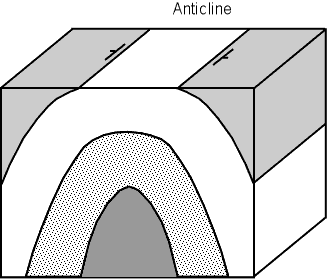
11. 1 Rock Deformation

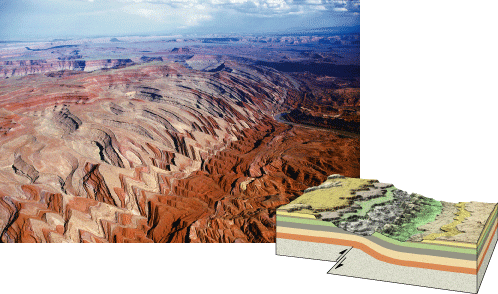
* Factors that influence the strength of a rock and how it will deform include: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Deformation: a general term that refers to all changes in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and/or \_\_\_\_\_\_\_\_\_\_\_\_ of a rock body
  + Most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_occurs along \_\_\_\_\_\_\_\_\_\_\_\_margins
* Stress: is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ per unit \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acting on a solid
* Strain: is the change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a body of rock as a result of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Temperature and Pressure
  + Rocks deform permanently in two ways \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Brittle deformation: the \_\_\_\_\_\_\_\_\_\_\_\_\_\_of an object once its strength is exceeded
  + Ductile deformation: a type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that produces a change in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an object without \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the object
* Rock Type
  + Mineral \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a rock also greatly affect how it will deform
  + Rocks like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ usually fail by \_\_\_\_\_\_\_\_\_\_ deformation
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rocks loosely cemented or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rocks with foliation usually fail by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ deformation
  + Strong bonds=brittle deformation
  + Weak bonds or Medium strength bonds=ductile deformation
* Time
  + Forces that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to deform rock with first applied may cause rock to flow if the force is maintained over a \_\_\_\_\_\_\_\_\_\_\_\_\_ period of time
* Types of Stress:
  + Three main types
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Stress: when rocks are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Stress: caused by rocks being \_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ directions
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Stress: causes a body of rock to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Folds
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are most commonly formed by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_, or arching, of rock \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are \_\_\_\_\_\_\_\_\_\_\_ downfolds in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ strata
    - Synclines are often found in association with anticlines
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ folds in otherwise \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sedimentary strata

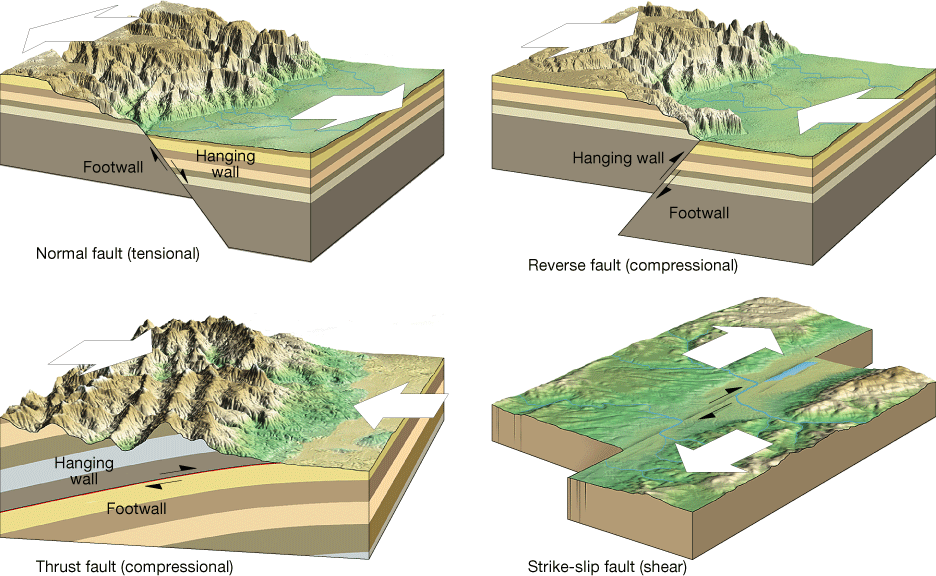






Monocline

* Faults
  + \_\_\_\_\_\_\_\_\_\_\_\_\_ faults occur when the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ moves \_\_\_\_\_\_\_\_\_ relative to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ block
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ faults are faults in which the \_\_\_\_\_\_\_\_\_\_\_\_ wall block moves \_\_\_\_\_\_ relative to the \_\_\_\_\_\_\_\_\_\_\_\_ block
  + \_\_\_\_\_\_\_\_\_\_\_\_ faults are \_\_\_\_\_\_\_\_\_\_\_\_ faults with dips less than \_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ faults are faults in which the movement is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the trend, or \_\_\_\_\_\_\_\_\_\_\_, of the fault surface

