

I. Igneous Rocks:

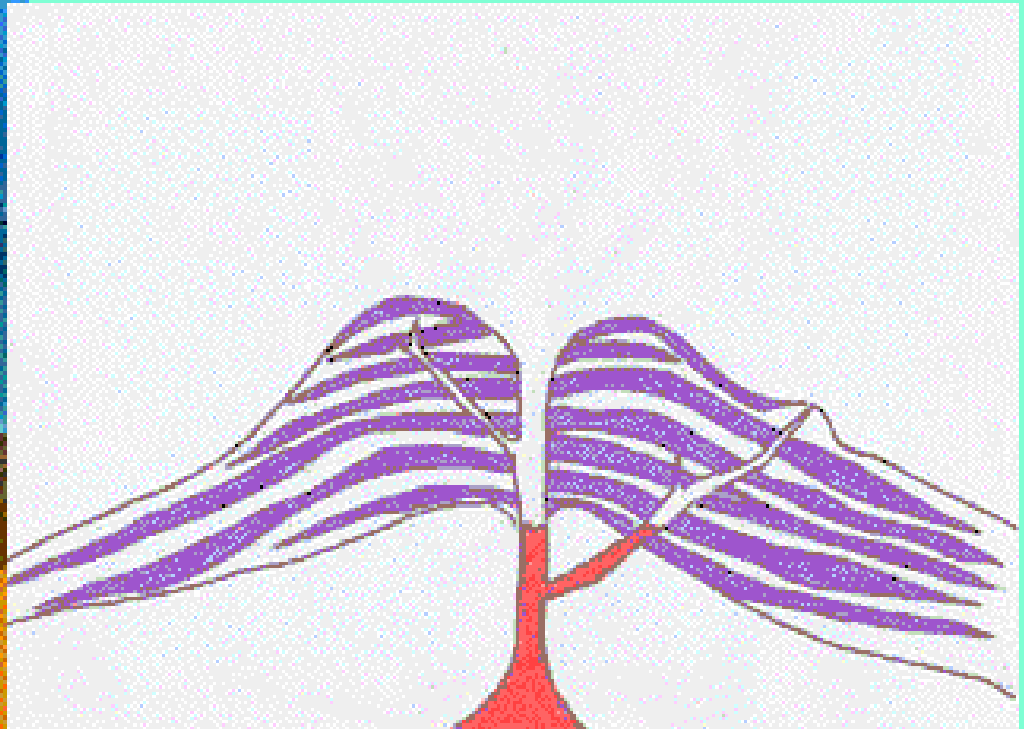
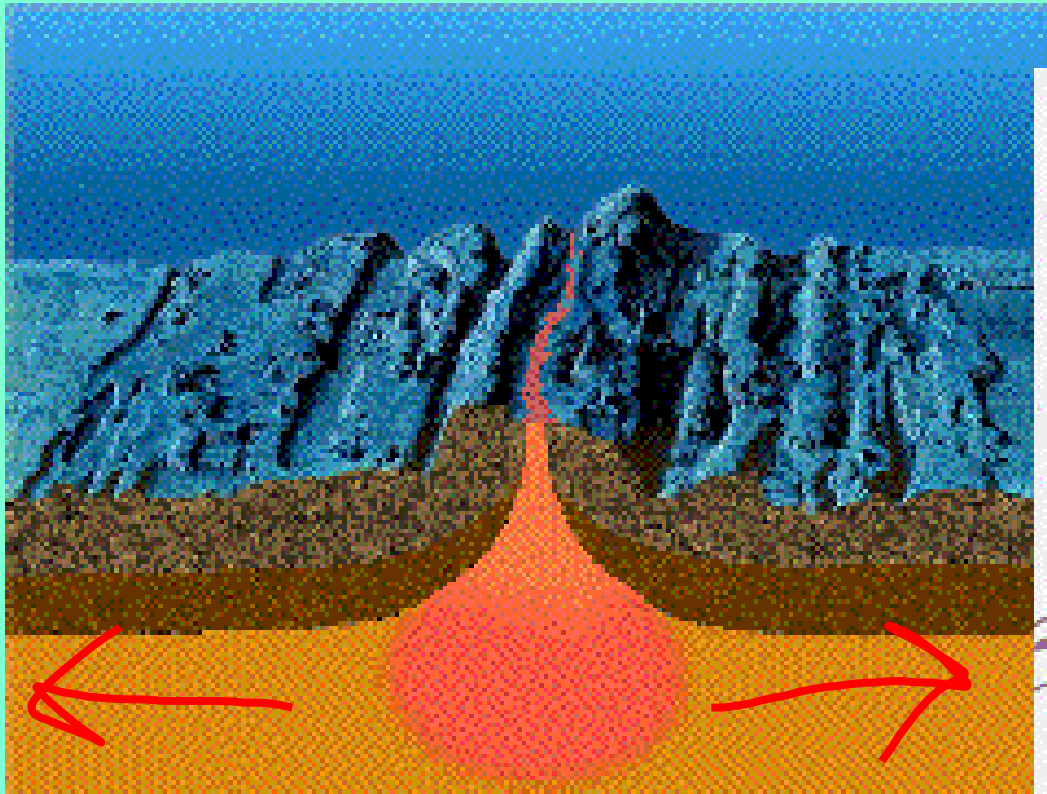
form from the cooling of molten (liquid) rock.



