Topic/Objective CHAPTER: Sed. & Rocks

NAME:

Pd: 1 2 4 5 other

DATE 1 of 5

Essential Question

What are Sedi. Rx?

Cue: Review: Thoughts: Main Idea

NOTE Taking AREA:

**Rock**

↳ All Rocks contain minerals

* All Rx's have

↳ is an aggregate of 1 or more minerals, mineraloids, volcanic glass, organic matter, or other material.

**Sediment**

↳ is a latin word for Sedimentum which means "to Settle"

↳ is solid material that has been weathered, eroded, and deposited in a new location.

i.e.

a) Valleys b) lakes c) Seas d) oceans

**Lithification**

↳ is the processes of turning sediment into Sedimentary Rx, either by Physical or Chemical weathering. ↳ mechanical

↳ The processes begins With the weathering, erosion, and deposition of Sediment. As more sediment is added burial takes place, and the Sediment begins to Compact together over time.

See Rock cycle notes ↳ 1ST step how they form.

↳ if allowed to continue, Cementation can occur. This binds Sediment grains together.

NOTES CONTINUE ON OTHER SIDE

↳ they can also form from Evaporation & Precipitation)

Topic/Objective CHAPTER:

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Cue: Review: Thoughts: Main Idea

NOTE Taking AREA:

## Sedi Rx

↳ Rx formed from Loose Sediment such as Rx Frag., mineral grains from a solution & Bits of Plants & Animal remains

## Classification of Sedi Rx

↳ 2 kinds of groups. ways to classify them (3 ways)
↳ (How they form)

1) Detrital (most common Sedimentary Rx)
↳ Rx made up of sediment which have a Clastic texture.
↳ Classified by Particle size of their component

## Clastic

↳ Broken pieces of Rx fragments which is often called: Grain Size or particle size.
↳ Size can vary from coarse to very fine

## Clastic texture Sediment

the Bigger the Rx

2 conglomerates

Gravel (large) { boulders, cobbles, pebbles, granules

e.g. Rocks

Breccia (angular shape)

Conglomerates (Rounded shape) due to stream erosion over Hundreds of miles

Loose Poor

Sand (medium)

Sand size (most common detrital Rx) coarse ↕ V. Fine

Sandstone (graywacke) (Arkose)

Mud (Fine) can contain up to 60% $H_2O$

Silt size Fine Siltstone

Clay V. Fine Shale

Mudstone

Lagoons

Compaction

Tightly

V. fine

50%/50% mixture

## SUMMARY:

the more energy is needed to move it!

Hw WS 13 Clastic Sedi

Topic/Objective CHAPTER: 6 Sedi Rocks

NAME:

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Essential Question

What are Sedi Rx?

Cue: Review: Thoughts: Main Idea

NOTE Taking AREA:

↳ 2 ways to Classify sedi Rx (3 ways)

## 2) Chemical

↳ Produced by salts and Ions that dissolve & wash into lakes and Oceans (sea shells and other components that breakdown like ...)

How Chemical Sedi Rx Form

↳ if they precipitate out of, they can form mineral particles which accumulate as chemical Sedimentary Rx

↳ if they evaporate from a solution mineral particles remain behind, which lithify into chem sedi rx.

Precipitate

evaporate

Precip. & evap.

Classified by their Chemical composition

Carbonates ↳ made of $CaCO_3$ (has Calcite)

e.g. ↳ Lime stone, Kaolin (chalk) ↳ See other side

mineral Calcite is present when it ↳ React w/ HCl

evaporites

evaporates → e.g. Rock salt, (Halite)

e.g. → Gypsum

↳ formed from evaporating solution of $CaSO_4$ calcium sulfate

e.g. of Biochemical

Intro to Biochemical

Coal

↳ Bio chemical sedimentary Rx formed from the weathering remains of plants & animals

4 stages ↳ Peat, Lignite, Bituminous, (see metamorphic Rx for last stage)

NOTES CONTINUE ON OTHER SIDE

Bioclastic → "oatmeal cookie" Coquina Sea Shells.

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Cue: Review:
Thoughts: Main Idea

Organic

NOTE Taking AREA:

3) Bio chemical / BioClastic

forms from ↳ Remains of plants & animals

↳ A.K.A. Organic (compaction)

↳ fossils can be found which once lived a long time ago e.g. Jelly Fish in sedi Rx - S.S.

Paleo environment

↳ ancient environment of past remains

- Fluvial (In and around rivers)
- Deltaic (mouth of rivers (Fan shape)) ↳ sediment increases farther from river
- Lacustrine (Stagnet lagoons & lakes)
- Turbidite (deposit underwater marine slopes)
- Desert
- Shallow Marine ↳ limestone & Shale ↳ Triobits ↳ sea shells
- Beach
- Pelagic (find open ocean sediment)

↳ fossils like:

Bones, plants, shells, footprint, eggs, etc... remains of once living things.

e.g. of Bio chem Rocks.