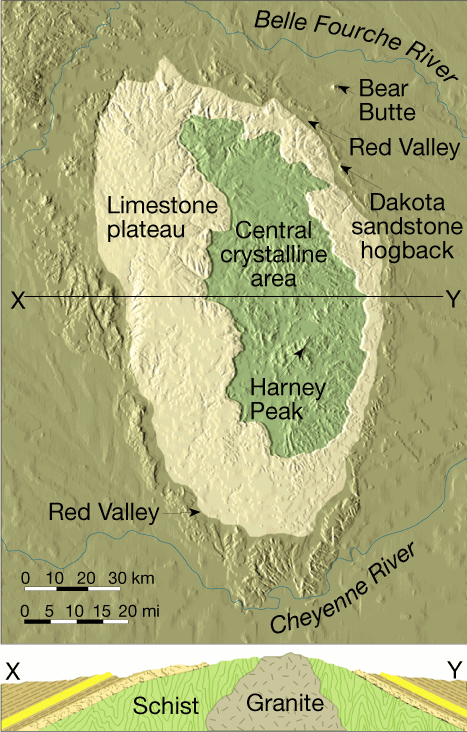


* Joints
  + Are \_\_\_\_\_\_\_\_\_\_\_\_ along which \_\_\_\_ appreciable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has occurred

11.2 Types of Mountains

* Folded Mountains
  + Mountains are classified by the dominant processes that have formed them
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: is the collection of processes that result in the forming of mountains
* Mountains that are formed primarily by \_\_\_\_\_\_\_\_\_\_ are called \_\_\_\_\_\_\_\_\_\_\_\_\_ mountains
* Major force is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stress
* Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* Large scale \_\_\_\_\_\_\_\_\_\_\_\_\_ faults are associated with structures called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mountains
* Fault-block mountains: are formed as \_\_\_\_\_\_\_\_\_\_\_ blocks of \_\_\_\_\_\_\_\_\_\_\_ are uplifted and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ along normal faults
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: formed by the downward displacement of fault-bounded blocks
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: elongated, uplifted blocks of crust bounded by faults
* Major Force is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ stress
* Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* When \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ produces a \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ structure, the feature is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mountains are circular or elongated structures

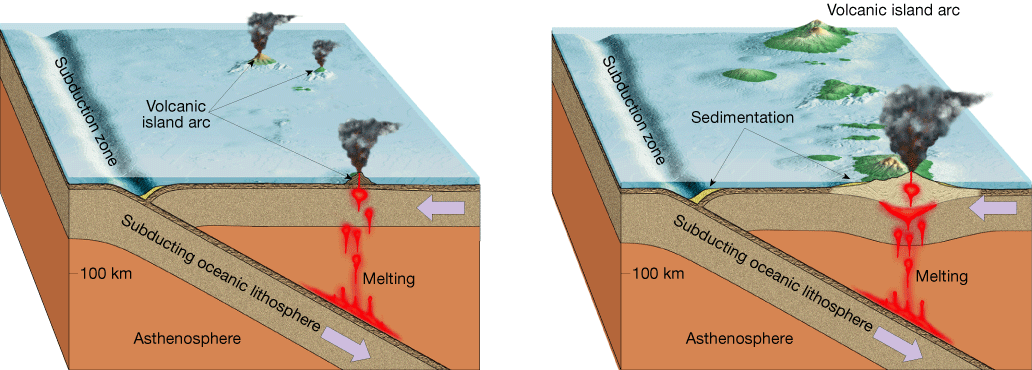
formed by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of underlying \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_rock