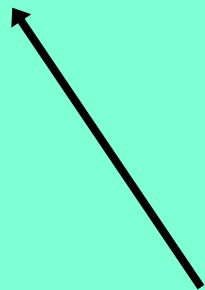
(two kinds of igneous rocks)

1. Extrusive Igneous:

cool on the surface of the Lithosphere



VIDEO



Remember how fast Lava Pillows cooled??? watch them again, but turn sound down...annoying

Cool quickly (seconds)
no crystals
Form from LAVA

Basalt



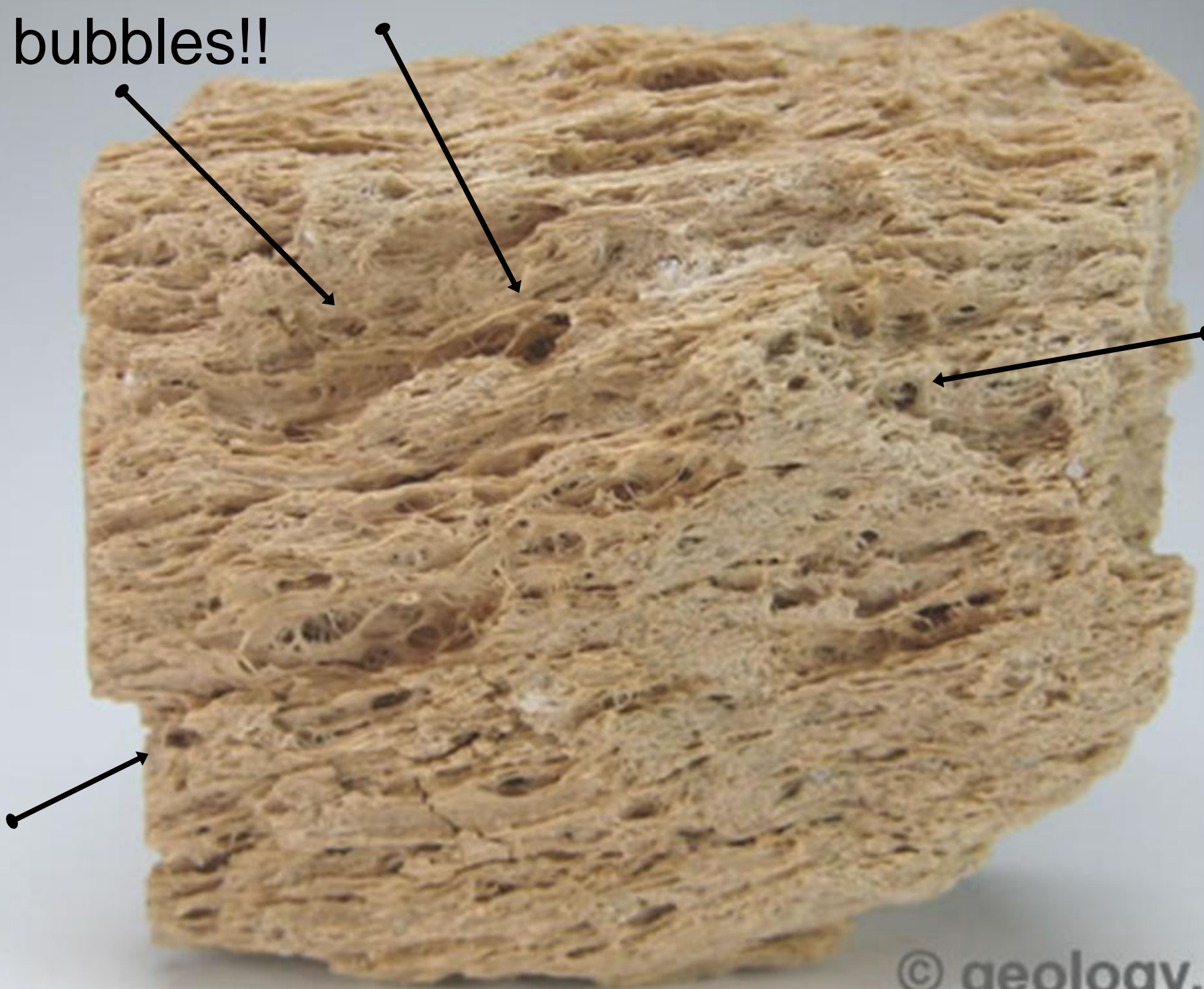
Plain.....no crystals.....and light colored!



Rhyolite

© geology.com

bubbles!!



© geology.com

Pumice! Scrub your feet with this.

Bubbles - Dark



Scoria!!