Coquina, Coal (4 stages), Oolitic L.S., Kaolinite (A.K.A. = Chalk)

The material that make up sedi Rx are deposited in layers, and these layers differ from 1 and other in composition when the Rx Lithify they form Layers or Bedding which are Also Known as Stratification (Bedding)

SUMMARY:

| | | |
|---|---|---|
| | Topic/Objective CHAPTER: 6 Sed. Rocks | NAME: |
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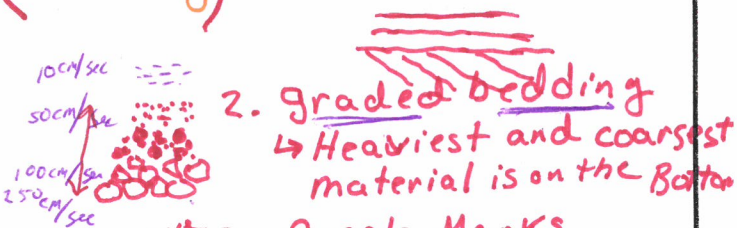
Essential Question

Who is James Hutton

| Cue: Review: Thoughts: Main Idea | NOTE Taking AREA: |
|---|---|
| Strata | ↳ layer of Rx (bedding) |
| Stratification | ↳ layers of Rx |
| James Hutton | ↳ father of geology |
| | ↳ study Rx formation and Strata layers |
| | ↳ Noted that: "What is happening now ... has happened in the past and will happen in the future ..." |
| | A.K.A. Principle of Uniformity |
| Principle of Uniformity | ↳ The physical, chemical, and biological Laws that operate today, have operated throughout Earth's History |
| Principle of Horizontality | ↳ Sediment moves (lay out in a) horizontal direction |

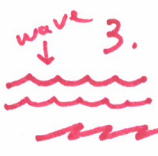
1. Cross-bedding
   ↳ inclined layers across Horizontal Area



2. graded bedding
   ↳ Heaviest and coarsest material is on the Bottom




3. Ripple Marks
   ↳ small ridges by wind or wave Action.




NOTES CONTINUE ON OTHER SIDE

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Cue: Review:
Thoughts: Main Idea

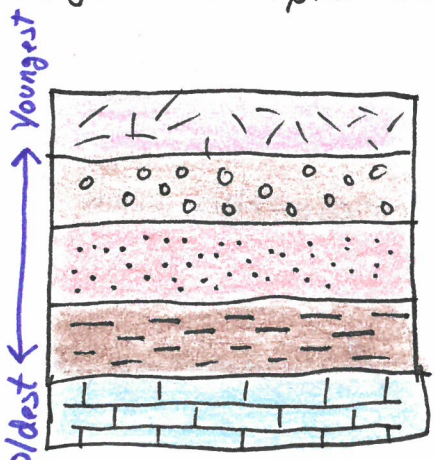
NOTE Taking AREA:

LAW of Superposition

↳ Oldest sediment is on the Bottom
Youngest sediment is on the Top

Rock ID Chart

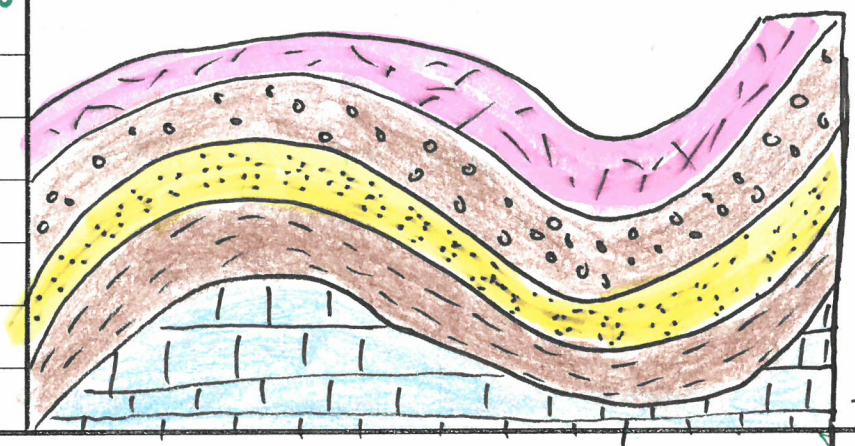
e.g. Principle of Horizontality




Granite
Conglomerates
Sandstone (SS) Arkose
Shale
Limestone (LS)

Blox Activity

See Blox diagram Activity



Rock Strata (Layers) can be bent or folded.

