**Unit 5/Surface Processes/Agents of Erosion/Miss Cohn**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_

**Erosion: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The forces/materials that transport sediments over time are:**

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



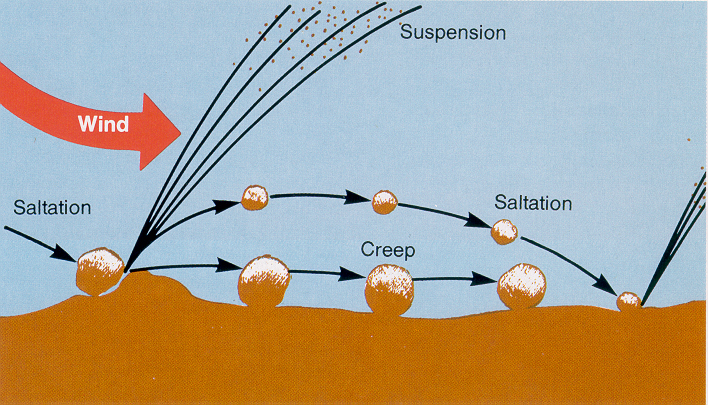
**4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**GRAVITY: When \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_is greater than the force of friction of the land, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_occurs!**

These are called: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Examples include: **Soil creep (slow), Avalanches, Landslides, Mudslides, Rock falls and slides** *\*Landslides and mudslides are more prevalent in areas that get heavy amounts of rainfall where the water does not have enough time to infiltrate.*

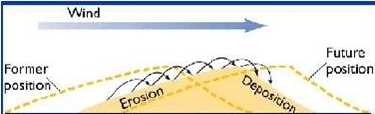
Mass movements can occur do to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

** WIND:** Wind Erosion is dependent upon **\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and the size of the sediment.

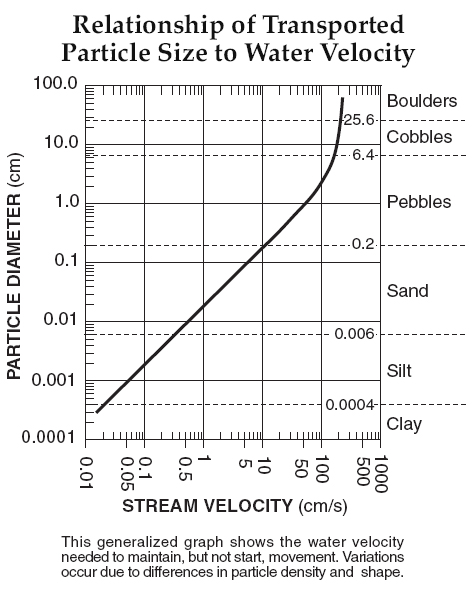
As sediment size \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of erosion by wind will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, because more sediment can be carried.

****Wind erosion is common in \_\_\_\_\_\_\_\_\_\_\_\_ climates. Mushroom rocks, Ventifacts (bottom right) and sand dunes are all the result of weathering and erosion due to wind.



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**WATER: Streams and Rivers are always carrying sediments of varied sizes.**

1. Small Particles can be\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, larger particles bounce along the stream bed (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), even larger Particles are rolled (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the velocity of a stream, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sized particle it can carry (erode). Below this speed, *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* will occur.

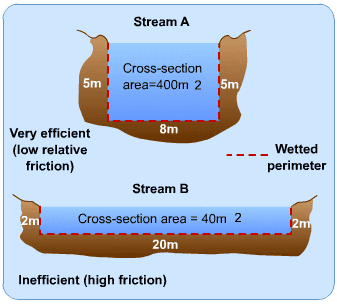
This is illustrated on page \_\_\_\_\_\_\_\_\_\_\_ of the ESRT.

The following are sediments of **increasing** sediment size:

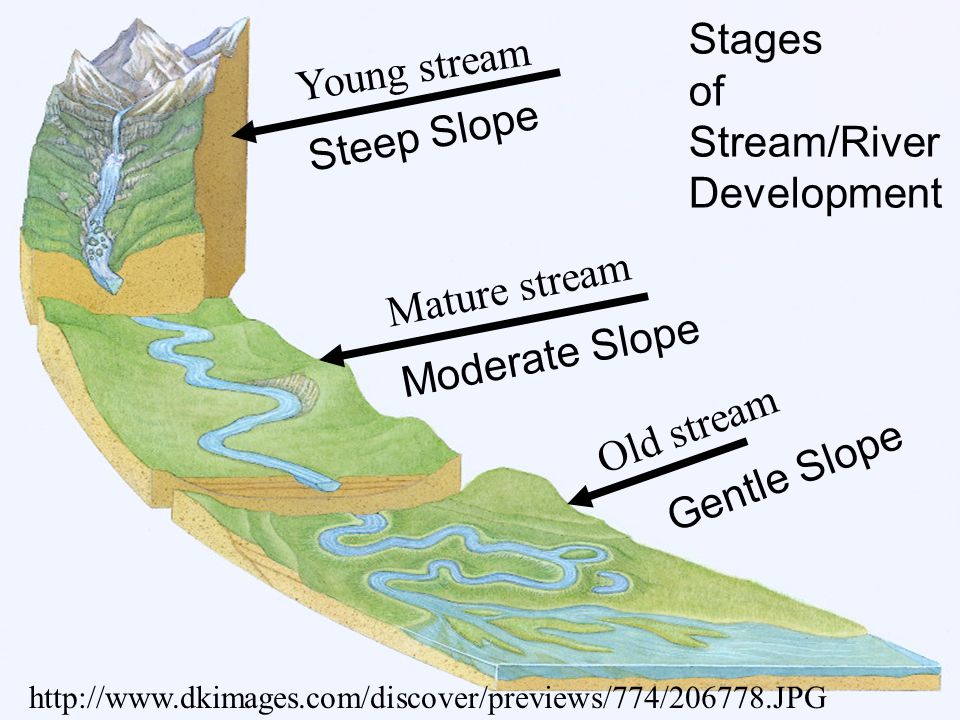
Clay, silt, sand, pebbles, cobbles and boulders.

**Checkpoint Questions:**

1. A stream moves at a velocity of 10 cm/s, what sized sediments will **erode**? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. If a stream was traveling at a velocity of 100 cm/s and dropped to a velocity of 10 cm/s due to a decline in rainfall, what sized sediment would become **deposited**? \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. What stream velocity is needed to **carry (erode)** a cobble sized sediment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What is the **range of size** for a sand sized sediment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ . A clay sized sediment? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?. A boulder is considered anything over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm in diameter.

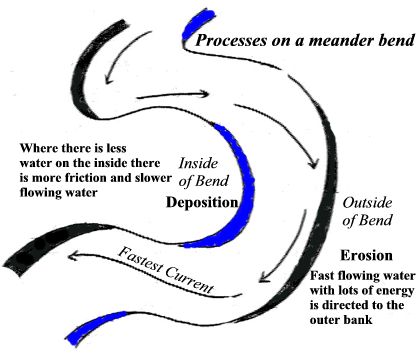
**Stream Velocity is dependent on:**

1. Slope of the Land:
2. Volume of Water in a Stream/River:
3. Channel Shape and Area:

**The Young Stream (High Altitude):** Water flows fastest in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and just below the \_\_\_\_\_\_\_\_\_\_\_ of the stream if the stream is straight. Erosion will create a \_\_\_ shaped valley.

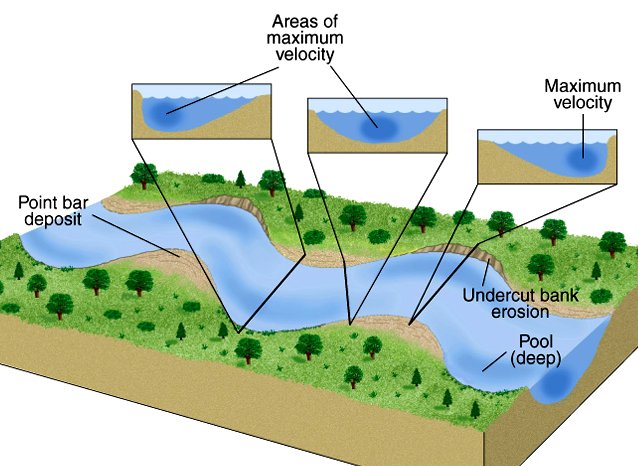
**The Old Stream (Flat Landscape):** The\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a stream is, the more S-shaped curves it develops, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

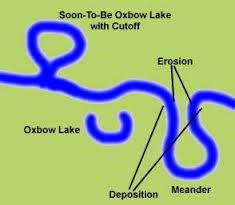
* Because of variations in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, there is deposition & erosion in different areas along a river. This means river profiles differ according to the velocity

**Profile Depth:**

1.)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water swings to the outside of the bend causing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water stays inside the bend causing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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**Real world: How could this influence your decision to purchase a home, or a business that was located along an old river system?**

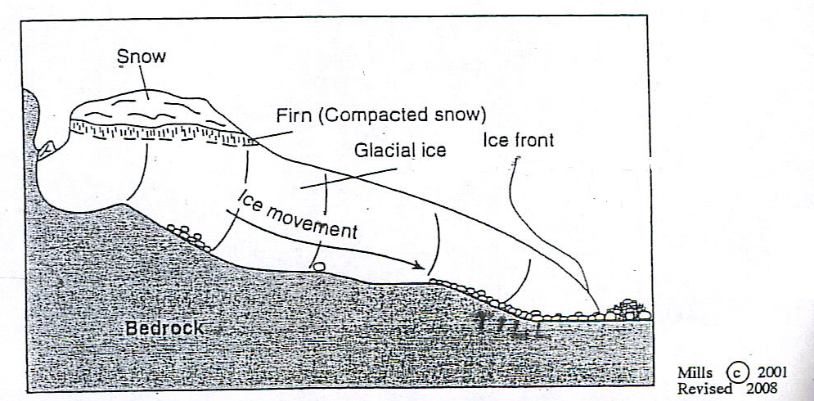
**Formation of Oxbow Lakes:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_by the river eventually cuts a new path for water to flow leaving behind an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, pictured right.