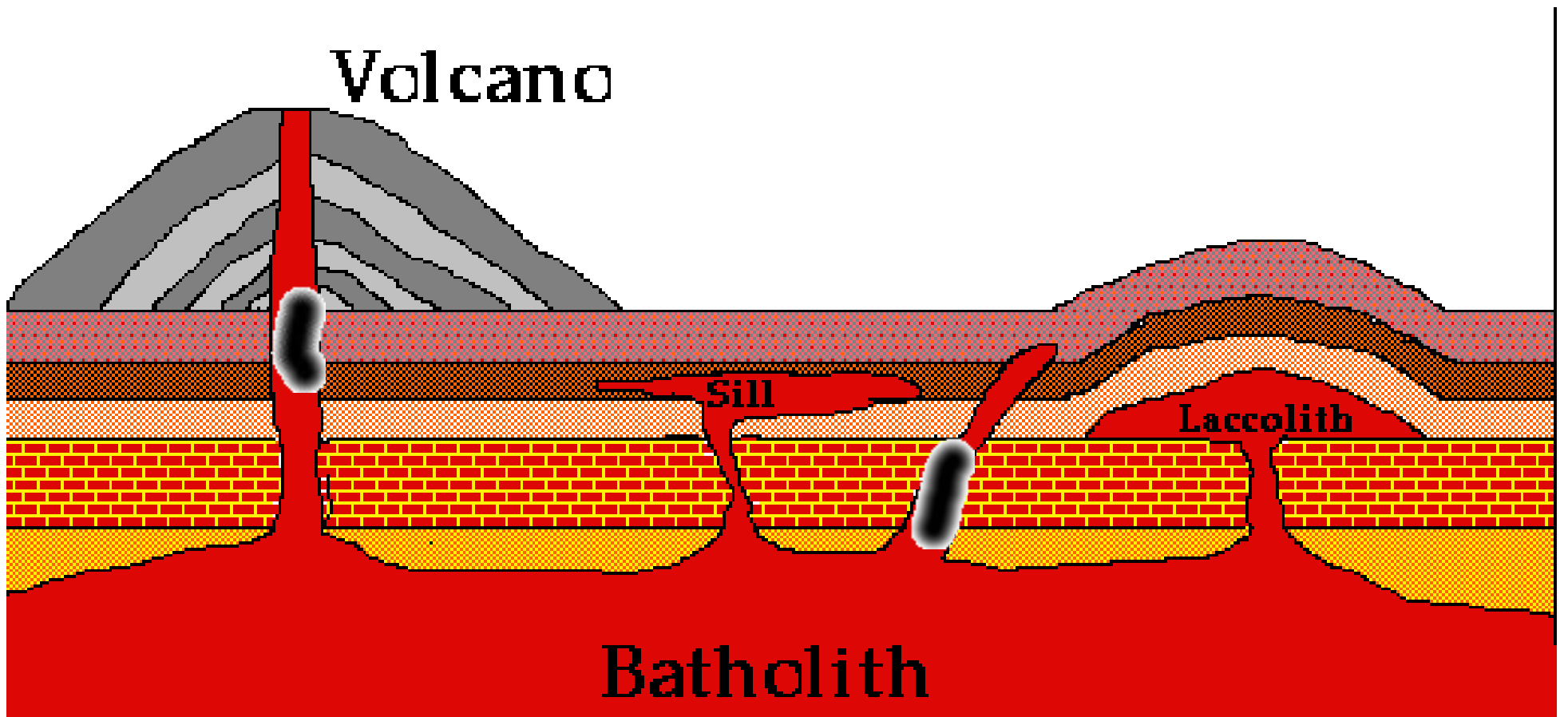
or Glassy!!!!----- but still No Crystals.



Obsidian!

2. INTRUSIVE Igneous:

form within the Lithosphere



Show Mini-movie DVD...use VideoLAN

Intrusion



This is called a
BATHOLITH

Large Crystals, sparkles
Cool slowly: 2 years!!!
Form from MAGMA

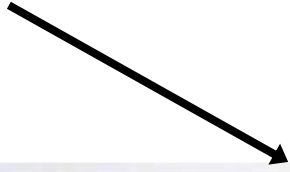


Dark, but crystalline



Diorite! (salt and pepper)

Tap Me!!!



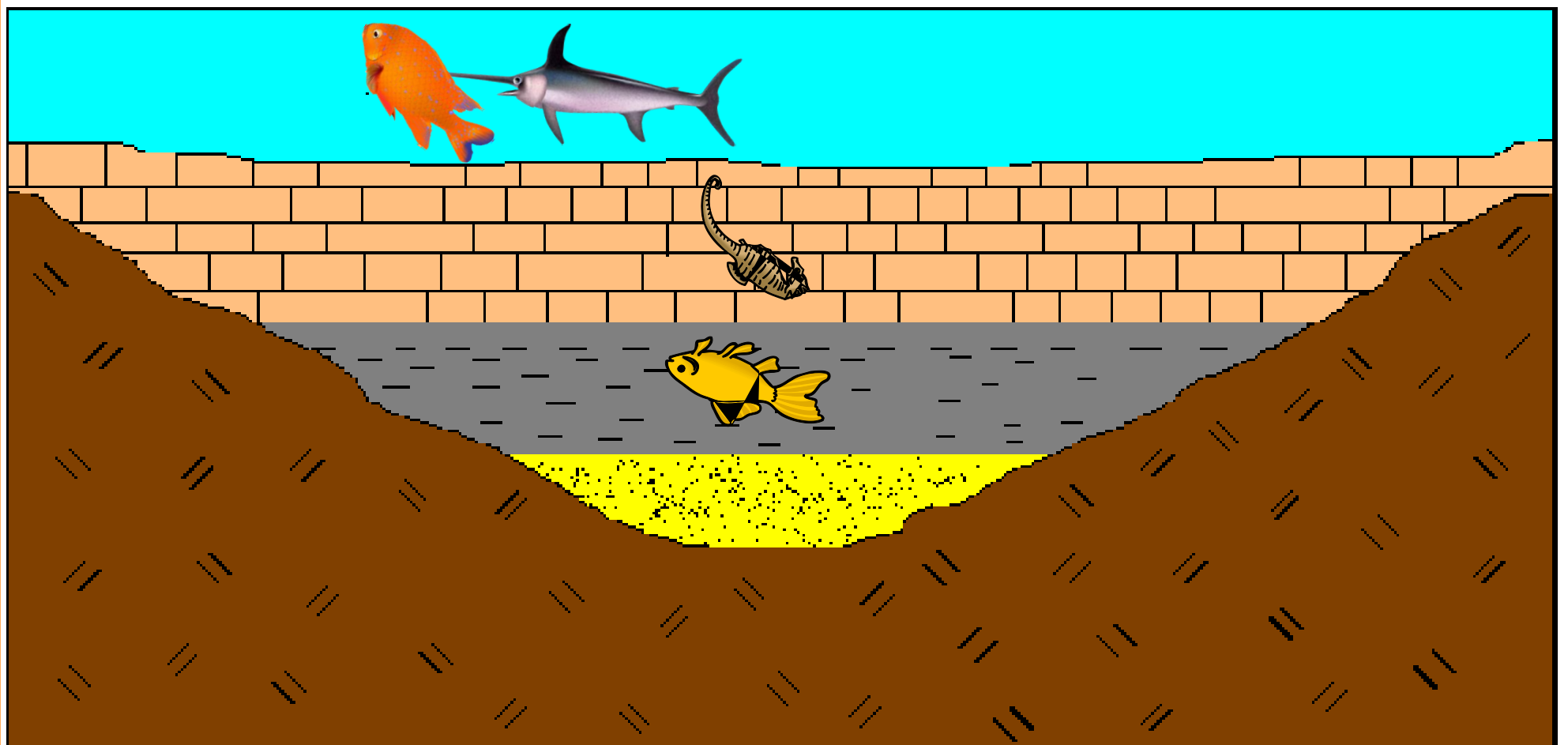
1. Determine Texture....then Determine if it's a light colored rock or Dark colored