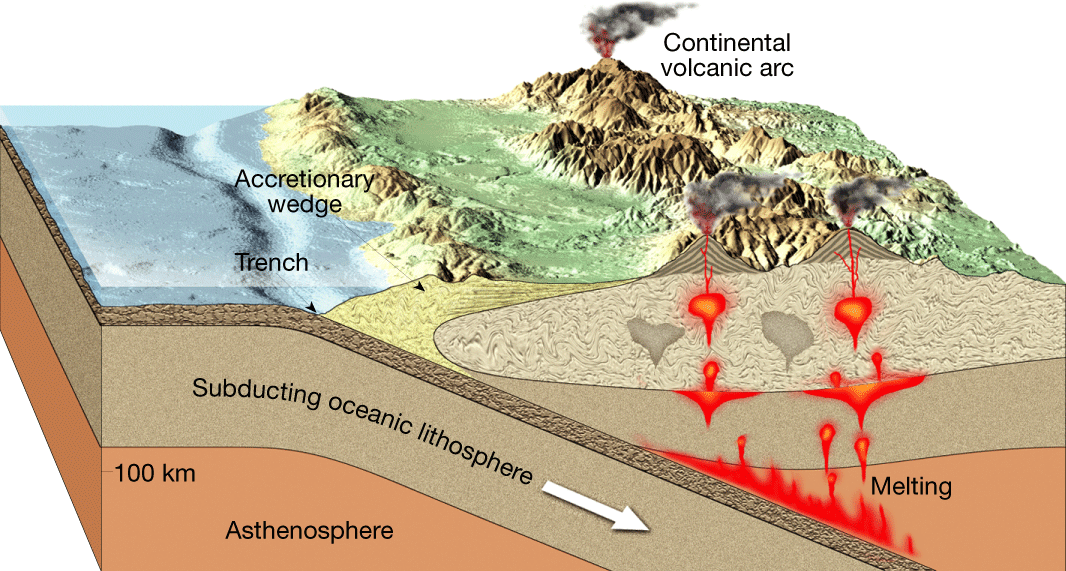
* Ex: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