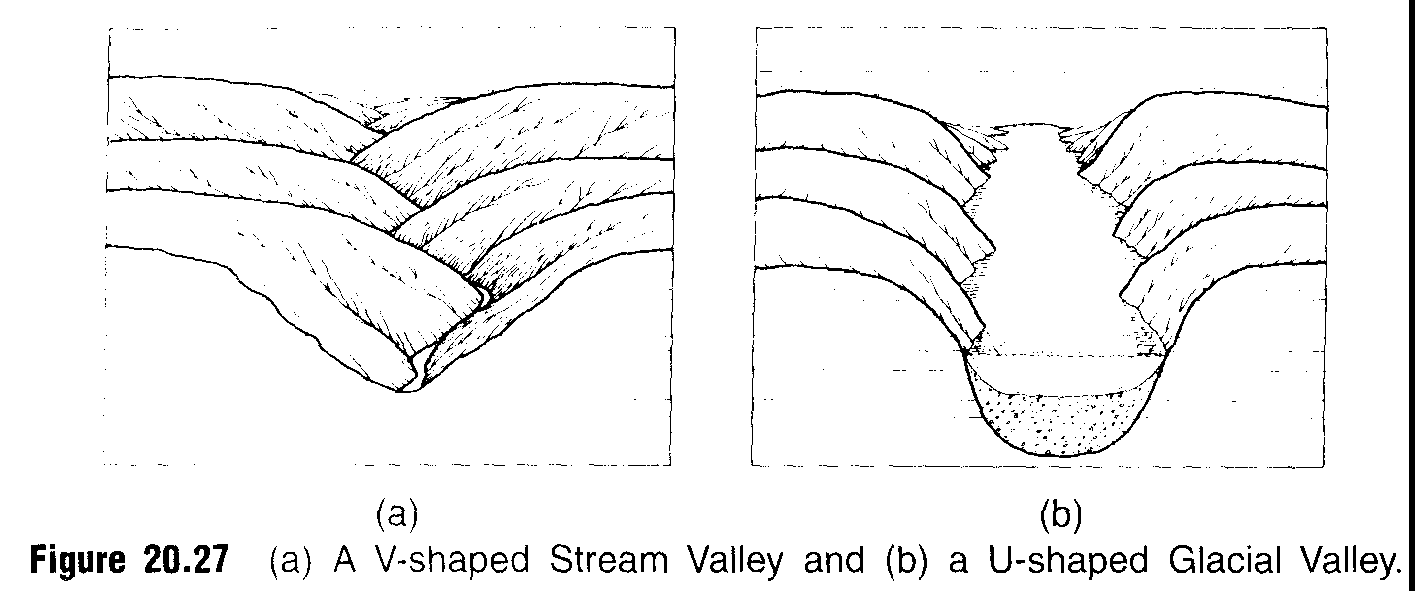
**GLACIAL ICE**

1. A glacier is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ of slowly moving ice that forms from the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of snow over time under the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of its own weight.

Where? Occur in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. ****When glaciers form in a mountain valley, they move \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ under the force of gravity, and fastest in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, just like a young stream. As the glacier moves, it plucks up sediments (called till) as it scrapes the land beneath.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is rock and sediment debris pushed along the edges of a glacier.

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**C. Glacial Erosion:** A difference between stream erosion and glacial erosion is the shape of the valley

Stream Erosion: \_\_\_\_-shaped

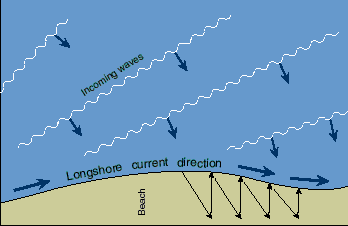
Glacial Erosion: \_\_\_\_\_-shaped

Other Erosional Features from Glacial Ice:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: parallel lines in the bedrock caused by rock fragments scratching the rocks surface.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: long thin lakes created by the deepening of pre- existing river valleys in western NY as the ice moved over this area. (Glacial sediment eventually dammed the lakes).

**Ocean Currents and Waves**

* *Surface* ocean currents and waves are generated mostly by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Wave action: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_motion within a wave results in the movement of sediments*.*
* As waves crash into the shoreline, they erode the bedrock forming\_\_\_\_\_\_\_\_\_\_\_\_\_ like structures as well as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Sand is constantly eroding along a shoreline, we build \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to limit beach erosion over time
* As waves crash into the shore at an angle, they carry sediment back out to the sea and transport it parallel to the shoreline. This is known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