Igneous Rock Key

TEXTURE	LIGHT COLORED		DARK COLORED
Coarse-grained (Sparkles)	GRANITE	DIORITE (salt & pepper)	GABBRO
Fine-grained (Dull)	RHYOLITE		BASALT
GLASSY (Shiny)			OBSIDIAN
BUBBLY (Holey)	PUMMICE		SCORIA

Sedimentary Rocks:

form when sediments are □ □ deposited in a body of water, □ □ then the water dries up



Original Horizontal Strata

Eventually the
□ water dries up!!!





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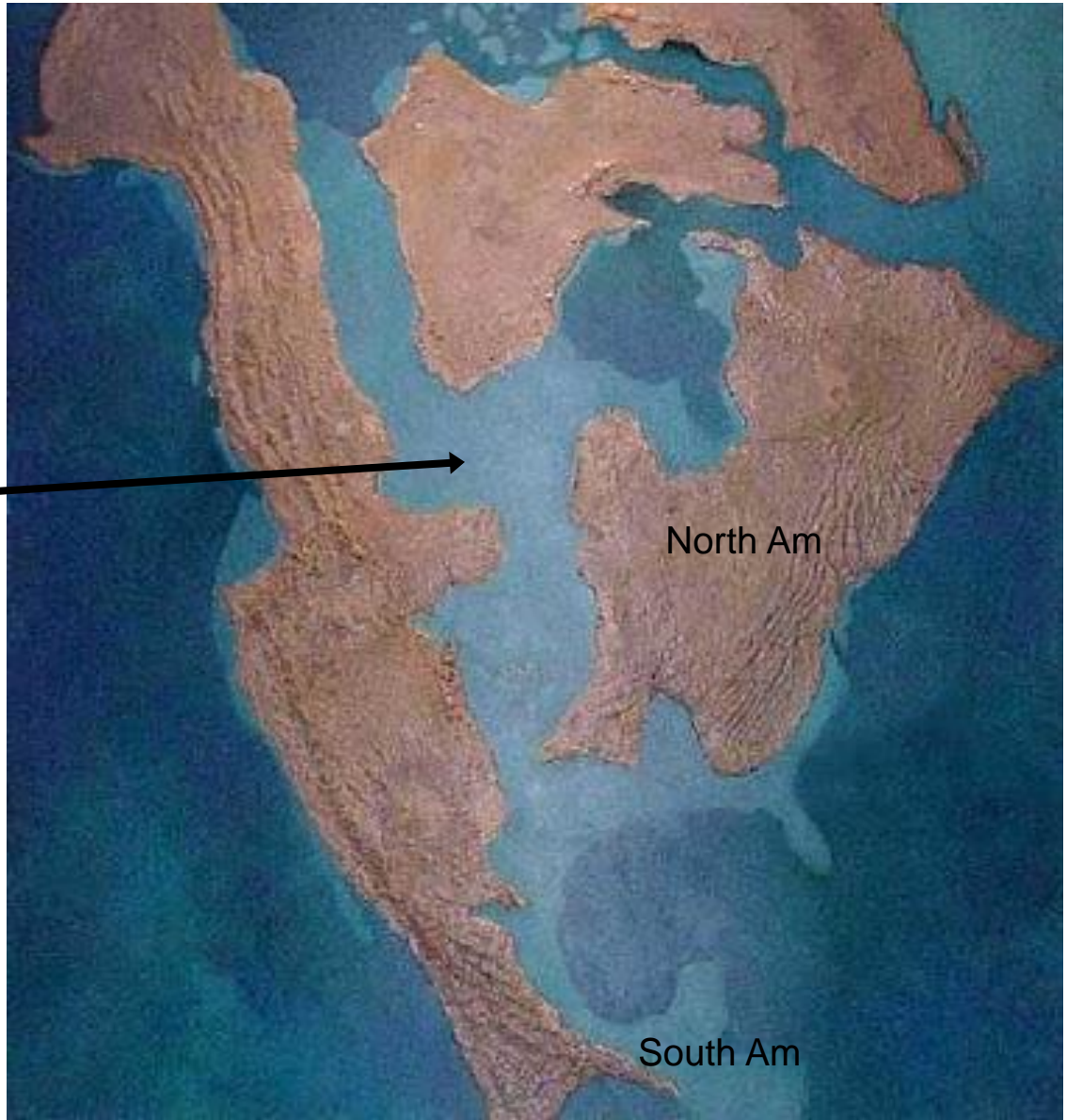