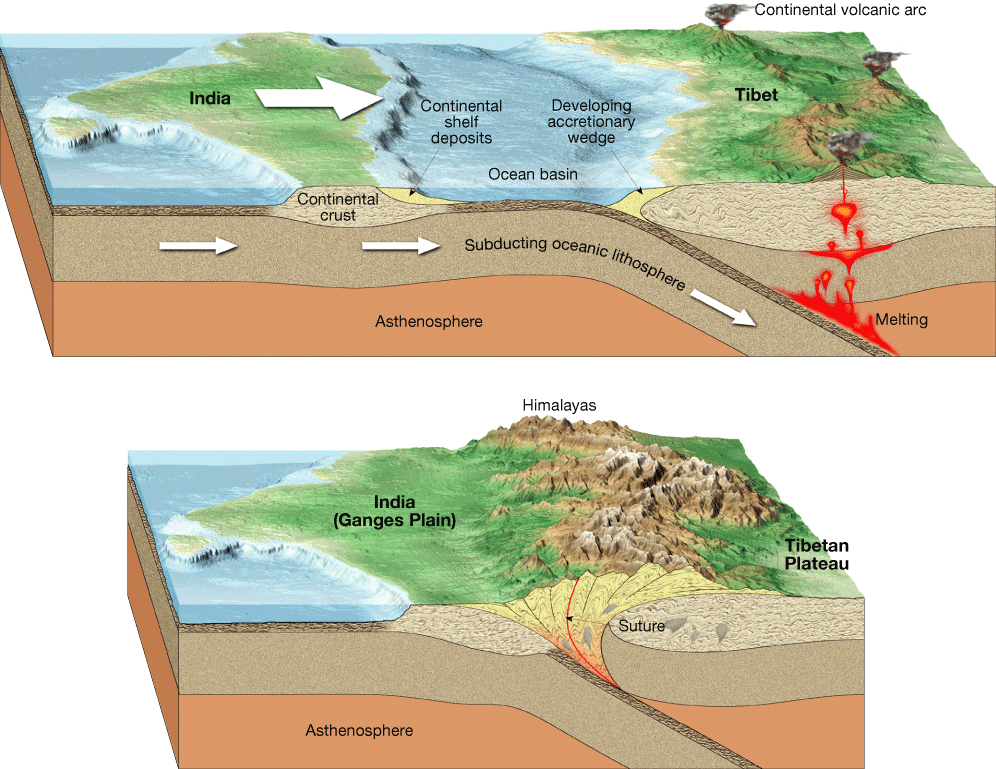
11.3 Mountain Formation

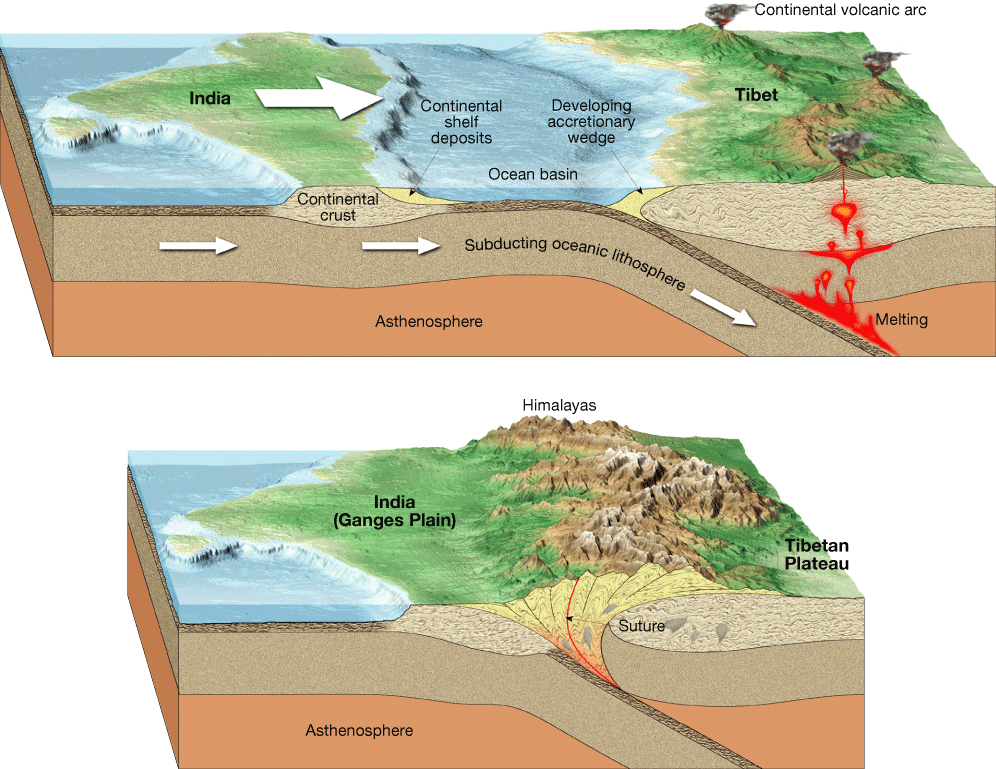
* Most mountain building occurs at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate boundaries
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates provide the compressional forces that fold, fault, and metamorphose the thick layers of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ deposited at the \_\_\_\_\_\_\_\_\_\_ of landmasses
* Mountain Building at Convergent Boundaries
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Convergence
    - Mainly produces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(like Aleutian islands in Alaska)



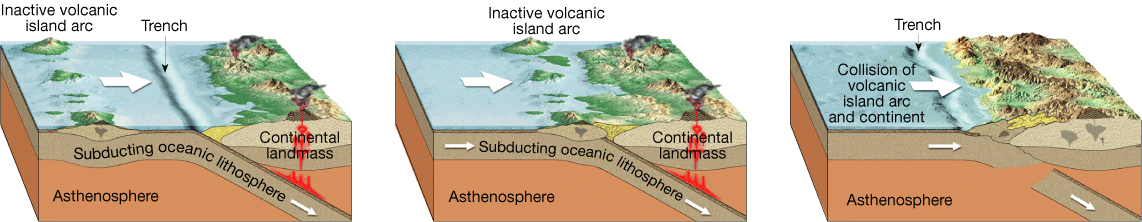
* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Convergence
    - The types of mountains formed are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (like Andes)
    - An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rocks with some scraps of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



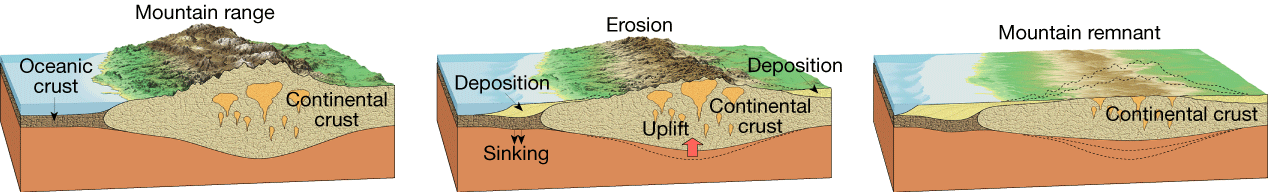
* + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Convergence
    - A collision will result and form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Ex: Himalayas



* Mountain Building at Divergent Boundaries
  + The mountains that form along \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at \_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate boundaries are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ type mountains
  + Ex: Mid Atlantic Ridge



* Non-Boundary Mountains
  + Not all mountains are formed by plate boundaries. Some are formed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or regional \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Example: Hawaiian Islands
* Continental Accretion
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a process that occurs when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ collide with and stay \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plate
  + Terranes:
    - Any \_\_\_\_\_\_\_\_\_\_\_\_\_ fragments that have a geologic history distinct from that of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Terranes occur along the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ coast
* Principles of Isostasy
  + Isostasy is the concept that Earth’s \_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in gravitation balance upon the material of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Because of isostasy, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will undergo regional \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both during mountain building and for a long period afterward.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the process of establishing a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



🡨This drawing indicates how wooden blocks of different thickness float in water. Like this, thicker crust floats higher than thinner crust.