

Name: _____

Date: _____

Period: _____

Weathering, Erosion & Deposition Web Quest

Directions

- You may write your answers on this paper.
- Go to <http://trackstar.4teachers.org> and enter in View Track #457062 'Go'
- Select **View in Frames** to gain access to the websites needed to complete the web quest
- Attach this web quest paper into your notebook to keep as part of your notes!

Website #1: Shape It Up!

Click on the green start button and play a round of the game. If you are incorrect with your choice you will see a red X prompting you to choose again. Play a few rounds!

What are the four different forms of erosion in the game?

1. _____

3. _____

2. _____

4. _____

Website #2: Erosion & Transport

5. Erosion is the mechanism by which weathered pieces of rock are _____ from the site of weathering.

While the game in Website #1 listed volcanoes as a form of erosion, volcanoes are not considered one of the main agents of transportation for erosion.

6. Agents of Erosion – Play the animation at the bottom of the page to view each type!

Gravity - Weathered rocks _____ under the action of gravity are transported from the site of weathering to a place further away, on route they can erode other rocks they _____. For example weathered rocks falling off a cliff face or mountain or rock being transported during a mudslide.

Wind Wind can carry small particles of rock, _____ and sand over vast distances. When the particles come across other rock features they can cause erosion via their _____ against these features.

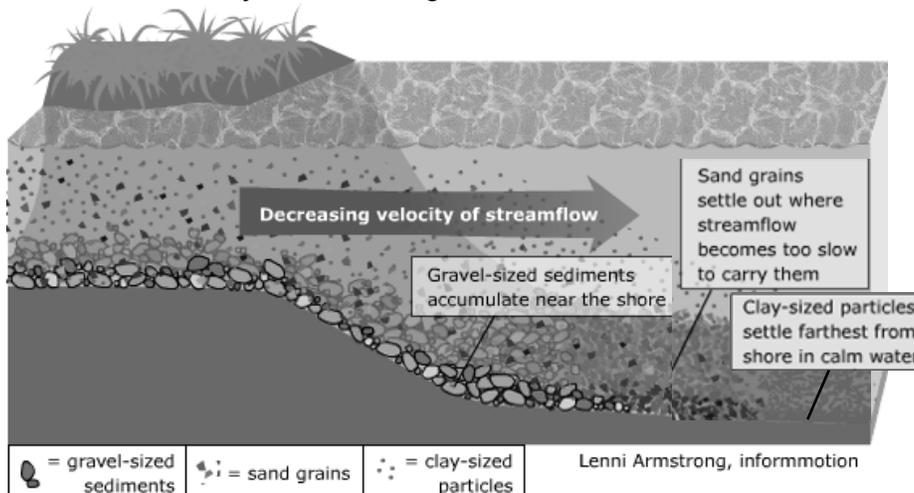
Water Weathered rocks can be transported vast distance by _____, rivers and _____. The _____ action of the transported rock can further erode the river beds and river banks.

Ice _____ can transport weather rocks which become embedded in the ice, these rocks then grind against the rocks beneath the glacier resulting in erosion.

Website #3: Deposition

Deposition is the final stage in the erosion process in which the transportation of sediment slows down and the sediments are dropped in another location.

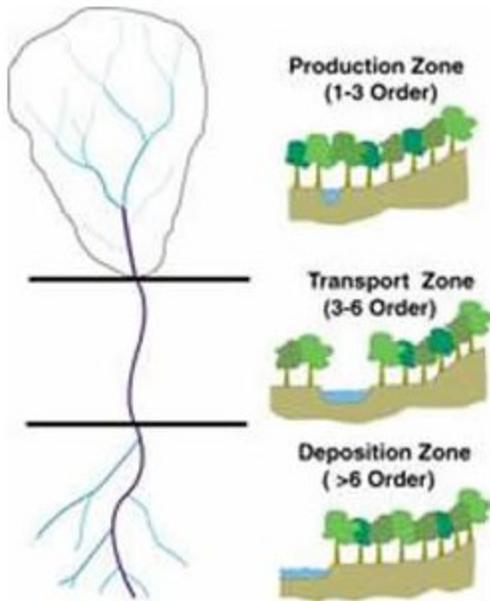
Click on the image to view an animation of a river entering into a lake



7. Why do you think that the larger gravel-sized sediments accumulate near the shore while smaller clay-sized particles settle the farthest from the shore?

Website #4: Longitudinal Zones

A **watershed** is a land area that is drained by a stream system.



8. Match each zone with their defining characteristics

___ Production Zone

A. Flattest gradient of all zones. Streams slow and widen even more in this zone, dropping sediment picked up at higher elevations.

___ Transport Zone

B. Found at the highest elevations in the watershed, is characterized by steep slopes and rapidly flowing water. Sediment is picked up in this zone and is carried downstream by the flowing water.

___ Deposition Zone

C. Stream velocity decreases, where slopes are not as steep and elevation is lower. Streams begin to meander in this zone.