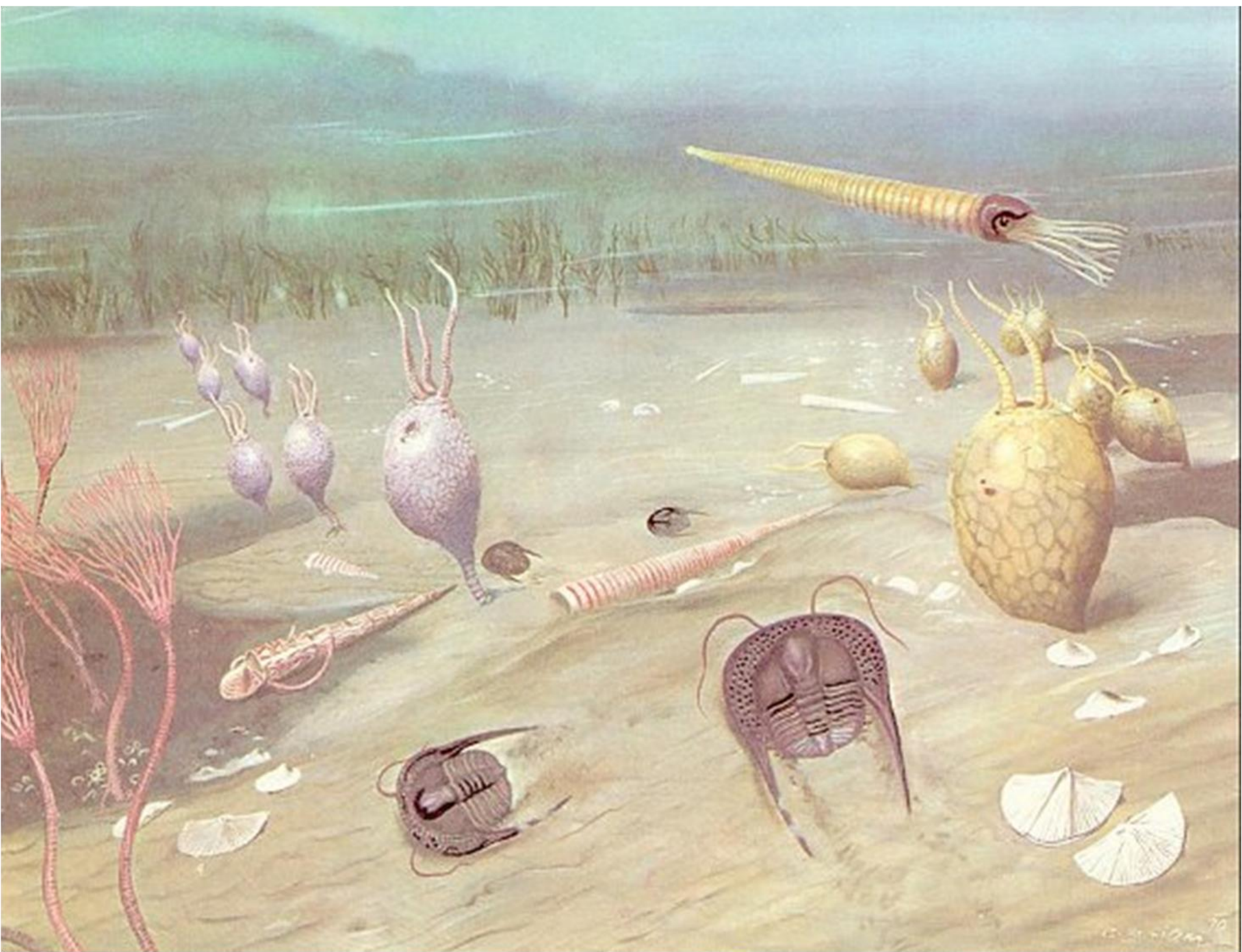
Carson Jack



400 Million Years Ago!!!!

Minnesota is covered by
a warm shallow Salt Water
Sea.