This is "uplifting" which is Mountain Building

COAL in PA

SUMMARY:

↳ Evidence of coal in PA due to climate change. Climate Change caused by Tectonic Plate movement. e.g. African plate colliding with North American Plate creating the Appalachian Mountains

Peat Lignite Bituminous (soft) Anthracite (hard)

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| | Pd: 1 2 4 5 other |
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**Essential Question**

# What are Hutton's Ideas?

| Cue: Review: Thoughts: Main idea | NOTE Taking AREA: C |
|---|---|
| | Hutton's work lies @ the foundation of: |
| Uniformitarianism | ↳ geologic process occurring today have been occurring since ⊕'s formed. |
| relative-age dating | ↳ one way this is by studying the order in which geologic events occurred using. |
| Original horizontality | ↳ sedimentary rocks are deposited in horizontal or nearly horizontal layers. |
| superposition | ↳ principle that in an undisturbed rock sequence, the oldest rocks are at the bottom and each consecutive layer is younger than the layer beneath it. |
| Cross-cutting relationships | ↳ states that an intrusion is younger than the rock it cuts across. |
| inclusions | ↳ states that the fragments in a rock layer must be older than the rock layer that contains them. |

NOTES CONTINUE ON OTHER SIDE

| Topic/Objective CHAPTER: | NAME: |
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Cue: Review:
Thoughts: Main Idea

unconformity

Angular unconformity

Disconformity

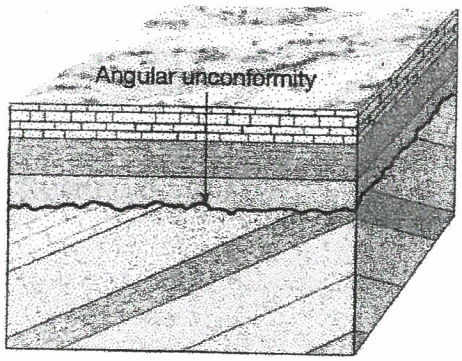
Nonconformity

Igneous Dike

Igneous Sill

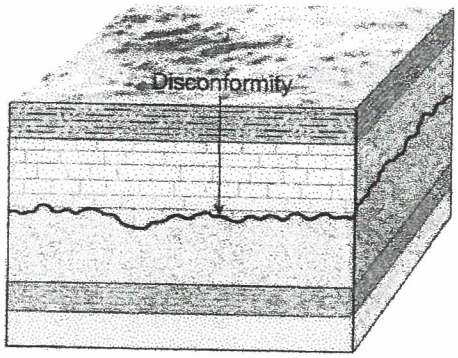
NOTE Taking AREA:

## SEDIMENTARY Strata LAYERS

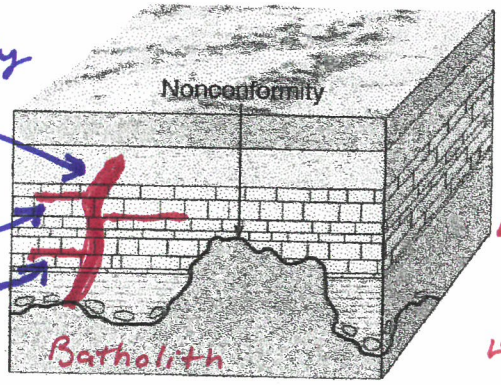



(uplifted)

↳ Rx are bent and then weathering & erosion takes places. placing more sediment on top.

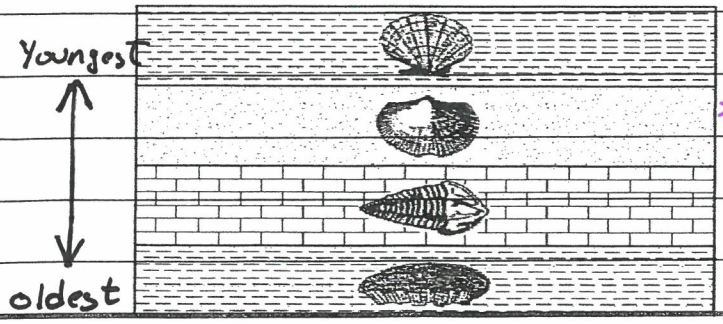



↳ Rx are deposited. Weathering and erosion take place, followed by more sediment being deposited on top.




↳ Magma Chamber melts surrounding country Rx (Batholith)
↳ magma chamber hardens
↳ magma intrusion cuts across rock (strata) layers = Dike
↳ magma intrusion cuts horizontal w/strata layers = Sills

SUMMARY:




**Fossils** are only found in ~~Sedimentary rocks.~~

* **Index Fossil** is when a fossil is visible within sediment. The Best sediment is usually Sandstone. Shale is also good.