9. What are deltas and how are they formed?

Website #5: Preventing Soil Erosion

10. Soil erosion removes the _____ which contains precious _____, organic matter, and micro-organisms essential to the viability of arable land. Taking steps to preserve soil is an important part of following an environmentally responsible lifestyle.

Effects of Soil Erosion

11. Over _____ % of human foods come from the earth. Soil loss can have catastrophic consequences.

10 Ways to Conserve Soil

Agriculture Soil Conservation

1. **Practice no till farming.** With no till farming, crops are allowed to remain rather than being _____ under at the end of the season. This practice keeps soils anchored in place rather than having bare ground exposed to wind and water.

2. **Use terrace farming.** This type of farming uses the _____ of the land to slow water flow through a series of terraces. This manipulation of the water flow prevents it from gathering speed and _____ soil away from farmlands.

3. **Practice contour farming.** Rather than planting crops in straight vertical rows, crops are planted following the _____ of the landscape. Crops planted up and down hillsides create pathways for water to flow. Crops planted parallel to the land slow the flow of water that prevents soil erosion.



Terrace Farming



Contour Farming

Home Methods

4. Reduce impervious surfaces. _____ surfaces like driveways and patios allow precipitation to flow freely over them. Water flow gains momentum when moving over such surfaces and can then erode stream banks and lakeshores. A good compromise is to use paving stones rather than a concrete slab for your patio to allow the water to percolate down into the soil.

5. Plant a rain garden. A rain garden is a shallow _____ in your yard, which will collect precipitation washing over impervious surfaces. It prevents soil erosion and gives you an opportunity to grow wetland plants.

6. Use a rain barrel. You can place a rain barrel _____ a downspout to collect the water that runs off of your roof. You can use the water you collect for your lawn and garden.



Paving Stone Driveway



Rain Barrel

Resource Planning

7. Plant windbreaks. Windbreaks prevent soil erosion by _____ the force of the wind over open ground. You can plant trees or shrubs in your windbreak.

8. Restore wetlands. Wetlands are one of the most effective ways to prevent soil erosion. Wetlands act as natural _____, absorbing rainwater and preventing it from carrying the soil away. They also provide a habitat for birds and other wildlife and help prevent water _____.

9. Plant buffer strips along stream banks. Buffer strips help _____ stream banks intact during times of flooding. They also prevent runoff from entering waterways. Buffer strips can include a mixture of _____, shrubs, and trees.

10. Re-establish forest cover. The re-establishment of forest cover provides an extensive, tree-root network that offers a _____ solution to soil erosion. It can function both as a windbreak and a means to anchor soils in place.



Windbreak



Buffer Strip

Website #6: Weathering & Climate (Review)

Click on "Home" to access the Weathering Overview

1. What are the two main classes of weathering processes?

1. _____ weathering
2. _____ weathering

2. The water cycle and climate are intimately involved in the process of weathering.

Which conditions enhance chemical weathering? _____ and _____ climate conditions

Which conditions enhance physical weathering? _____ and _____ climate conditions

Click on "Next" to access the Mechanical Weathering Overview

3. Complete the list of mechanical weathering processes:

- frost _____
- _____ expansion and contraction
- tree _____ growth
- exfoliation
- _____ growth
- abrasion

Click on "Next" to access Frost Wedging

4. Click on Freeze It to watch frost wedging in action. Complete the following fact about water:

Water _____ when it freezes – an ice cube is about ____% larger than the volume of the water before it froze.

Click on "Next" to access Exfoliation

5. Take a look at the animation. What are the fallen pieces of rock called? _____

Click on "Next" to access Thermal Expansion and Contraction

6. Click on Start to view the animation and finish the following statement:

Repeated _____ and _____ cycles slowly _____ mineral grains apart.

Why does thermal expansion and contraction occur mostly in desert regions?

Click on "Next" to access Crystal Growth

7. Click on Start to view the animation. Salt crystals from the sea loosen and break up rocks similar to frost wedging.

Click on "Next" to access Tree Roots

8. Click on Grow to view the animation.

Briefly describe the animation:

Click on "Next" to access Abrasion

9. The animation starts automatically. To review click Back then Next again.

Give one example of where abrasion can occur:

Summary – Climate plays a huge role in mechanical weathering. Match each of the types of mechanical weathering to their climates. If you need help, review the sections looking at the small white word box below the animations.

- | | |
|---|--|
| 1. _____ Frost Wedging | A. Desert regions, in which temperature fluctuates by as much as 50°C daily |
| 2. _____ Exfoliation | B. Coastal and desert regions where salt comes from the sea |
| 3. _____ Thermal Expansion & Contraction | C. Mountain regions with plutonic (deep) igneous rock has been uplifted and exposed |
| 4. _____ Crystal Growth | D. Occurs wherever sediments are transported by water, wind or ice. |
| 5. _____ Tree Roots | E. Warm moist regions, which support dense forests |
| 6. _____ Abrasion | F. Cold, moist mountain regions, in which water is abundant |

If you have time continue by clicking on "Next" to access Chemical Weathering

Game

Website #7: Forces of Nature

Scroll down to the orange and black box. Choose in the top left corner (tornado, volcano, hurricane, earthquake) which force you would like to create!