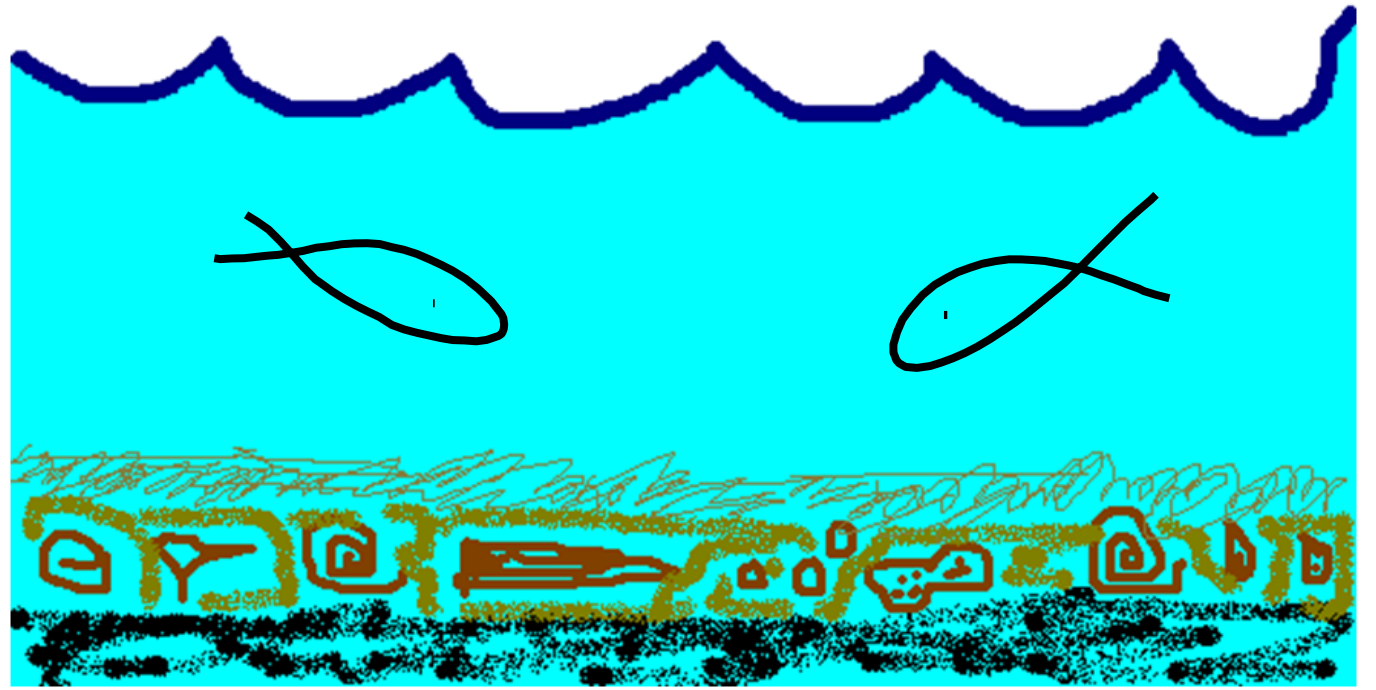




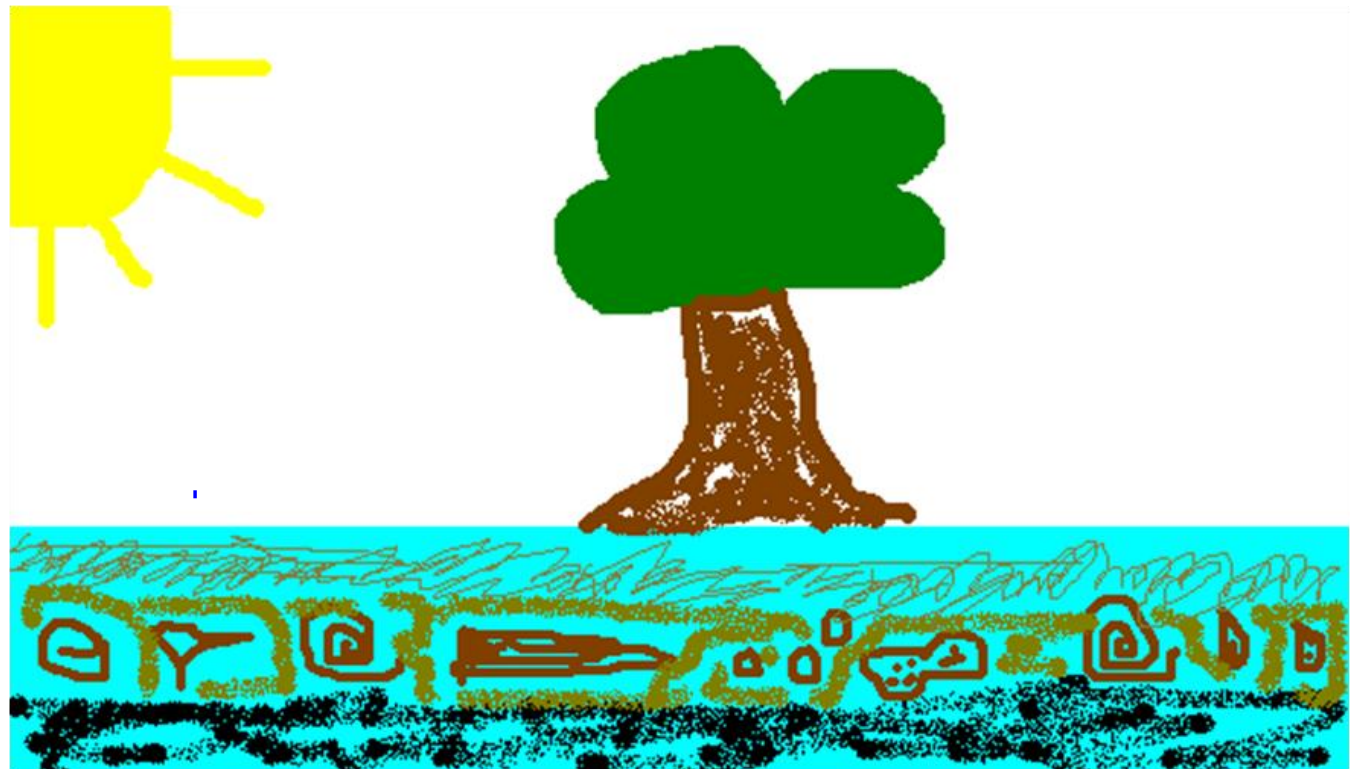


Squid Shell!!!!