* must be consistant in all Rock layer

Topic/Objective CHAPTER: 5/21

Rocks

NAME:

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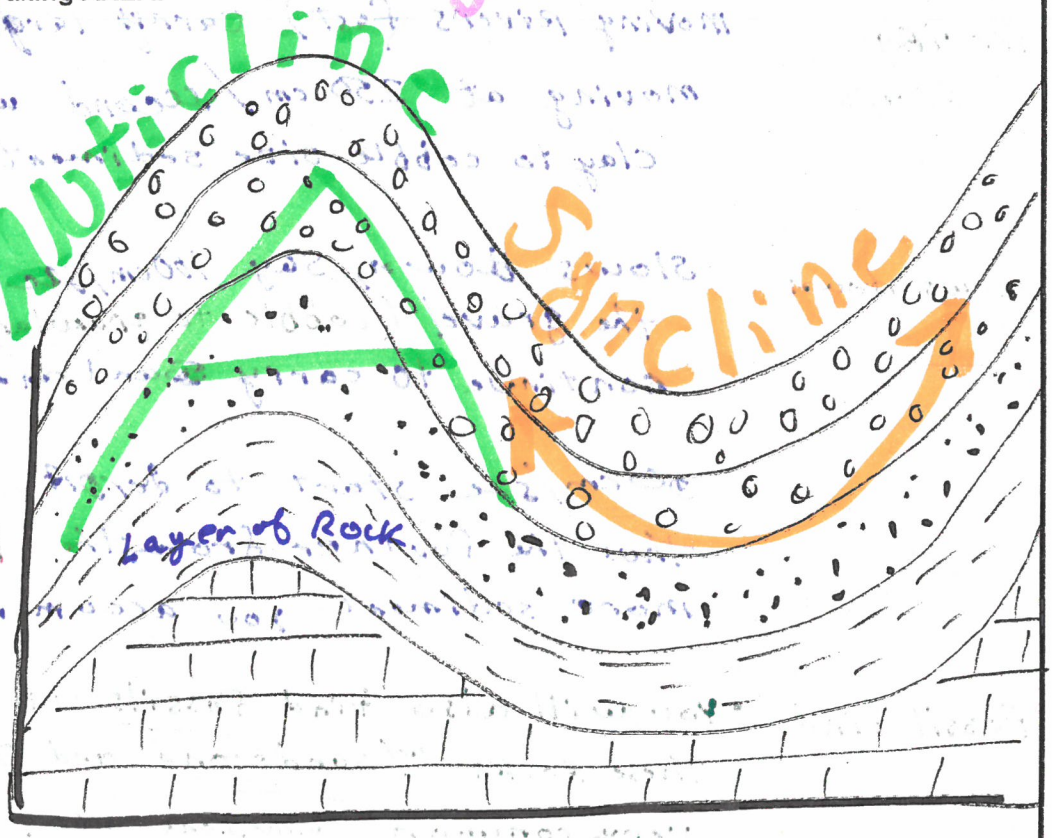
Essential Question

What are Strata layers & what is in them

Cue: Review:
Thoughts: Main Idea

NOTE Taking AREA:




Strata

Anticline

↳ is usually a Mountain/hill
↳ is an "A" shape bending of Rx
↳ oldest layer is located in the middle while the youngest layer is found on the outside

Syncline

↳ is usually a valley w/a "U" shape
↳ oldest layer is located on the outside while the youngest strata is found in the middle

E.g.

sideling hill.

NOTES CONTINUE ON OTHER SIDE

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**Cue: Review: Thoughts: Main Idea**

**NOTE Taking AREA:**

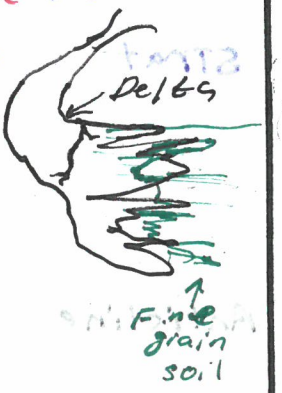
Moving Rivers

moving rivers (fast) carry larger particles moving at 250 cm/second will transport clay to cobble size sediment BUT if it

Slows down

slows down, say 100cm/sec will deposit the gravel (cobble to granulars) but still continue to carry sand and smaller.

50 cm/sec start to deposit sand. thus the further from the Delta mouth more sediment you accumulate




Fossil find

- You will also find fossils in these Rocks w/ sandstone and shale very common. Limestone also.
- Why no fossils in Ign Rx?
  - ↳ Igneous Rx form from Lava/magma
  - : Meta Rx?
  - ↳ heat + pressure would destroy them



**SUMMARY:**

Rock

Sedi → Sandstone → Quartzite

META

Gneiss ← Granite

Shale → Slate → Schist ← Basalt

Ign.

Limestone → Marble