After the water dries up, the sediments turn to rock...



Four Steps to making a Sedimentary Rock

1. You need a body of water
2. Sediments are deposited into the body of water
3. Sediments are squished by more on top
4. Water dries up and layers dry out



Cementation

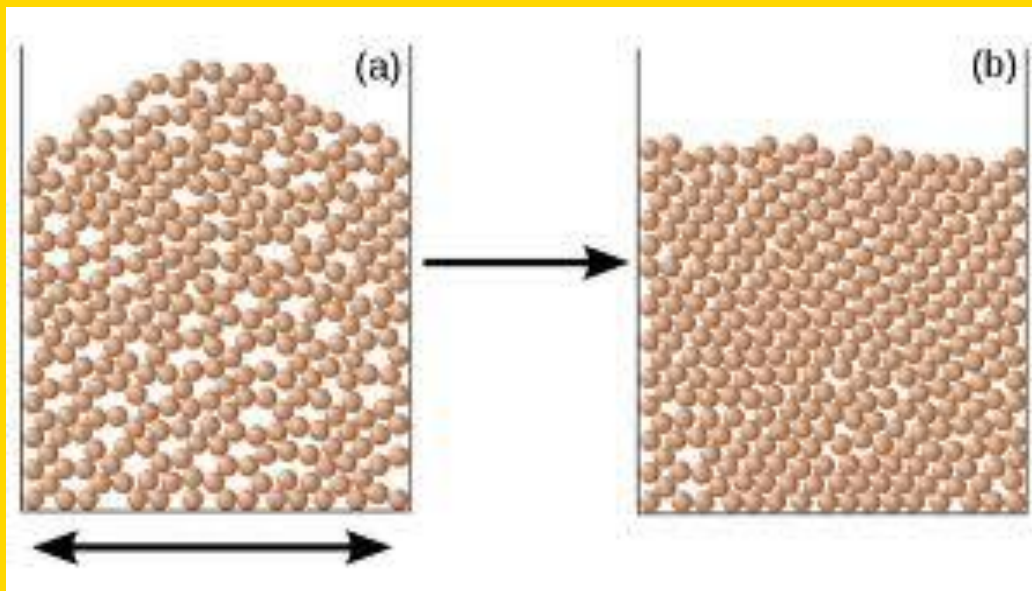
: When sediments dry out and harden



Dried clay (shale)

COMPACTION:

When sediments are squished together



*which one is more
 compact? A or B?*

Clastic: Non-living sediments

Organic: once living sediments

SEDIMENTARY KEY



COMPOSITION	CHARACTERISTICS	ROCK NAME
Compacted mud	Gray rock with thin layers	SHALE
Cemented pebbles and sand	Cemented rock with rounded pebbles (sometimes fizzes)	CONGLOMERATE
Cemented grains of sand	Gritty rock. Feels like sand.	SANDSTONE
Rotting/decaying plant material	Black rock	COAL
Microscopic Quartz	Smooth rock Colors can vary Scratches Glass	CHERT (flint)
Cemented dirt with bones/shells	Some visible fossils in rock	LIMESTONE
Cemented shell fragments	Mostly shell fragments. Looks like a granola bar	COQUINA
Coral Remains	White coral rock.	CORAL
Bones/shells and magnesium	Tan, dull color. May have small erosion holes.	DOLOSTONE

Batholith Formation



Intrusive Igneous

Extrusive Igneous

form INSIDE volcanos

Have large crystals

Cool Slowly

form underground

coarse texture

cool in a batholith

cools over 2 years

can be full of air bubbles

can't see crystals

Cool within seconds

form as lava flows down a volcano

form at an MOR

Form on top of volcanos

form when lava hits water

Form from lava

bubbly, fine and glassy textures

form from molten rock

Metamorphic Rocks: form when an existing rock
changed by heat, □ pressure, or acids.

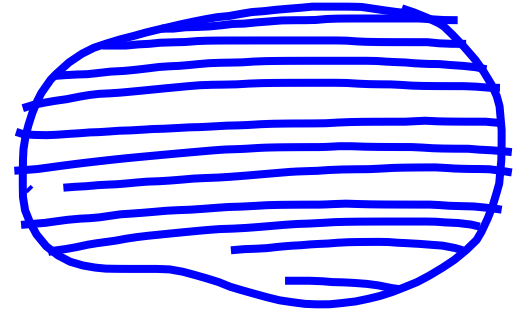


Quick Movie on Metamorphic rocks

1.FOLIATED:

Metamorphic Rocks with lines or bands

Draw them:





Lines (not layers)



2. NON-FOLIATED:

metamorphic rock with no lines or bands

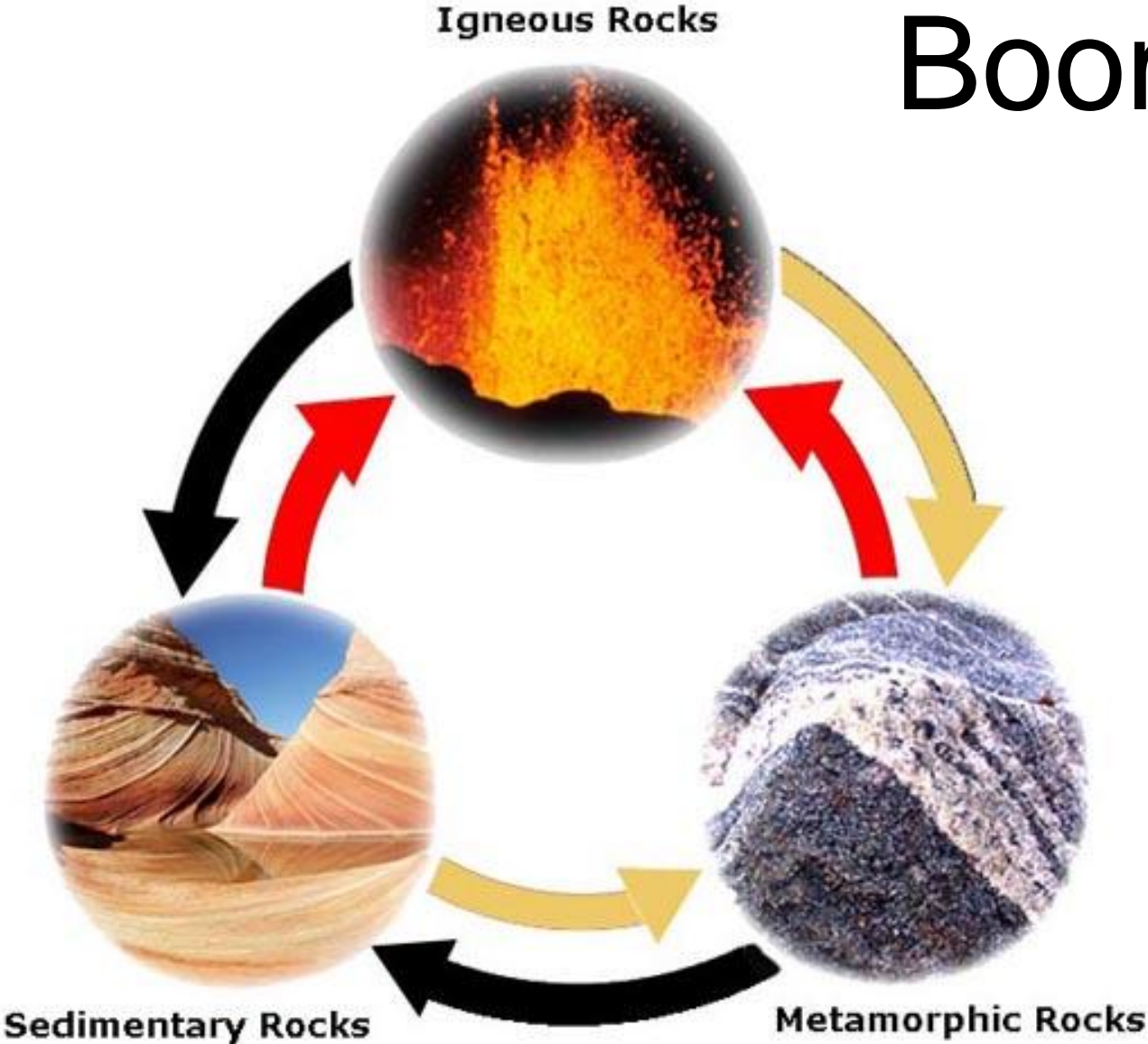


Draw them



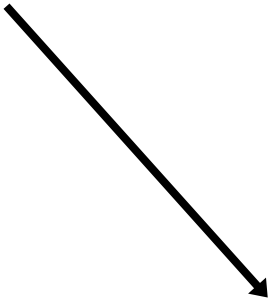
Metamorphic rocks can come from: igneous, sedimentary, or metamorphic rocks.

Boom!!



One more
Movie!

Review



METAMORPHIC ROCK KEY

FOLIATED: lines NON-FOLIATED: no lines	DESCRIPTION	ROCK NAME	PARENT ROCK
FOLIATED	Layers of pink and black minerals. Resembles Granite	GNEISS	GRANITE, RHYOLITE, DIORITE,
FOLIATED	Thin, sparkly layers.	SCHIST	SHALE
FOLIATED	Flat top and bottom. Thin layers. Grey color.	SLATE	SHALE
FOLIATED	Looks similar to slate, but coarser. Not FLAT Grey color.	PHYLLITE	SHALE
FOLIATED	Black, shiny.	ANTHRACITE COAL	SEDIMENTARY COAL
NON-FOLIATED	Fizzes from Acid. Colors vary: white, grey, pink.	MARBLE	LIMESTONE OR DOLOSTONE
NON-FOLIATED	Colors vary: white, pink, grey	QUARTZITE	SANDSTONE

Attachments

pillow lava, ocean crust, croûte océanique, basalt.mp4.mp4